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**ROYAL BOROUGH OF
KENSINGTON AND
CHELSEA**

DOCUMENT TYPE

COUNCIL CASE 8

PLANNING APPLICATIONS

PUBLIC INQUIRY

PP/02/01324

PP/02/01324

Lots Road Power Station And Chelsea Creek

Due to case file size the content has been broken down and scanned in sections as denoted.

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Lots Road Public Inquiry
Circadian Limited

APP/H5390/V/04/1148781

APP/K5600/A/04/1146268

**LOTS ROAD POWER STATION
And
LAND AT THAMES AVENUE DEVELOPMENT**

**ENVIRONMENTAL STATEMENT
ADDENDUM**

February 2003



■ City of London
■ Glasgow
■ Edinburgh



AMA/PD5824

03 March 2003

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The Chambers,
Chelsea Harbour
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Dear Sir or Madam

LOTS RD POWER STATION DEVELOPMENT

Please find enclosed a copy of an addendum to the Environmental Statement that accompanies the current planning application to redevelop the above site.

In December 2002, you kindly left a copy of the planning application and Environmental Statement in your offices for members of the public to view. We would be very grateful if you could provide space within your offices to make the enclosed addendum available to members of the public for the month of March.

We trust this is acceptable, however should this cause inconvenience or you have any queries please do not hesitate to contact Jim Pool of this office.

Yours faithfully

MONTAGU EVANS

Enc.

PARTNERS
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W C O'Hara
C A Ridgag
M J Kerr
S L Thomas
T P Watkins
S R W Harris
J T Bailey
A C W Rowbotham
P T H Lowrie
K J Mitchell

R P Posner
P B Grant
H A Rutherford
C M M Whyte
A J Simmonds
N P How
R D Harvey
D A M Reid
R J Cohn
R P Woodman
S J Wough
G S Davey

A R McRitchie
I J Michie
R V Bower
D A McCrory
R M Philpotts
P J Mason
M A C Higgin
S E Knight
G Howes
N P Law
T J Raban
M J Knight

G C Essex
M E Kuit
M Gudaitis
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G H J McGonigal
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SECRETARY
S M Wilson



Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

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Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

NON-TECHNICAL SUMMARY OF ADDENDUM TO ENVIRONMENTAL STATEMENT

INTRODUCTION

An Environmental Statement (ES), prepared by Waterman Environmental, was submitted on 12 December 2002 on behalf of Circadian Limited in support of planning applications for the proposed redevelopment of Lots Road Power Station and Land at Thames Avenue. A formal request was made by the Royal Borough of Kensington and Chelsea (RBKC) and the London Borough of Hammersmith and Fulham (LBHF) for further supporting information to this ES under Regulation 19 of The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. This Addendum to the ES has been prepared and is submitted in accordance with the requirements of this Regulation. It addresses comments made by the RBKC and LBHF, and presents further results from ongoing specialist studies, including transport sensitivity testing based on higher trip rates. A small amendment was also made to the original traffic flow survey data at Lots Road, and the base TRANSYT analysis has been re-run with this error eliminated. A River Transport Study has also been included, as requested by RBKC and LBHF.

There have been no design changes that would impact on the conclusions of the December ES. The additional information submitted in this document elaborates upon topics covered in the ES. The full ES documentation has therefore not been reproduced. This Addendum should be read in conjunction with the 'Lots Road Power Station and Land at Thames Avenue Development - Environmental Statement' and accompanying technical appendices, dated December 2002.

A summary of the additional information, implications to the conclusions of the previous ES and additional technical reports are presented in this Addendum. Further information contained in this Addendum includes air quality modelling data, a revised traffic assessment using 'worst case' assumptions, and a river transport report. This section provides a summary, in non-technical language, of the Addendum.

IMPLICATIONS OF THE ADDITIONAL INFORMATION

Each environmental parameter considered in the original Environmental Impact Assessment (EIA) study has been re-evaluated by Waterman Environmental, as the EIA project

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

managers, and by the specialists who undertook the relevant technical studies. It has been determined that the additional information does not alter the conclusions of the original EIA study or change the type or magnitude of residual impacts identified in the ES.

Air

The amalgamated air quality report includes an additional modelling report covering construction-phase traffic, as requested by RBKC and LBHF. It is based on the vehicle trips identified on page 49 of the ES which takes into account the proposed use of the river, which demonstrates a 50% reduction in road vehicle movements generated by the site works, including HGV's, MGV's and site workers vehicle movements. It predicts no significant increase in areas of air quality objective exceedances. Only minor pollution concentration increases are predicted at locations close to the site and negligible effects are expected elsewhere.

Traffic

Transport Sensitivity Testing based on a 'worst case' scenario, as requested by RBKC and LBHF, has been undertaken and shows no unacceptable or adverse impact on the road network. Amendments to the original traffic flow data and a re-run of the TRANSYT analysis show slightly improved conditions at the Lots Road/ Kings Road junction without the development. With the development traffic and the proposed traffic signals at Lots Road/Cremorne junction, the latest results show that, even making no allowance for the reduced traffic levels overall as a result of Sustainable Integrated Transport System (SITS), the impact of development traffic on the road network remains negligible. The additional work confirms the robustness of the transport proposals and reconfirms the conclusions of the ES.

River Transport Study

This report verifies the vehicle movements presented in the ES and substantiates how materials can be moved to and from the site by river, and thus reducing the number of heavy and medium goods vehicles (HGV's and MGV's) needed for the development by approximately 50%.

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

RESIDUAL IMPACTS AND CONCLUSIONS

All other environmental parameters assessed in the original ES including archaeology, socio-economic issues, noise, built heritage, landscape and visual effects, water resources, ecology, sustainability, contamination, telecommunications and microclimate are not affected by the additional information in this report, and the impact assessment for these topics remain the same as presented in the ES.

Overall, in consideration of additional information submitted after the December ES, it is concluded that the **residual environmental impact** of the Lots Road Power Station and Land at Thames Avenue Development remains substantially *beneficial* in respect of the local community, economy and the environment.

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

1.0 INTRODUCTION

1.1 Background

An Environmental Statement (ES), prepared by Waterman Environmental, was submitted on 12 December 2002 on behalf of Circadian Limited in support of planning applications (No.02/01324 for the Royal Borough of Kensington and Chelsea and No.2002/03132/FUL for the London Borough of Hammersmith and Fulham) for the proposed redevelopment of Lots Road Power Station and Land at Thames Avenue (See figures 1 & 2).

A formal request was made by the Royal Borough of Kensington and Chelsea (RBKC) and the London Borough of Hammersmith and Fulham (LBHF) for further supporting information to this ES under Regulation 19 of The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. This Addendum to the ES is prepared and submitted in accordance with the requirements of this Regulation, addressing comments made by the RBKC and LBHF, and presents further results from ongoing specialist studies since the ES submission in December 2002. A River Transport Study has also been included.

A small amendment was made to the original traffic flow data at Lots Road and the TRANSYT analysis has been re-run with this error eliminated. There have been no design changes in the scheme since the planning application was submitted that affect the conclusions of the ES. A summary of the additional information, its implications to the conclusions of the ES, and additional technical reports are presented in this Addendum.



Figure 1: Site Location Plan

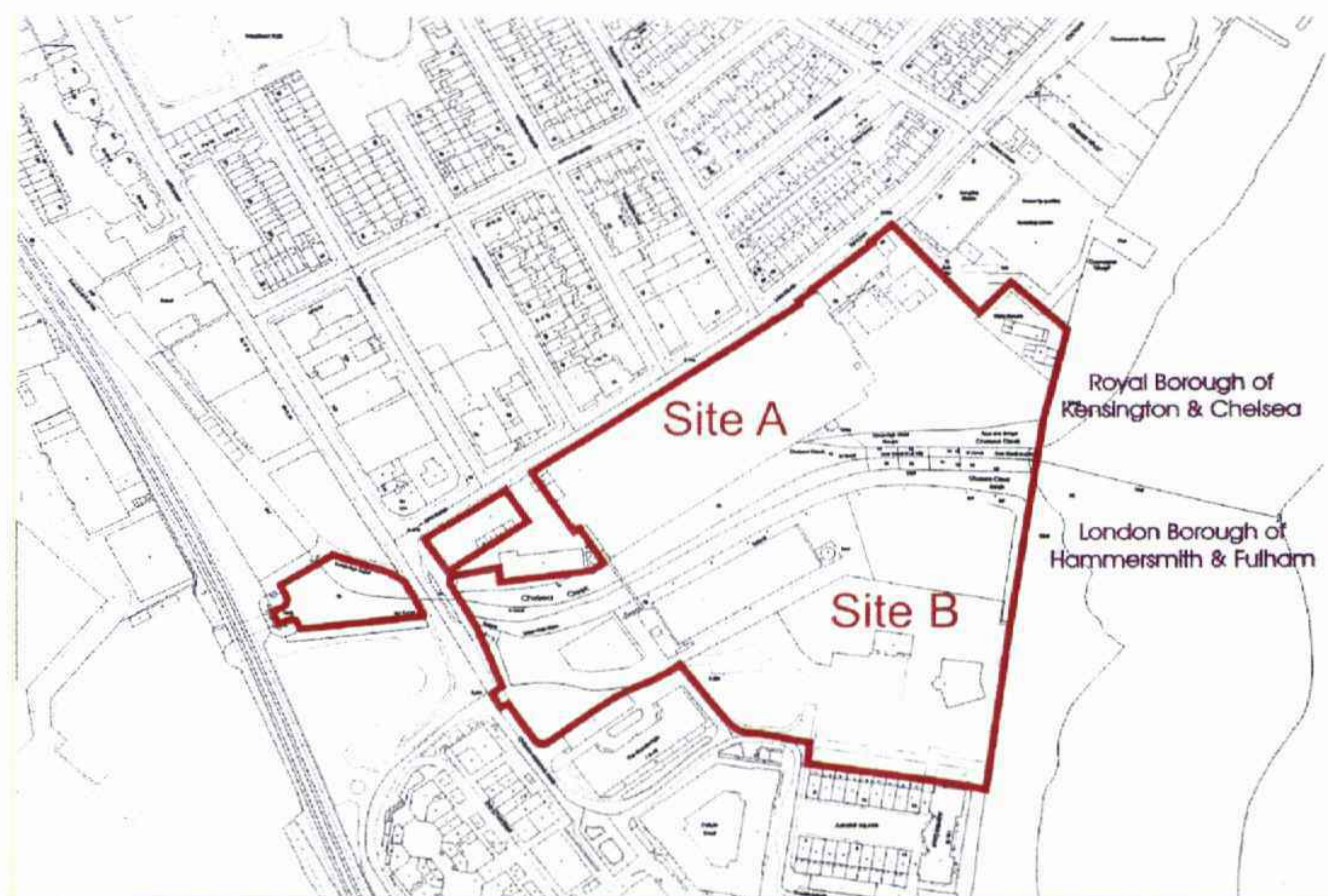


Figure 2: Site Boundary

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

Comments raised by the RBKC and LBHF following the submission of the planning applications are summarised below:

With regards to air quality:

- An air quality assessment during the construction phase, in relation to construction vehicles and site workers vehicles, needs to be taken into account in the Dispersion Modelling Study;
- Both the 'operational' 2010 air quality modelling study and the 'construction' 2004/5 modelling should be reported within a single volume; and
- Validation data showing the performance of the air quality model should be included in the air quality assessment.

With regards to transport:

- Sensitivity tests of the road network using higher trip rates than those used in the Transport Assessment should be undertaken; and
- A number of issues concerning vehicle access should be examined with regard to detailed geometry and layout of the proposed development.

As construction-phase traffic data became available following the ES submission, the above could be addressed in an air quality report amalgamated by Waterman Environmental (Appendix A). Further traffic assessment has been undertaken by Symonds (Appendix B), and a river transport study has been carried out by Taylor Woodrow Construction (Appendix C) as part of ongoing appraisals for the scheme. The information arising from these studies is summarised in Section 2.

1.2 Relationship of Addendum to the December 2002 ES

This Addendum addresses the implications of the additional information with respect to the scheme's environmental impacts and the mitigation measures adopted, as described in the December 2002 ES. There have been no changes to the scheme design, and the contents of the additional information have not changed the

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

conclusions of the ES. The full ES documentation has therefore not been reproduced.

This report should be read in conjunction with the individual assessments of the relevant environmental topics in 'Lots Road Power Station and Land at Thames Avenue Development - Environmental Statement' and accompanying technical appendices, dated December 2002. The ES submitted previously remains valid, and the conclusions expressed therein remain the same.

1.3 Summary of Residual Impacts

For completeness, the residual impacts (i.e. those remaining after mitigation) of the proposed development are presented in Tables 1 and 2 overleaf.

The tables represent the residual impacts during the dismantling, demolition, remediation and construction phases (Table 1) and on completion and operation of the development (Table 2), highlighting the implications of the additional information to the original impact assessment.

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

Table 1: Summary Table of Residual Impacts - Dismantling, Demolition, Remediation and Construction

ISSUE	DESCRIPTION OF IMPACT	DESIGN/ MITIGATION PROPOSAL	NATURE OF IMPACT	RESIDUAL SIGNIFICANCE	IMPLICATIONS OF ADDITIONAL INFORMATION
Sustainability	Increased energy consumption	Selection of energy efficient plant and equipment	ST	Negligible	Unchanged
	Production of significant quantities of waste for disposal	Measures in place to reduce wastage, re-use and recycling of excavated and demolition material where feasible.	ST	Negligible	Unchanged
Socio-economics	Generation of an estimated average 500 construction jobs per day	None required	ST	Beneficial	Unchanged
	'Knock-on' economic benefits for local suppliers/ construction/service industry	None required	ST	Moderate beneficial	Unchanged
	Potential disruption to local community during works	Environmental control measures specified in EMP (noise, dust, traffic, etc.). Regular community liaison and information updates.	ST	Minor adverse	Unchanged
Built Heritage Townscape and Visual	Demolition of buildings Visual intrusion of construction works	Buildings that are being demolished are of no particular merit. Use of protective hoardings and scaffolding to shield construction where possible.	LT, IR ST	Negligible/ Minor adverse	Unchanged
Archaeology	Potential loss of <i>in situ</i> archaeology	Possible further evaluation and a watching brief during proposed excavation work to ensure recovery and recording of finds/features.	LT, IR	Minor adverse / Negligible	Unchanged
Water Resources	Temporary loss of flood storage capacity during creek works	Protection measure in EMP and Remediation Strategy.	LT	Negligible	Unchanged
Ecology	Disturbance to protected species	EMP provisions	ST, R	Negligible	Unchanged

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

	Impact to TPO trees	EMP provisions and replacement or relocation.	ST, R	Negligible	Unchanged
	Ecological perturbation due to works in creek	EMP provisions	ST, R	Minor adverse	Unchanged
Contamination Issues	Remediation and safe disposal of soil contamination	Remediation Strategy and EMP.	LT	Major beneficial	Unchanged
	Removal of old plant, hazardous materials and asbestos from industrial buildings	EMP and legal controls	LT	Major beneficial	Unchanged
Transport	Increase in local traffic from construction traffic	Use of River Thames for approximately 50% of trips (where feasible). Carefully scheduled construction works and deliveries. Implementation of a Green Travel Plan.	ST	Minor adverse	Unchanged Substantiates how materials would be moved to and from the site by river.
Air Quality	Emissions from traffic and site plant	Measures in place to reduce construction traffic, including the use of barges on the River Thames Use of high quality plant which will be regularly maintained.	ST	Negligible/ Minor adverse	Unchanged No significant increase in areas of air quality objective exceedances predicted. Minor pollution concentration increase predicted in locations close to the site. Negligible effects elsewhere.
	Generation of dust and PM ₁₀ from demolition and site works	Selection of appropriate demolition and construction methods. Implementation of dust management procedures and routine monitoring as part of EMP.	ST	Negligible/ Minor adverse	Unchanged As above
Noise and Vibration	Disturbance to existing residents from demolition/construction noise	Control measures specified in EMP, to include: use of high quality plant (regularly maintained), bunds and other acoustic screening (where appropriate), restricted working hours etc. Threshold and action values to be agreed with the local authorities. Monitoring of noise levels at strategic locations in line with requirements of LPA.	ST	Minor adverse	Unchanged

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

Microclimate	Localised changes to wind pattern during building demolition and construction	No public access to the site, provision of hoarding around buildings to help restrict wind movement.	ST	Negligible	Unchanged
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KEY TO IMPACTS:

ST Short term (over the lifetime of the dismantling, demolition and construction programme)
 LT Long-term (over the lifetime of the development as a whole)
 R Reversible
 IR Irreversible

Table 2 Summary Table of Residual Impacts - Operational

ISSUE	DESCRIPTION OF IMPACT	DESIGN / MITIGATION PROPOSAL	NATURE OF IMPACT *	RESIDUAL SIGNIFICANCE**	Implication of Additional Information
Sustainability	Increased local energy consumption	Selection of energy efficient equipment and building design and adoption of an energy strategy.	LT	Negligible	Unchanged
	Increased production of waste material	Recycling strategy, segregation facilities and waste minimisation advice.	LT	Negligible	Unchanged
Socio-economics	Increased demand on local facilities	Provision for doctors' and dentist surgeries, nursery, convenience store, community space and other public facilities on site.	LT	Minor beneficial	Unchanged
	Provision of approximately 400 jobs	None required	LT	Minor beneficial	Unchanged
	Increased availability of affordable housing	None required	LT	Moderate beneficial	Unchanged
	Provision of public open spaces	Landscape Management Plan to preserve quality of creek and other open space.	LT	Moderate beneficial	Unchanged
	Accessibility to river frontage	Safety features provided	LT	Moderate beneficial	Unchanged

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Built Heritage Townscape and Visual	Retention of power station.	The retention of power station facades and photographic recording of structures to be demolished.	LT	Major beneficial	Unchanged
	Transformation of the public domain	None required	LT	Beneficial	Unchanged
Archaeology	N/A	N/A	N/A	N/A	N/A
Water Resources	Increased demand for water and sewage treatment	Use of Sustainable Urban Drainage techniques. Use of water efficient devices, water metering, advice on reducing water use. Use of roof water for irrigation and introduced flows to creek.	LT	Minor adverse	Unchanged
	Groundwater quality within the River Terrace Gravels	Reduction in rainwater infiltration at the site and soil remediation.	LT	Moderate beneficial	Unchanged
	Changes to flood capacity	Provision of cut and fill terracing within the creek and creation of an artificial inflow of water to the creek to replace the existing power station cooling water discharge.	LT	Moderate beneficial	Unchanged
	Increased surface water run-off	Use of Sustainable Urban Drainage techniques.	LT	Negligible	Unchanged
Ecology	Loss of existing ruderal habitats	Equivalent area provided on extensive green roofs on Blocks HF3 (A, B & C) ensuring their long-term survival and eliminating human disturbance.	LT	Minor Beneficial	Unchanged
	Creation of new intertidal habitat in the creek and maintenance of a tidal regime	Commitment to maintain creek and basin as ecological resources.	LT	Major Beneficial	Unchanged
	Loss of high tide roosting habitat for grey heron	New ledges incorporated in Blocks HF3 (A, B & C).	LT	Negligible	Unchanged

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

Contamination Issues	Non-ionising Electromagnetic Radiation from BSP	Steel plate screening around cable conductors or screening in façade of KC4, if required.	N/A	Negligible	N/A
Transport	Increased road traffic	Implementation of a Green Travel Plan Promotion of sustainable transport, including, public transport use, pedestrian facilities and cycle provision.	LT	Negligible	Unchanged Slightly improved conditions at the Lots Road/Kings Road junction for the base and future case scenarios. The additional work reconfirmed the conclusions of the ES. They show no unacceptable or adverse impacts on the road network.
	Provision of improved integrated transport facilities an Green Travel Plan	Transport Manager on site	LT	Moderate beneficial	Unchanged
	Improved cycle and pedestrian links with local area	N/A	LT	Moderate beneficial	Unchanged
	Enhancement of Thames Path National Trail and Cycle Route	N/A	LT	Moderate beneficial	Unchanged
	Commitment to the WLL, if feasible, or alternative investment	N/A	LT	Moderate beneficial	Unchanged
Air Quality	Vehicular emissions from road traffic	Measures to reduce car use and increase public transport use (see above).	LT	Negligible/ Minor adverse	Unchanged
Noise and Vibration	Noise disturbance to existing and new residents from increased road traffic	Use of high quality construction materials and noise insulation where required. Measures to reduce road traffic (see above).	LT	Negligible	Unchanged
	Noise disturbance to new residents adjoining SITA Waste Transfer Station	Use of double glazing with high acoustic insulation.	LT	Minor adverse	Unchanged
	Noise generation from building service plant	Equipment designed to high specification to minimise noise emissions.	LT	Negligible	Unchanged

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

Microclimate	Changes to the local wind environment	Consideration in the design process, including provision of a canopy on Block KC1 and HF1, and also in the landscaping proposals.	LT	Negligible	Unchanged
	Localised changes to existing sunlight, daylight and overshadowing patterns	Consideration in the design, massing and orientation of the buildings.	LT	Negligible	Unchanged
Telecommunications	Potential disruption to telecommunication signals	No significant disruption predicted. Realignment of existing antennas if required.	LT	Negligible	Unchanged

KEY TO IMPACTS:

ST Short term (over the lifetime of the dismantling, demolition and construction programme)
 LT Long-term (over the lifetime of the development as a whole)
 R Reversible
 IR Irreversible

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

2.0 SUMMARY AND IMPLICATIONS OF ADDITIONAL INFORMATION

2.1 Air Quality Data

This air quality report presented in Appendix A provides additional information on impacts to local air quality that are predicted during the development construction-phase. It also incorporates the modelling report of predicted air quality impacts in 2010 once the development is completed, as prepared for the previous ES, and details of the validation work undertaken for the model used for the assessment, as requested by RBKC and LBHF.

Construction-phase traffic data was modelled for effects on local air quality for comparison with the current 2004-5 national Air Quality Objectives. No significant increase in areas of air quality objective exceedances is predicted as a result of the development, and only minor pollution concentration increases are predicted at locations close to the site. The effects elsewhere from the operation of the development would be negligible.

2.2 Traffic Assessment

Appendix B comprises an Addendum to the Transport Assessment (TA) which was submitted with the ES in December 2002. This includes sensitivity tests on the road network using higher trip rates, further detailed analysis of the Lots Road/Cremorne Road junction, an analysis of the impact of restaurant car parking and a review of detailed geometry issues with regard to the scheme design. A revised TRANSYT analysis correcting a small error found in the original survey data is also provided.

Amended TRANSYT analysis

A small error has been found in the original survey data where the traffic flows at the Lots Road/King's Road junction were overstated. The base TRANSYT analysis has been re-run with this error eliminated. The results of the rerun analysis give slightly improved conditions at the Lots Road/ King's Road junction when compared with the Transport Assessment for both the base and future case scenarios.

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

Sensitivity tests

This work has been completed using a 'worst case' scenario assuming no impact of improvements for cyclists and pedestrians, no beneficial impacts of the Green Travel Plan, new public transport improvements, or new local facilities on car use, based on 870 new units in the development rather than the proposed 817 units. The tests demonstrate that even with higher trip rates based on the above assumptions, the development will not have an unacceptable impact on the road network.

TLRN and Cremorne Road junction

Further Linsig analysis of the Lots Road/Cremorne Road junction has been undertaken using the higher trip rates requested by RBKC and LBHF. This reconfirms that the proposals at the junction are adequate to accommodate both the addition of traffic generated by the development and the new buses associated with improved public transport access in the area.

Impact on parking

The impact of restaurant car parking at the development has been considered. This work demonstrates that there will be adequate public car parking within the basement of the development to accommodate restaurant customers who choose to arrive by car. There will therefore be no adverse impact on the surrounding road network.

Detailed geometry

This work has been completed and it has demonstrated that the design proposals are adequate to accommodate service and emergency vehicle access.

2.3 River Transport Study

This report verifies the vehicle movements presented in the ES and substantiates how materials and wastes could be moved to and from the site by river, and thus reducing the number of heavy goods vehicles (HGV's) and medium goods vehicles (MGV's) needed for the development of Lots Road.

Lots Road Power Station and Land at Thames Avenue Development - ES Addendum

It reports on the calculations behind the figures for HGV and MGV movements on the project, which was worked out by estimating the volumes of materials to be used or removed from site, and the average and practical capacity of HGV's and MGV's for a construction project.

The feasibility and practicalities of using river transport was examined, based upon calculations of the quantities of different demolition and construction materials arising from the site during different phases of the construction programme. The report concludes that the use of river barges for demolition material and scrap steel from the site, as well as the import of aggregates to the site, are both practicably achievable within the constraints posed by the site. However, further surveys are needed to determine what quantities of non-hazardous excavated materials can be transported by barge. It is anticipated that the heaviest demand will be in 2004 -05, with up to 14 barges per week.

3.0 RESIDUAL IMPACTS AND CONCLUSIONS

With regard to the additional information provided, the construction-phase air quality assessment shows that the scheme has *negligible* short term and *minor adverse* long-term residual impacts, as previously concluded.

Further traffic assessment has not altered the original conclusion of the ES. The development with its associated transport improvements will have *minor adverse* short term and *negligible/moderate beneficial* long-term impacts on the surrounding area, as previously concluded.

The residual impacts during the construction and operational phases of the redevelopment presented within Chapter 21 of the Environmental Statement remain the same. There is no greater adverse residual impact than that specified in the original ES.

Overall, it is considered that the **residual environmental impact** of the Lots Road Power Station and Land at Thames Avenue Development will remain substantially *beneficial* in respect of the local community, economy and the environment.

APPENDIX A

Air Quality Report

Introduction

This Appendix to the Addendum includes the following sections:

- Air Quality Report
- Construction-Phase Air Quality Modelling Report 2004-5 (Appendix A1)
- Completed Development Air Quality Modelling Report 2010 (Appendix A2)
- Modelling Validation (Appendix A3)

Lots Road Power Station and Land at Thames Avenue ES
Addendum to Air Quality Section

1.0 Introduction

This section of the Environmental Statement (ES) Addendum provides information on the air quality modelling studies that have been undertaken as part of the Environmental Impact Assessment (EIA) for the development proposals. The ES submitted in December 2002 provided details of the atmospheric dispersion modelling study that had been carried out on the effect on local air quality of exhaust emissions from traffic generated once the development becomes operational. Annual and hourly concentrations of NO₂ and annual and daily concentrations of PM₁₀ were modelled in 2010 for comparison with the provisional 2010 UK air quality objectives.

This study concluded that minor increases in pollutant concentrations would occur at locations close to the site, but that effects elsewhere from the operation of the development would be negligible.

The absence of detailed construction-phase traffic information prior to the ES submission prevented a similar study being undertaken in relation to air quality impact during the construction phase. RBKC stated in their letter of 12 December 2002 that such an assessment is required, particularly as the current UK air quality objectives for PM₁₀ and NO₂ relate to 2004 and 2005 respectively when construction activities and associated vehicle movements would be taking place.

Construction-phase traffic data became available following the ES submission, and therefore effects on local air quality during this phase have now been modelled for comparison with the current 2004/5 air quality objectives.

RBKC also requested that the two air quality modelling studies prepared for this planning application (i.e. the 'operational' 2010 modelling reported in the ES and the additional 'construction' 2004/5 modelling) are reported within a single report volume, and that information on model validation is also provided. This section of the ES Addendum therefore reports the two air quality modelling studies undertaken for the application, together with model validation details.

2.0 Modelled Traffic Data

2.1 Operational Traffic Data

The development traffic data modelled in 2010 for comparison with the provisional air quality objectives was provided by Symonds Group. Details of this traffic data are provided in the Transport Assessment submitted by Symonds, and a summary of the report is contained within Chapter 16 'Transport' and Appendix I 'Air Quality Modelling' of the main ES.

2.2 Construction-Phase Traffic Data

Following submission of the main ES document in December 2002, traffic flow data has been prepared in relation to anticipated development traffic flows in the year 2005. This data relates to a mix of *construction* vehicles, *construction worker* vehicles, and also *residential* vehicles from the development units that would be occupied by this time. The traffic modelling is based on the assumptions given in Section 2.2.1 below.

Taylor Woodrow Construction prepared estimates of peak daily *construction* and *worker* vehicle movements. This data was modelled on the local road network by Symonds, together with anticipated *residential* vehicle movements that were estimated by Symonds.

Lots Road Power Station and Land at Thames Avenue ES
Addendum to Air Quality Section

The Transport Assessment report submitted with the ES did not include detailed traffic flow information in relation to the development's construction phase. An updated Transport Assessment report is not being prepared, and therefore Taylor Woodrow Construction and Symonds have provided the following descriptive text in relation to the preparation of this data.

2.2.1 Construction and Worker Vehicle Movement Estimates

Construction vehicle movement estimates are based upon volumes of demolition waste, excavation material and construction materials. A total volume of 117,000m³ demolition waste is anticipated, considered a worst-case figure. A total volume of 100,000m³ excavation waste is anticipated, of which approximately 50% would be potentially hazardous and 50% non-hazardous. A total volume of 40,000m³ construction waste is predicted, based on: experience from other projects; waste to floor area calculations; and Building Research Establishment (BRE) best practice projects volumes. A total volume of 75,000m³ concrete is also estimated.

In order to calculate the approximate number of heavy goods vehicles (HGVs) and medium goods vehicles (MGVs) required, these material volumes were divided by the typical load values for these vehicles. These figures were then combined with the strategic construction programme to calculate when each of the different materials would be removed from, or used on, the site. The rates of removal or use of individual materials were assumed to be constant over their programmed timescale. This resulted in predictions of total monthly HGV and MGV movements to and from the site. To estimate the numbers of light goods vehicles (LGVs), general information from existing Taylor Woodrow Construction sites was correlated against specific information regarding the Lots Road site.

TWC's River Transport study concludes that non-hazardous excavation and demolition material, aggregates and sub-base are the most feasible and practical materials to be transported by river. The river transport strategy assumes that all demolition material (117,000m³), non-hazardous excavated material (50,000m³) and aggregates (75,000m³ plus sub-base) would go by river until the end of 2005. This equates to approximately 50% of the total construction vehicle movements that would be required by road if river transport was not used. Vehicle movements associated with these materials were therefore removed from the total monthly figures.

The peak number of workers on site during the construction period was estimated by Taylor Woodrow Construction, based on experience from similar projects. The proportion of workers using different transport modes was estimated from knowledge of previous projects and also responses to a questionnaire sent to a number of Taylor Woodrow Construction's preferred sub-contractors in relation to personnel transport to the site. The general conclusion to this questionnaire is that companies with experience of working in central London are used to dealing with this situation. The idea of a Park & Ride system and mini-buses collecting them from local rail or tube stations was welcomed. Companies with an un-skilled workforce generally provide mini-buses to take them to and from site. Skilled workforces generally travel from further afield, and are more likely to lodge in the local area or use public transport.

From this information, it is estimated that 50% of the workforce would use the mini-buses, 30% public transport, 10% walk, and 10% would cycle / motorcycle. A peak of 700 people on site per day is anticipated, but the average will be around 500.

Lots Road Power Station and Land at Thames Avenue ES
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2.2.2 Residential Vehicle Movements

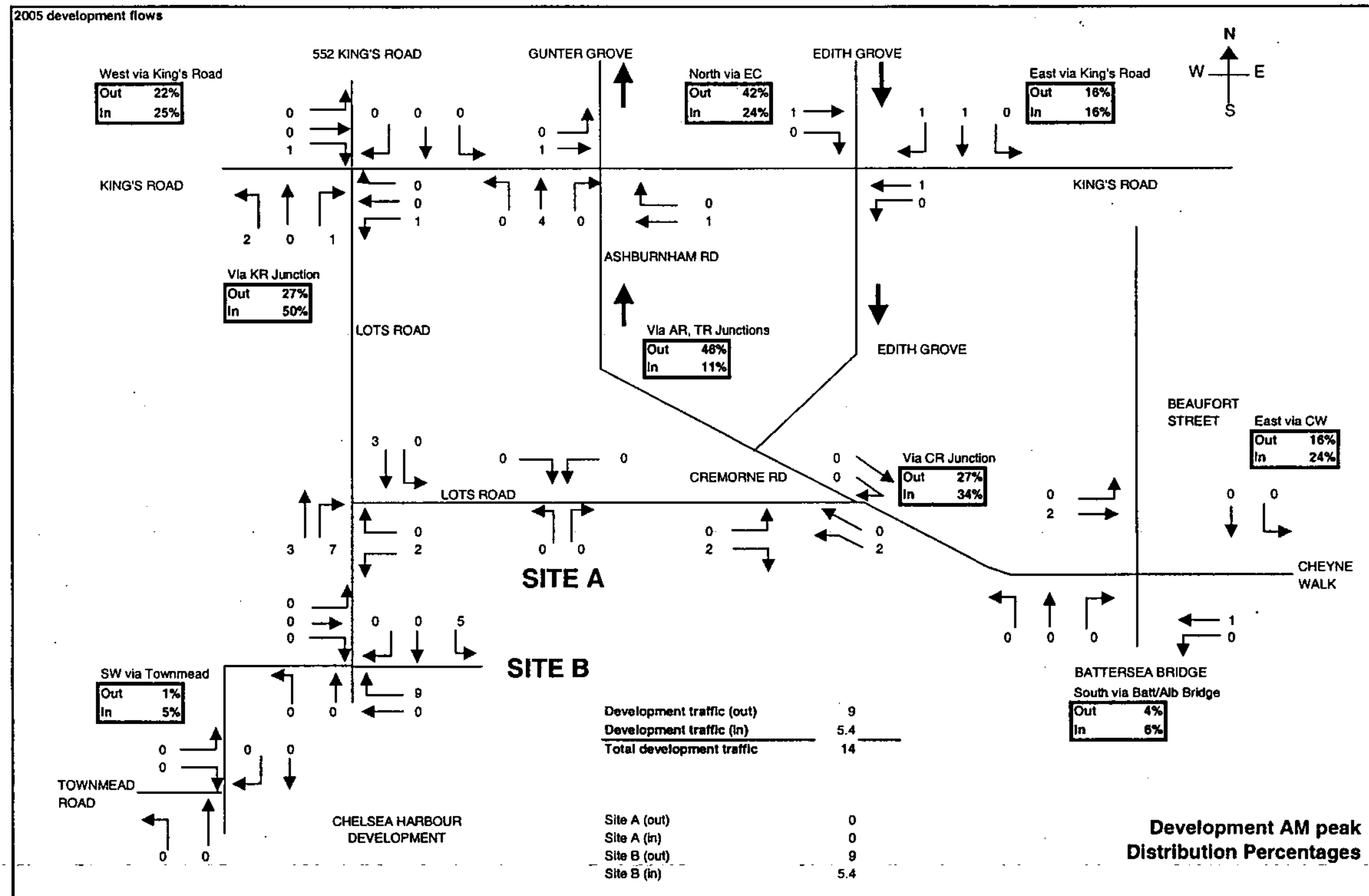
It is anticipated that a total of 90 residential units would be occupied by 2005, all of which would be located within the Hammersmith & Fulham part of the development.

2.2.3 Traffic Modelling

Symonds applied their traffic assignment model to the above *construction*, *worker* and *residential* vehicle movement estimates to produce four flow diagrams: one for residential vehicle AM Peak movements; one for residential PM peak movements; one for worker vehicle Annual Average Daily (AADT) flow movements; and one for construction vehicle AADT movements. These flow diagrams are presented as Figures 1 to 4, respectively.

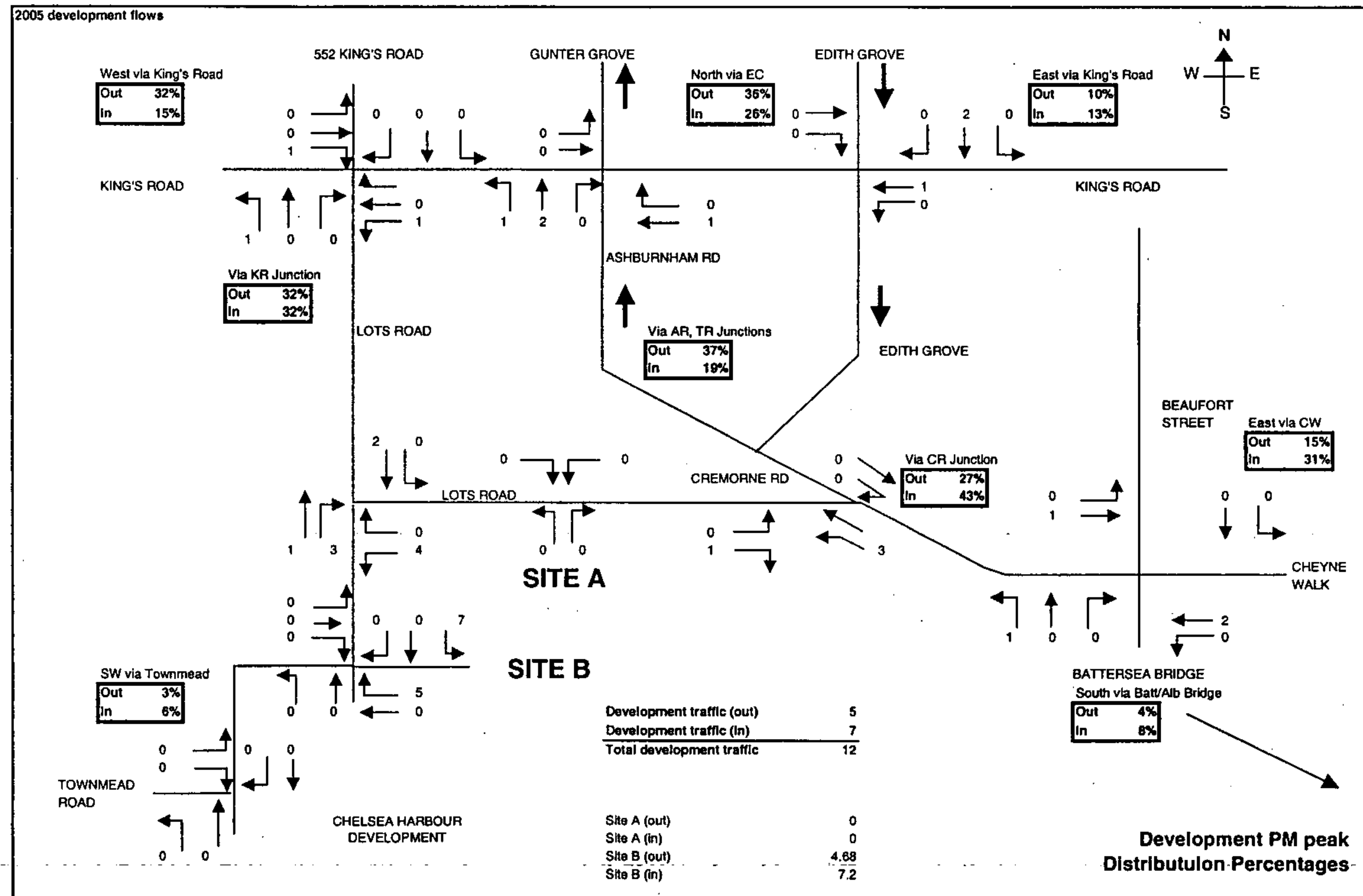
Lots Road Power Station and Land at Thames Avenue ES
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Figure 1 Predicted Residential Vehicle AM Peak Movements, 2005



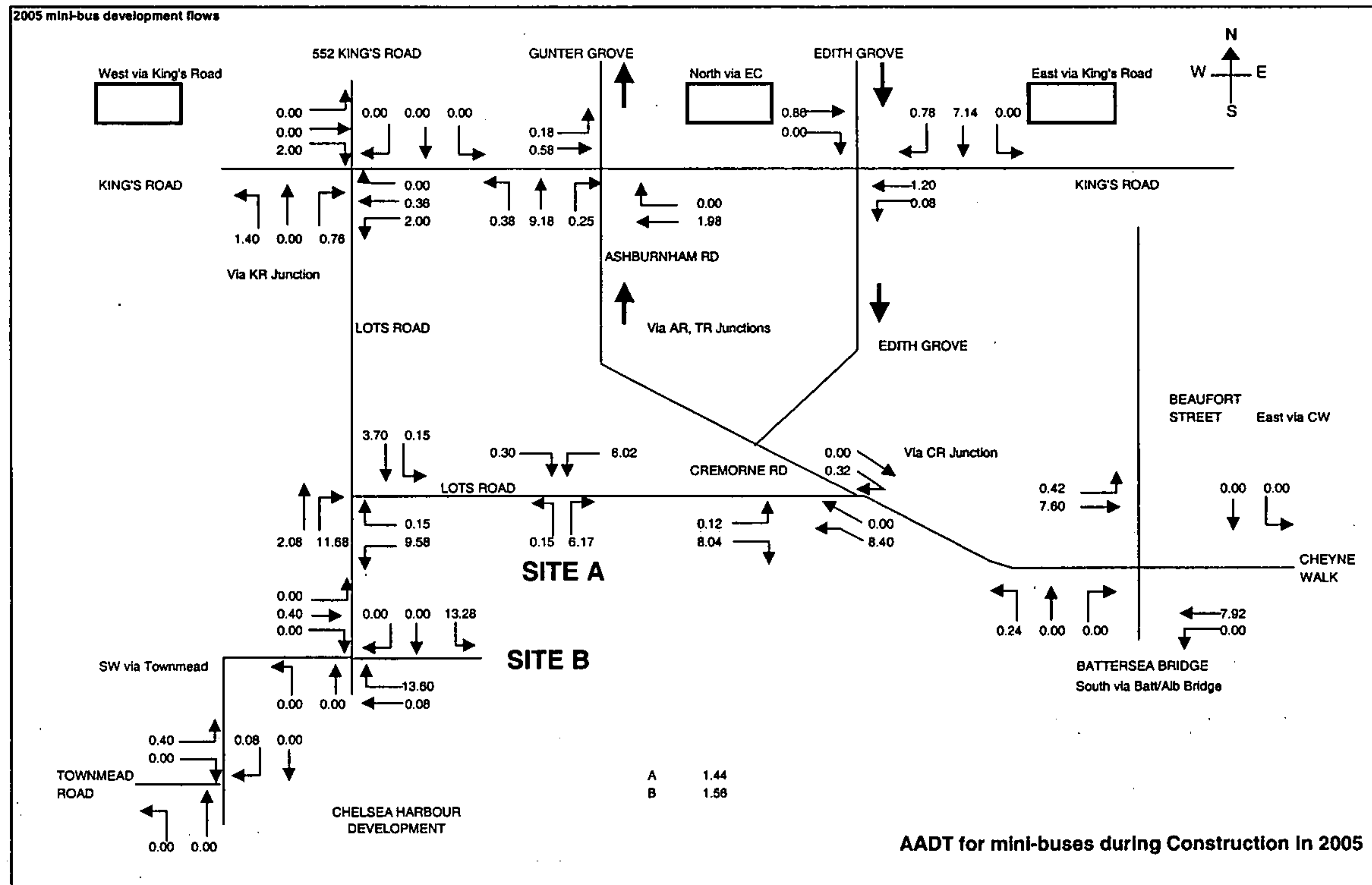
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Figure 2 Predicted Residential Vehicle PM Peak Movements, 2005



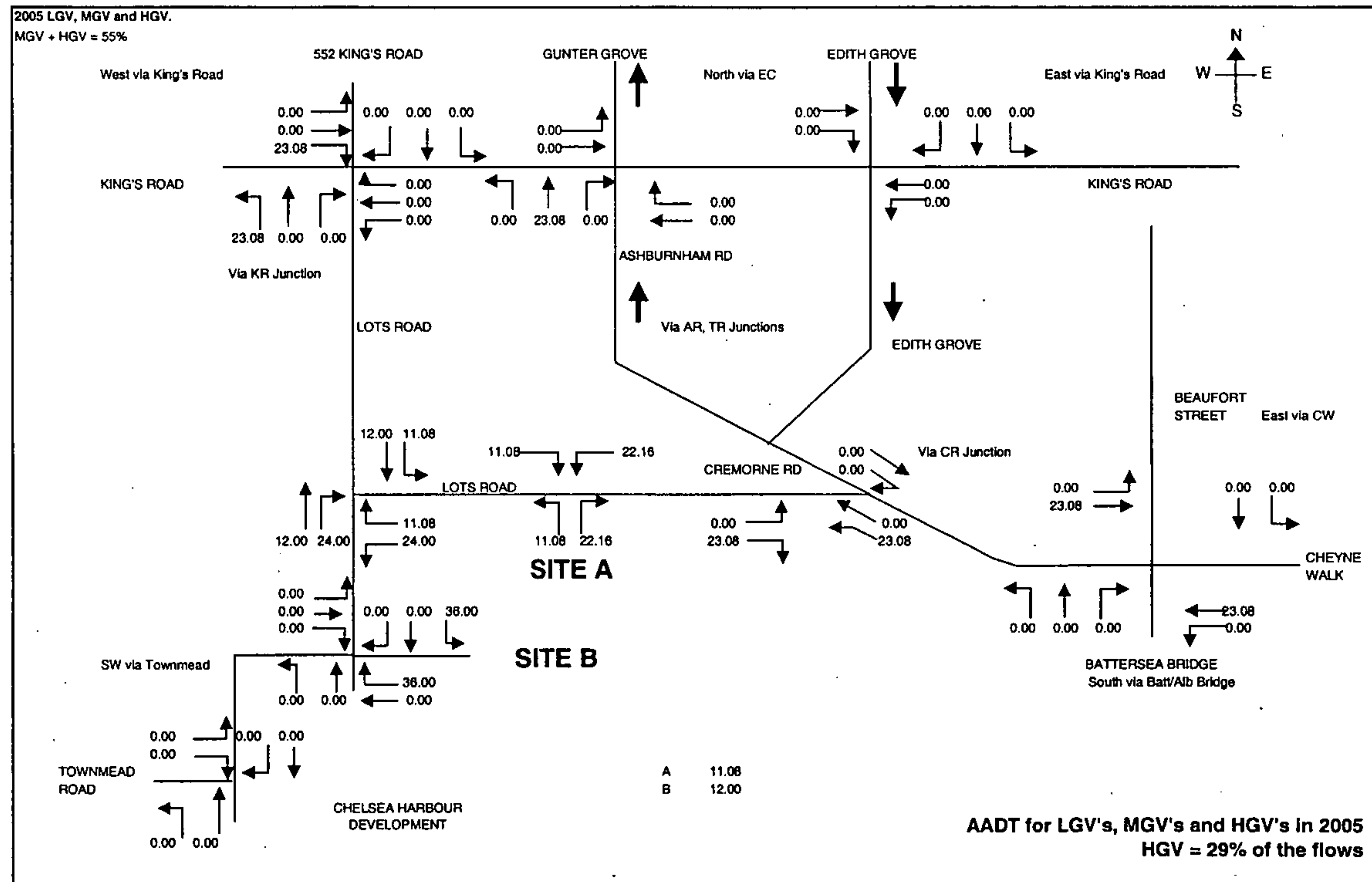
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Figure 3 Predicted Worker Vehicle AADT Movements, 2005



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Figure 4 Predicted Construction Vehicle AADT Movements, 2005



Incorporation of Traffic Data into the Air Quality Model

The predicted construction and worker vehicle AADT flows were incorporated directly into the baseline 2005 flows for the appropriate road links in the existing RBKC model. Residential vehicle AM and PM Peak data was converted by CERC into AADT format, before being added to these baseline flows.

4.0 Air Quality Modelling Results and Conclusions

4.1 Construction-Phase Modelling (2004/5)

The full construction-phase (2004/5) air quality modelling report is presented as **Appendix A1**. This study concludes that emissions from site plant and construction, worker and residential vehicle movements during the development's construction phase would have only minor effects on pollution concentrations close to the site, with negligible effects predicted elsewhere.

Annual and daily mean PM₁₀ concentrations are predicted to increase by a maximum of 0.1 µg/m³ at three selected receptor locations close to the site, and the area of annual PM₁₀ objective exceedence that is anticipated in the absence of the development is not predicted to be significantly increased by development traffic.

Annual average NO₂ concentrations are predicted to exceed objective values in the 'without development' scenario, and the predicted effect of construction-phase traffic and site plant emissions is a minor increase in concentrations at locations close to the site, with negligible impacts elsewhere. The maximum increase in annual NO₂ concentrations at three selected receptor locations close to the site is 0.3 ppb.

99.79th percentile of hourly average NO₂ concentrations are not predicted to be exceeded within the study area in both the *with* and *without development* scenarios. Emissions from site plant and construction phase vehicle movements are predicted to result in minor increases in concentrations close to the site, with negligible impacts elsewhere. The maximum increase in hourly NO₂ concentrations at three selected receptor locations close to the site is 0.8 ppb.

These predicted pollutant concentration increases are less than those suggested by the Association of London Governments (ALG) Transport and Environment Committee as being increases that could be considered significant [*Air Quality Assessments for Planning Applications - Technical Guidance Note; ALG; March 2001*].

Although minor pollution increases are predicted at locations close to the site, the proposed development is considered unlikely to have a significant adverse impact on local air quality and the Air Quality Management Areas of RBKC or LBHF. The conclusions of the main ES therefore remain valid.

4.2 Modelling of Completed Development (2010)

The data sources, methodology, results and conclusions of this work are reported in detail in the main volume of the ES. The modelling report is provided again here at the request of RBKC, see **Appendix A2**, and there are therefore no implications to the original ES conclusions in relation to air quality.

5.0 Air Quality Model Validation

CERC has provided details of the validation work undertaken for the existing RBKC model that has been used for this assessment work. This information is presented as **Appendix A3**. In summary, CERC considers that the model shows generally good agreement with monitored data, indicating that the modelling approach and emissions data are suitable for the current situation. Provided that the estimates of emissions for future years (obtained

Lots Road Power Station and Land at Thames Avenue ES
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from the GLA emissions inventory and DTLR) are accurate, the predicted future concentrations will therefore give a robust indication of whether or not air quality objectives will be met by 2004 and 2005.

6.0 Conclusions

This Addendum to the main ES provides additional information on impacts to local air quality that are predicted during the development's construction-phase. It also incorporates the modelling report of predicted air quality impacts in 2010 once the development is completed and details of model validation, as requested by RBKC.

The air quality modelling work, undertaken using the existing and validated atmospheric dispersion model used for RBKC's Stage 4 Air Quality Review and Assessment, predicts that minor increases in air pollutant concentrations would occur at locations close to the site during both the construction and subsequent operation of the development, but that effects elsewhere would be negligible.

Modelling was undertaken for the years 2004/5 and 2010 to allow comparison with the current and provisional UK air quality objectives, respectively. No significant increases in areas of air quality objective exceedences are predicted as a result of the development, and only minor pollution concentration increases are predicted.

The conclusions of the main ES, that the Lots Road and Land at Thames Avenue development is considered unlikely to have a significant adverse effect on local air quality or the Air Quality Management Areas of RBKC or LBHF, therefore remain valid.

Appendix A1

Construction-Phase Air Quality Modelling Report (2004/5)

**Cambridge
Environmental
Research
Consultants Ltd**

Dispersion Modelling Study of
Construction Phase Traffic Emissions from the
Proposed Lots Road Power Station
and Land at Thames Avenue Development in 2004/5

Draft Report

Prepared for
Waterman Environmental

21st February 2003

C E R C

Report Information

CERC Job Number: FM584

Job Title: Dispersion modelling study of construction phase traffic emissions from the proposed Lots Road Power Station and land at Thames Avenue development

Prepared for: Waterman Environmental

Report Status: Draft

Report Reference: FM584/R2/03

Issue Date: 21st February 2003

Author(s): Matthew Williams

Reviewer(s): Sarah Wilkinson

Issue	Date	Comments
1	21/02/03	Draft
2	21/02/03	Second draft

Main File(s): FM584_LotsRoad_R2_21Feb03.doc

Figures and Tables Model Run Reference(s)

Figures 7.1a & 7.2a	gwo0496.upl
Figures 7.2b & 7.2b	gl0496.upl
Figures 7.3a & 7.4a	gwo0597.upl
Figures 7.3b & 7.4b	gl0597.upl
Table 7.1	wo0496.upl, 5l0496.upl
Table 7.2	wo0597.upl, 5l0597.upl

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1. Summary

CERC has been commissioned by Waterman Environmental to undertake dispersion modelling to assess the impact of NO_x and PM_{10} emissions from construction phase traffic at the proposed Lots Road Power Station and Land at Thames Avenue development on local air quality using the ADMS-Urban model (version 1.7).

This study has used emissions data from the GLA emissions inventory for London, February 2002, together with some amendments to traffic flows supplied by the Royal Borough of Kensington and Chelsea and predicted traffic flows supplied by Symonds Group Ltd. These data relate to construction vehicles, workers' vehicles, and vehicles from the scheme's residential units that would be occupied by 2005. The model has been set up to be consistent with other modelling being carried out in the area.

Annual and 24-hour average concentrations of particulates (PM_{10}) and annual and hourly average concentrations of nitrogen dioxide (NO_2) have been calculated for comparison with Air Quality Strategy (AQS) objectives. Four scenarios have been modelled, each over a 12-month period:

- 2004 without any proposed development, for PM_{10} ;
- 2004 with construction phase traffic, for PM_{10} ;
- 2005 without any proposed development, for NO_2 , and;
- 2005 with construction phase traffic, for NO_2 .

The modelling used hourly sequential meteorological data from Heathrow for 1996, for PM_{10} modelling, and 1997, for NO_2 modelling, which is consistent with the other work being carried out in the area. Emissions of pollutants from the whole of London have been considered in the study by including them as a set of 1km square grid sources.

Traffic flow data for the development were provided by Symonds Group Ltd. The baseline (no development) traffic data include the traffic expected due to developments at 552 King's Road and Imperial Wharf.

Modelling of PM_{10} has shown that, with no development, there are no predicted exceedences of the AQS objective value for annual average concentrations of $40\mu\text{g}/\text{m}^3$. The addition of the construction phase traffic is not predicted to result in significant increases in annual average PM_{10} concentrations.

The 90.41st percentiles of 24-hour average concentrations are predicted to exceed the AQS objective value of $50\mu\text{g}/\text{m}^3$ over small areas at road junctions in the absence of the development. The modelling predicts that the addition of the development traffic would result in minor increases to the 90.41st percentile of 24-hour average concentrations close to the proposed development but the areas of exceedence are not predicted to be significantly larger.

Modelling of NO_2 concentrations has shown that, with no development, annual average concentrations of NO_2 are predicted to exceed the AQS objective throughout the majority of the modelled area. The addition of the construction phase traffic is predicted to result in minor increases in concentrations immediately around the development although elsewhere the impact is predicted to be negligible. The maximum increase in

annual NO₂ concentrations at three selected receptor locations close to the proposed development is 0.3 ppb.

With no development, the AQS objective value for the 99.79th percentile of hourly average concentrations of NO₂ is not predicted to be exceeded in the study area. With the addition of the construction phase traffic, concentrations are predicted to increase slightly close to the proposed development but elsewhere the impact is predicted to be insignificant. The maximum predicted increase at three selected receptor locations is 0.8ppb.

2. Introduction

CERC has been commissioned by Waterman Environmental to undertake dispersion modelling to assess the impact of traffic emissions from the construction phase of the proposed Lots Road Power Station and Land at Thames Avenue development on local NO_2 and PM_{10} concentrations using ADMS-Urban (version 1.7).

Four scenarios were modelled and the predicted concentrations compared with the appropriate Air Quality Strategy (AQS) objective values (see Section 6):

- Year 2004 with no development for PM_{10} ;
- Year 2004 with construction phase traffic for PM_{10} ;
- Year 2005 with no development for NO_2 , and;
- Year 2005 with construction phase traffic for NO_2 .

Details of the study carried out and the sources of data are given in Section 3, and information concerning the meteorological data used is given in Section 4. Section 5 presents the background data used. The relevant limits and objectives for PM_{10} and NO_2 are given in Section 6. The modelling results are presented in Section 7, with a discussion of their implications in Section 8. A description of the ADMS model used in the study is included in Appendix A.

3. The Site

The location of the proposed development site is presented in Figures 3.1 and 3.2. The land use surrounding the site is urban, so a surface roughness of 1m has been used in the study. This is consistent with other studies being carried out in this area. Figure 3.1 also shows the locations of three example receptor points near the proposed development, which are further discussed in Section 7.

3.1 Traffic data

Symonds Group Ltd provided traffic data for the roads surrounding the site for each of the development scenarios. This data relates to construction vehicles, workers' vehicles, and also vehicles from the scheme's residential units that would be occupied by 2005. The figures for traffic flows expected in 2004/5 without any proposed development take into account both the existing traffic flows and those expected due to developments at 552 King's Road and Imperial Wharf. The annual average daily total (AADT) traffic flows for each scenario, taken from the Symonds Group data, are given in Table 3.1.

Data for other roads in the study area have been taken from the GLA emissions inventory for London, February 2002. Emissions from all of the roads have been calculated using the most up-to-date emission factors published by the Department of Transport, Local Government and the Regions in February 2002. The modelled road network in the area is shown in Figure 3.1.

Table 3.1. Traffic flows with and without development

Road	AADT without development	% HGV without development	AADT, construction phase	%HGV, construction phase
Edith Grove North	24207	6.5	24246	6.5
Gunter Grove	31892	7.8	31970	7.8
Ashburnham Road	22995	7.8	23082	7.8
Kings Road 3	29520	5.4	29546	5.4
Edith Grove S	21228	6.5	21259	6.5
Kings Road 4	28088	5.4	28106	5.4
Cheyne Walk West	47556	5.6	47681	5.6
Beaufort Street	19797	6.8	19798	6.8
Cheyne Walk East	52327	5.8	52435	5.8
Battersea Bridge	28283	7.5	28291	7.5
Kings Road 2	39507	3.9	39541	3.9
Kings Road 1	39682	2.9	39771	3.0
Bour Avenue	933	4.4	933	4.4
552 Kings Road	1943	7.0	1943	7.0
Car Park A	184	1.5	263	8.4
Car Park B	0	0	301	6.9
Chelsea Harbour Drive E	2965	4.4	2965	4.4
Chelsea Harbour Drive N	8458	4.4	8758	4.5
Chelsea Harbour Drive W	6831	4.4	6831	4.4
Lots Road West	7106	4.4	7228	4.5
Lots Road East	9705	1.5	9901	1.6
Townmead Road	5005	0.3	5006	0.3

Other relevant traffic data, for example traffic speeds and proportions of Heavy Goods Vehicles (HGVs) for the without development scenarios, were taken from the GLA emissions inventory. For Lots Road, HGV data were provided by Symonds Group. The northern section has an HGV percentage of 4.4% and the eastern section has an HGV percentage of 1.5%.

Development car parks and access roads have been represented as two roads with the vehicles travelling at 5km/hr. King's Road has been split into four sections A, B C and D, between junctions with major roads running from west to east. No traffic speed data is available for 552 King's Road as the development is currently unfinished, so it has been assumed that traffic on this road will travel at 5km/hr.

Emissions from site construction plant have been represented as a volume source covering the development site. Emissions data for the plant are not available but have been estimated using emission factors for HGVs, assuming that two HGVs are travelling at 5km/hr continuously throughout the day. The emission rates used are given in Table 3.2

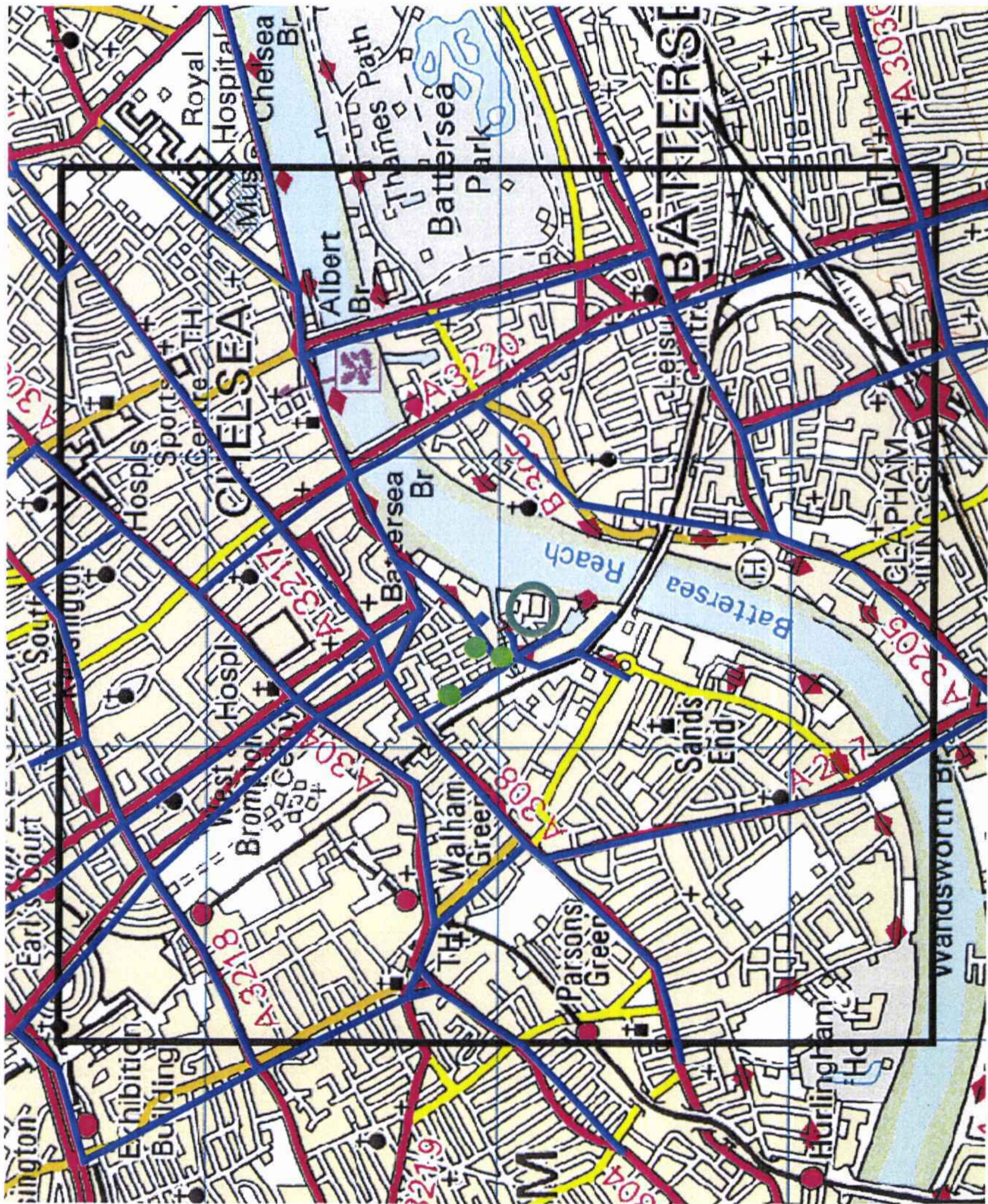
Table 3.2. Assumed construction plant emission rates (g/s)

	NO_x	VOC	PM₁₀
2005	0.0438	0.0077	0.0026
2004	0.0459	0.0082	0.0029

3.2 Other emissions

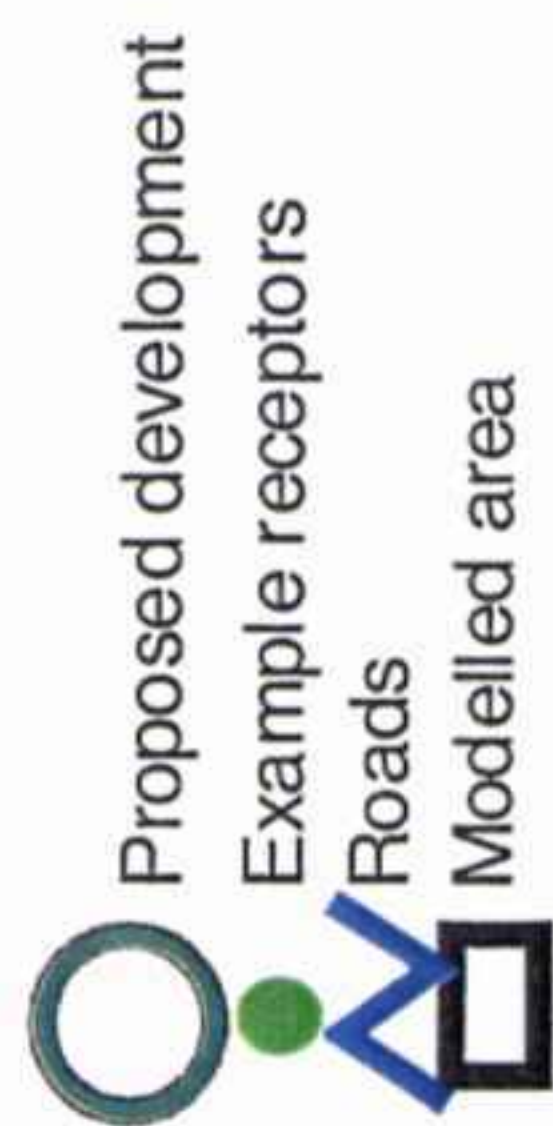
The modelling has taken into account all of the emissions in London by treating them as a set of aggregated grid sources with a 1km resolution. These emissions have been taken from the GLA emissions inventory for London, February 2002.

It should be noted that emissions from the Lots Road power station have not been included in the modelling because the power station will not be operational in 2004/5.



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0 1 2 3 Kilometers

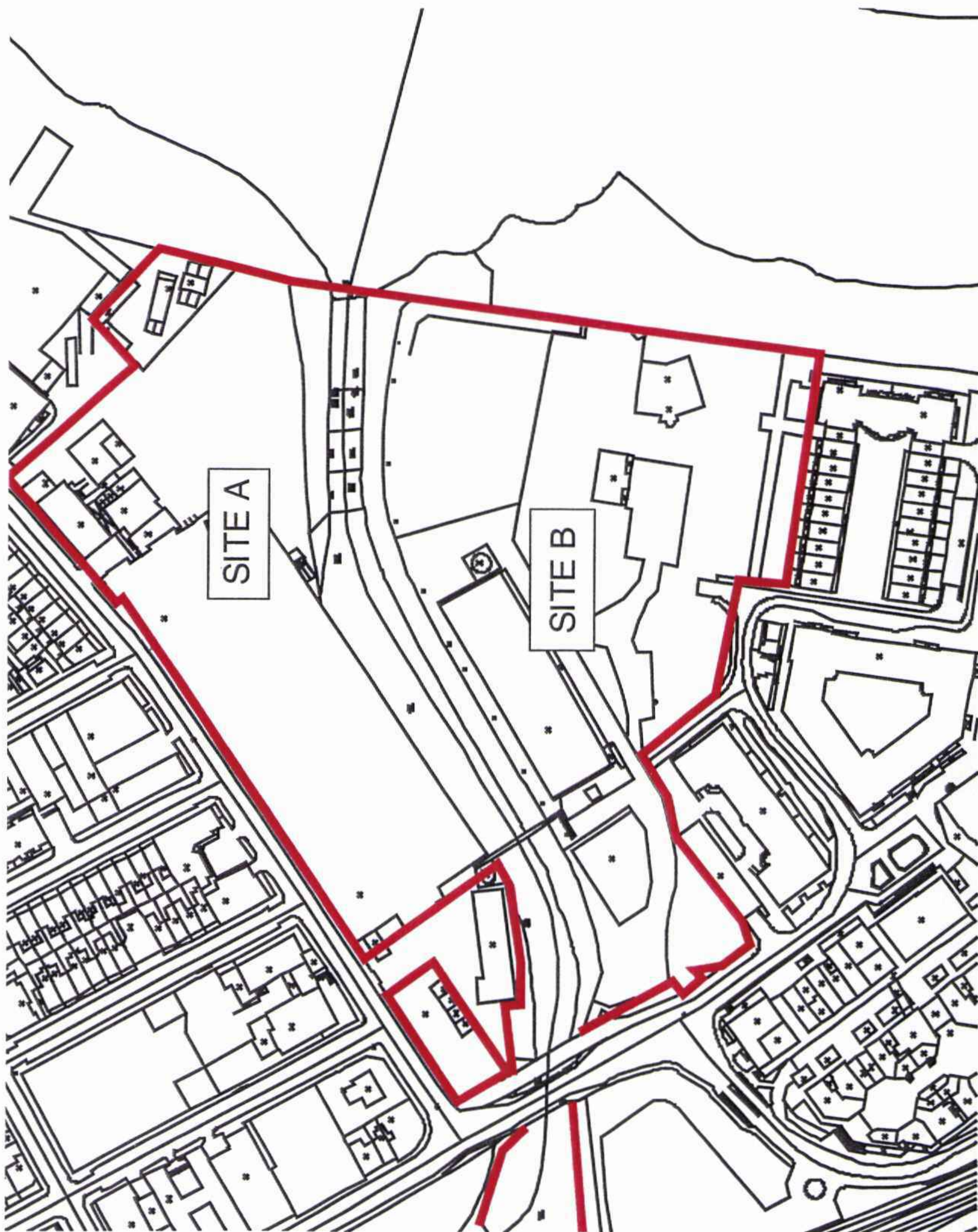


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Extent of modelled area

Figure 3.1



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Locations of
proposed development

Figure 3.2

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0 100 200 300 Meters

4. Meteorological Data

Predictions of future concentrations were made using meteorological data from Heathrow. For NO₂, 1997 data were used and for PM₁₀, 1996 data were used for consistency with other work being carried out in the area.

Table 4.1 shows a summary of the meteorological data for each year.

Table 4.1: Summary of meteorological data

	Minimum	Maximum	Mean
1996			
Temperature (°C)	-5.0	31.1	10.5
Wind speed (m/s)	0	13.4	3.6
Cloud cover (oktas)	0	8	5.6
1997			
Temperature (°C)	-5.2	31.4	11.9
Wind speed (m/s)	0	12.9	2.9
Cloud cover (oktas)	0	8	5.4

The ADMS meteorological pre-processor, written by the Meteorological Office, uses the data provided to calculate the parameters required by the program. Figures 4.1 and 4.2 show wind roses for the site showing the frequency of occurrence of wind from different directions for a number of wind speed ranges.

Figure 4.1: Wind Rose for Heathrow, 1996

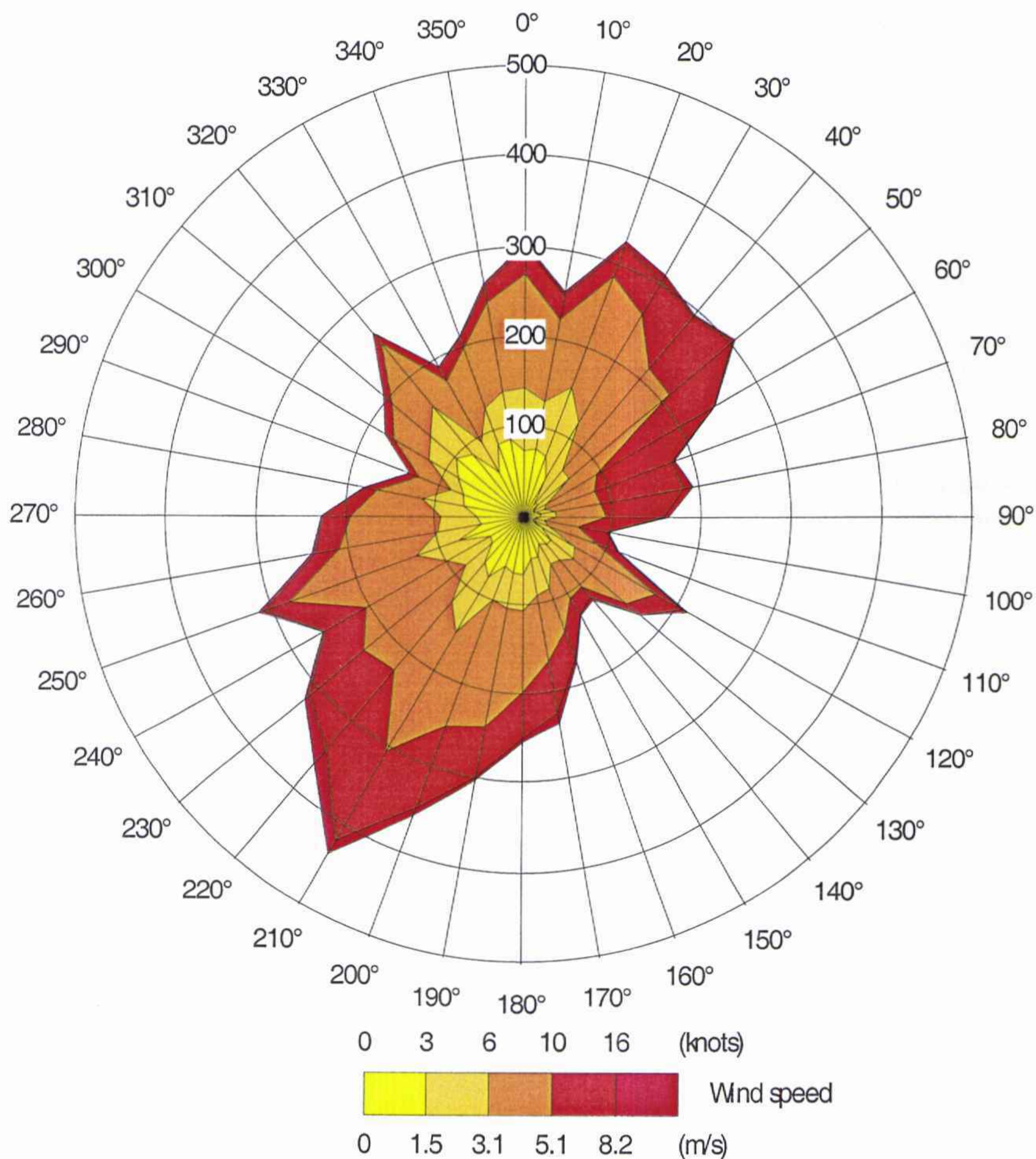
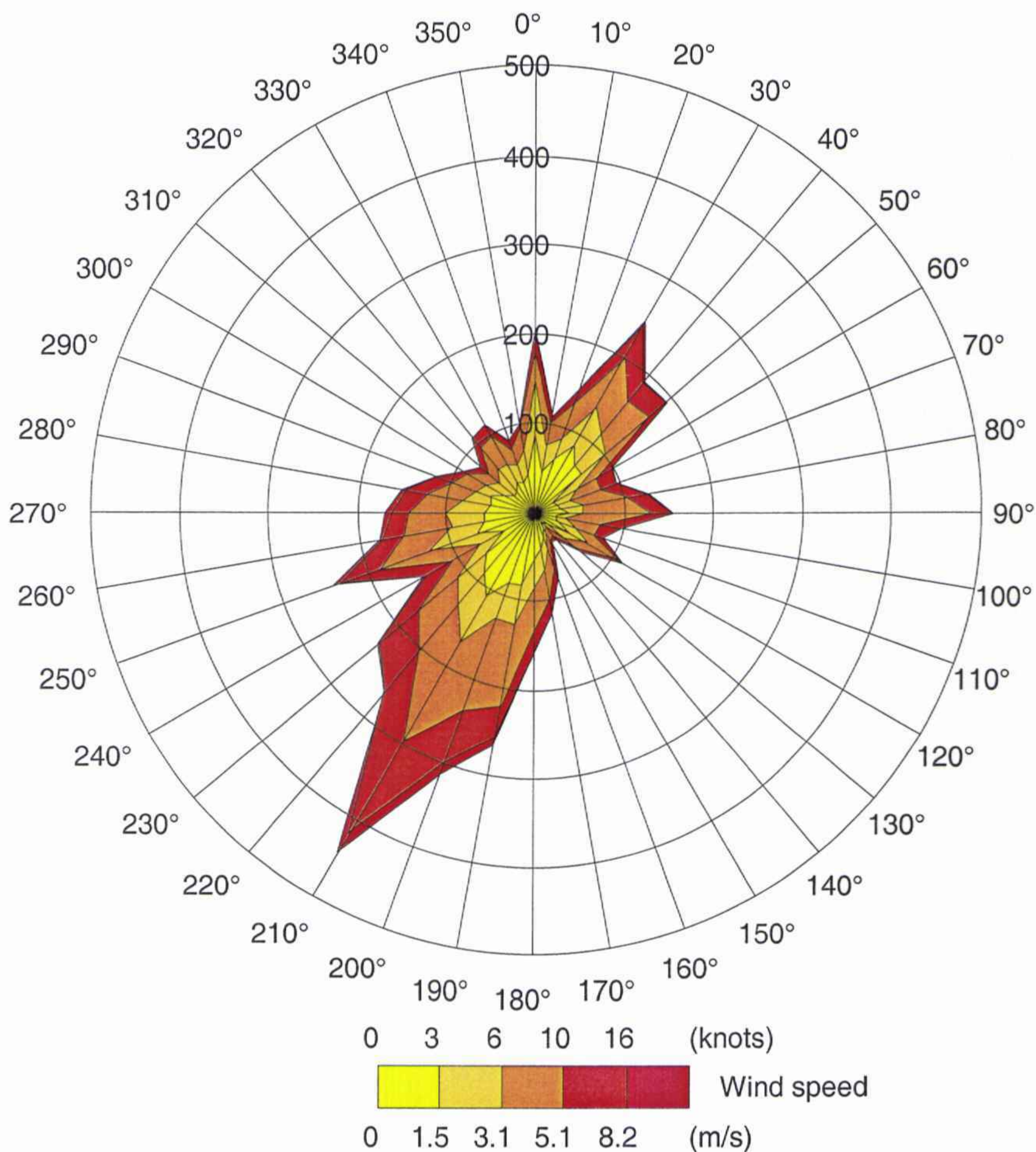


Figure 4.2: Wind Rose for Heathrow, 1997



5. Background data

For each hour of meteorological data for 1997, NO_x, NO₂ and ozone concentrations have been obtained from one of five rural monitoring sites around London according to wind direction. The hourly average concentrations have then been scaled according to the predicted decreases in concentrations in future years given in the DETR Pollutant Specific Guidance (LAQM.TG4(00)). Background concentrations of PM₁₀ have been derived from sulphate measurements from Bridge Place for 1996. Tables 5.1 and 5.2 show summaries of the background data used in the study.

Table 5.1 Background concentration data for 2004

	PM ₁₀ (µg/m ³)
Annual average	27.5
Maximum hourly average	239.4
99.8 th percentile	113.7

Table 5.2 Background concentration data for 2005

	NO _x (ppb)	NO ₂ (ppb)	O ₃ (ppb)
Annual average	9.8	7.5	28.1
Maximum hourly average	134.1	39.8	117.2
99.8 th percentile	94.6	34.7	88.4

6. Air Quality Standards

The air quality standards considered in this study are taken from The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Working Together for Clean Air, January 2000. They are presented in Table 6.1.

Table 6.1. AQS objectives

	Value	Description of standard
NO ₂	105ppb	Maximum hourly average (not to be exceeded more than 18 times per year, assumed equivalent to a 99.79 th percentile)
	21ppb	Annual average
PM ₁₀	50 µg/m ³	24 hour average (not to be exceeded more than 35 times per year, assumed equivalent to a 90.41 st percentile)
	40 µg/m ³	Annual average

The AQS objectives for PM₁₀ are to be achieved by 2004 and those for NO₂ are to be achieved by 2005 and so concentrations for these years have been predicted for comparison with the objectives.

7. Calculated Concentrations

7.1 Predicted Concentrations of PM₁₀

Figures 7.1a and 7.1b show the predicted annual average concentrations of PM₁₀ for 2004 without any proposed development and with the addition of construction phase traffic for the proposed development respectively. Figures 7.2a and 7.2b show the predicted 90.41st percentiles of 24-hour average concentrations for the 'without development' and 'construction phase' scenarios respectively.

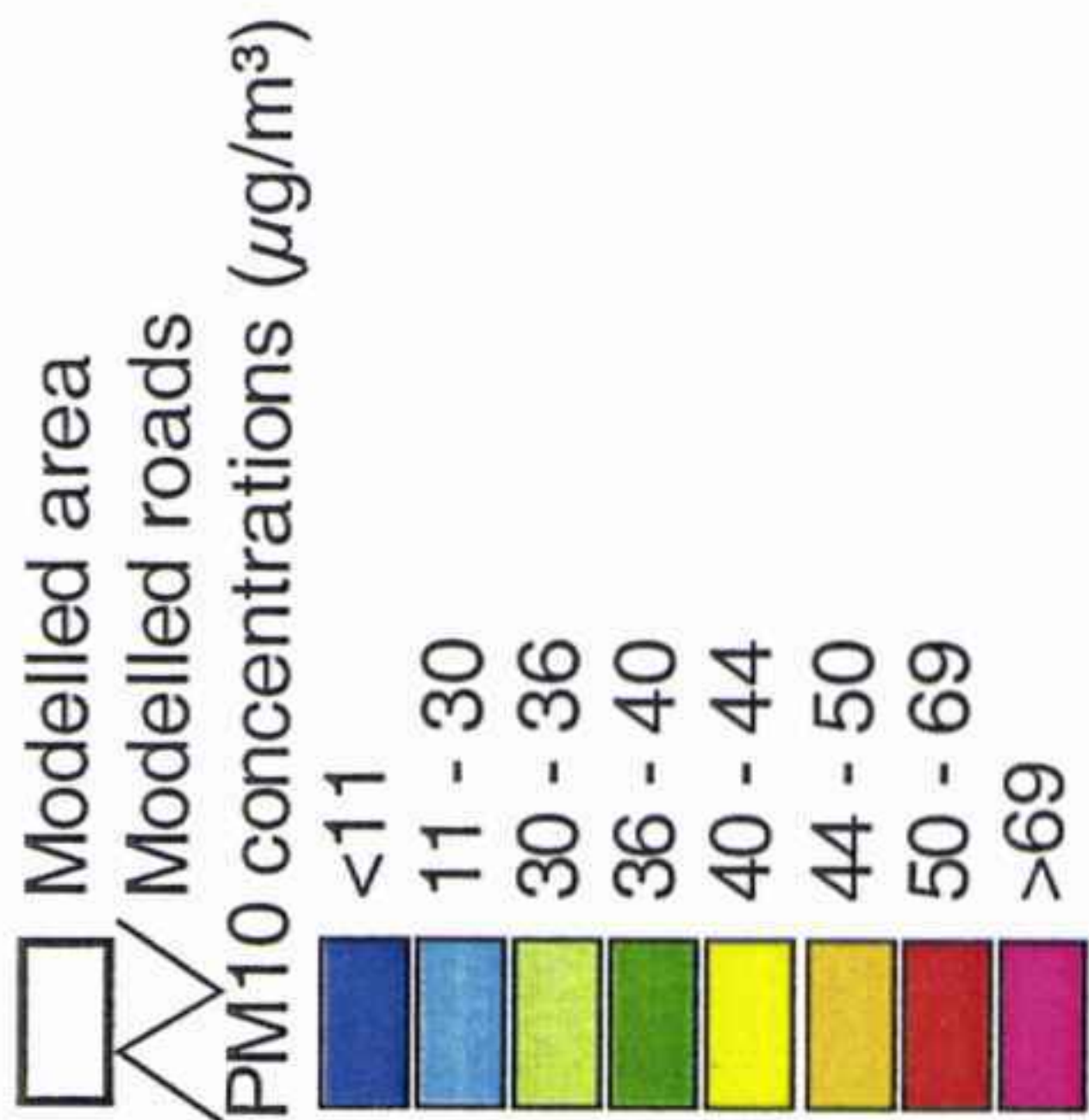
Without the proposed development, the annual average PM₁₀ concentrations are not predicted to exceed the AQS objective value of 40µg/m³, and the impact of the proposed development construction phase traffic is predicted to be insignificant.

The 90.41st percentiles of 24-hour average PM₁₀ concentrations are predicted to exceed the AQS objective value of 50µg/m³ over small areas at road junctions in the absence of the development. These concentrations are predicted to increase slightly around the proposed development with the addition of the proposed development construction phase traffic although the areas of exceedence of the objective are not predicted to be significantly larger.

Pollutant concentrations have also been calculated at three selected receptor points close to the proposed development, as shown in Figure 3.1. Each receptor is located about 10m from the edge of the nearest road. Table 7.1 shows predicted PM₁₀ concentrations at the three receptor points. The table shows that there are no significant increases predicted; in fact the annual average and 90.41st percentile PM₁₀ concentrations are predicted to increase by a maximum of only 0.1µg/m³.

Table 7.1. Predicted PM₁₀ concentrations at example receptor locations (µg/m³)

	Lots Road East		Lots Road West		Chelsea Harbour Drive	
	Without dev.	With dev.	Without dev.	With dev.	Without dev.	With dev.
Annual average	29.4	29.4	29.5	29.5	29.3	29.3
90.41 st percentile	45.6	45.7	45.6	45.6	45.2	45.3

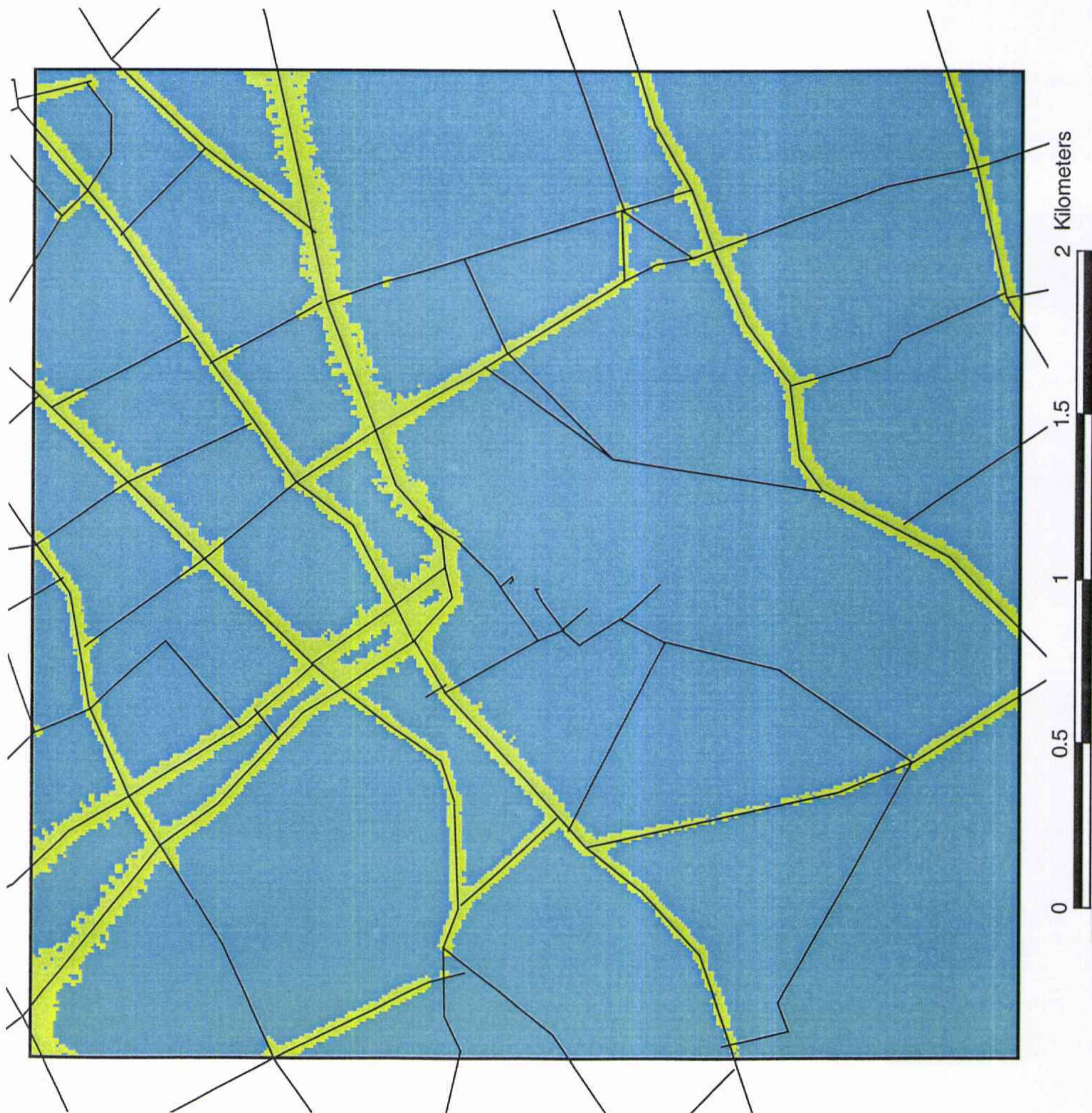


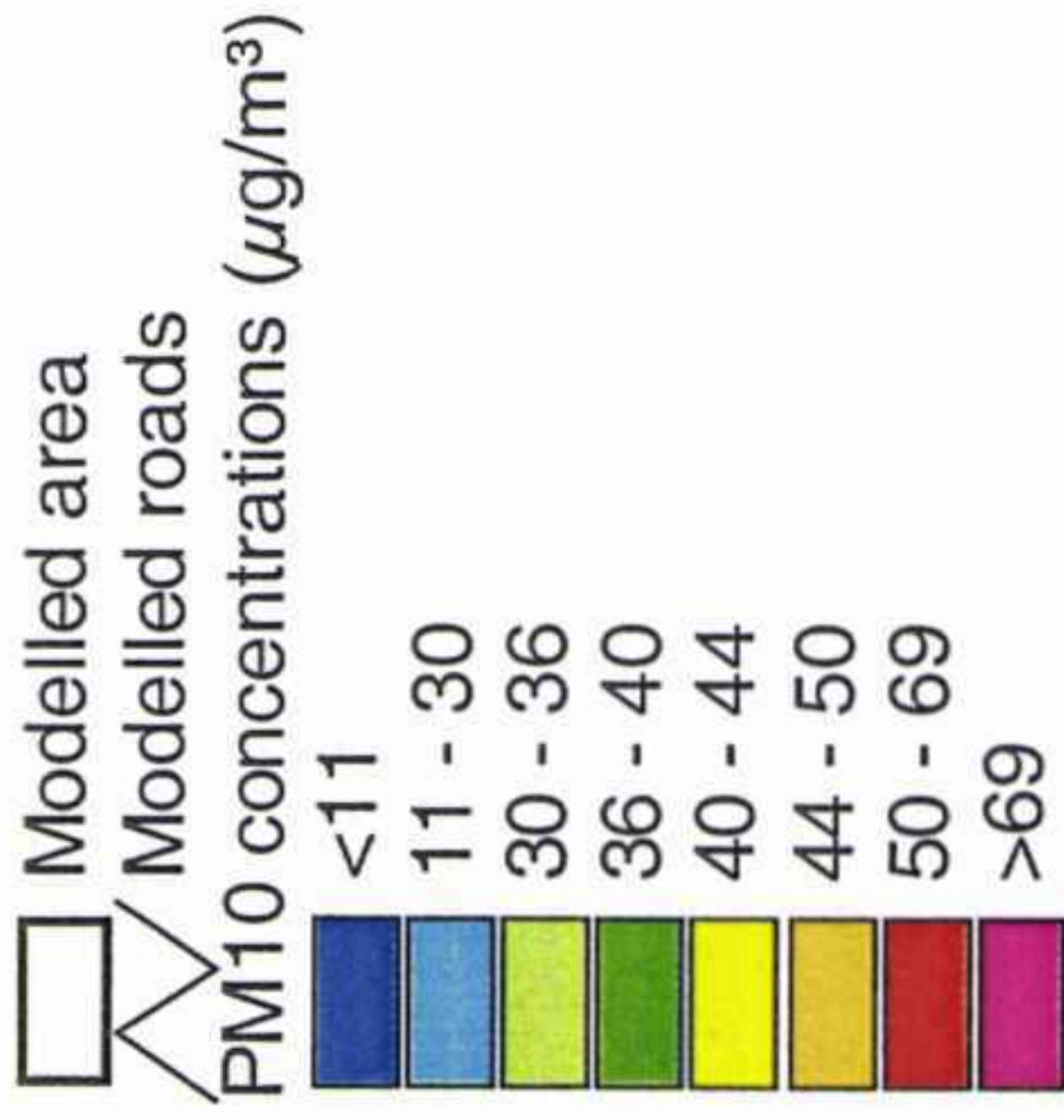
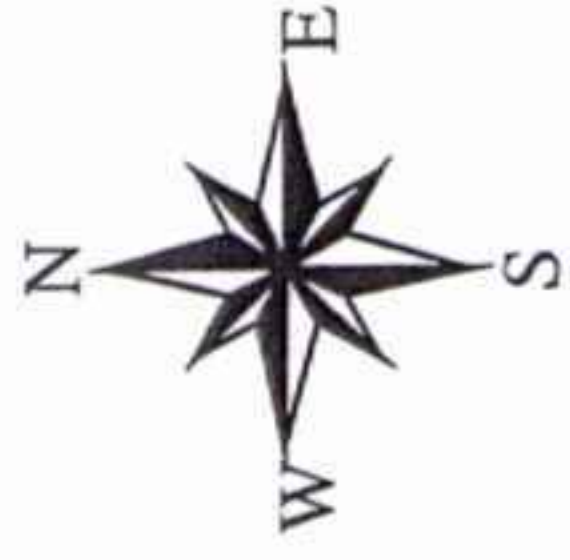
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Predicted annual average
PM10 concentrations ($\mu\text{g}/\text{m}^3$)
for 2004 without proposed
development

Figure 7.1a



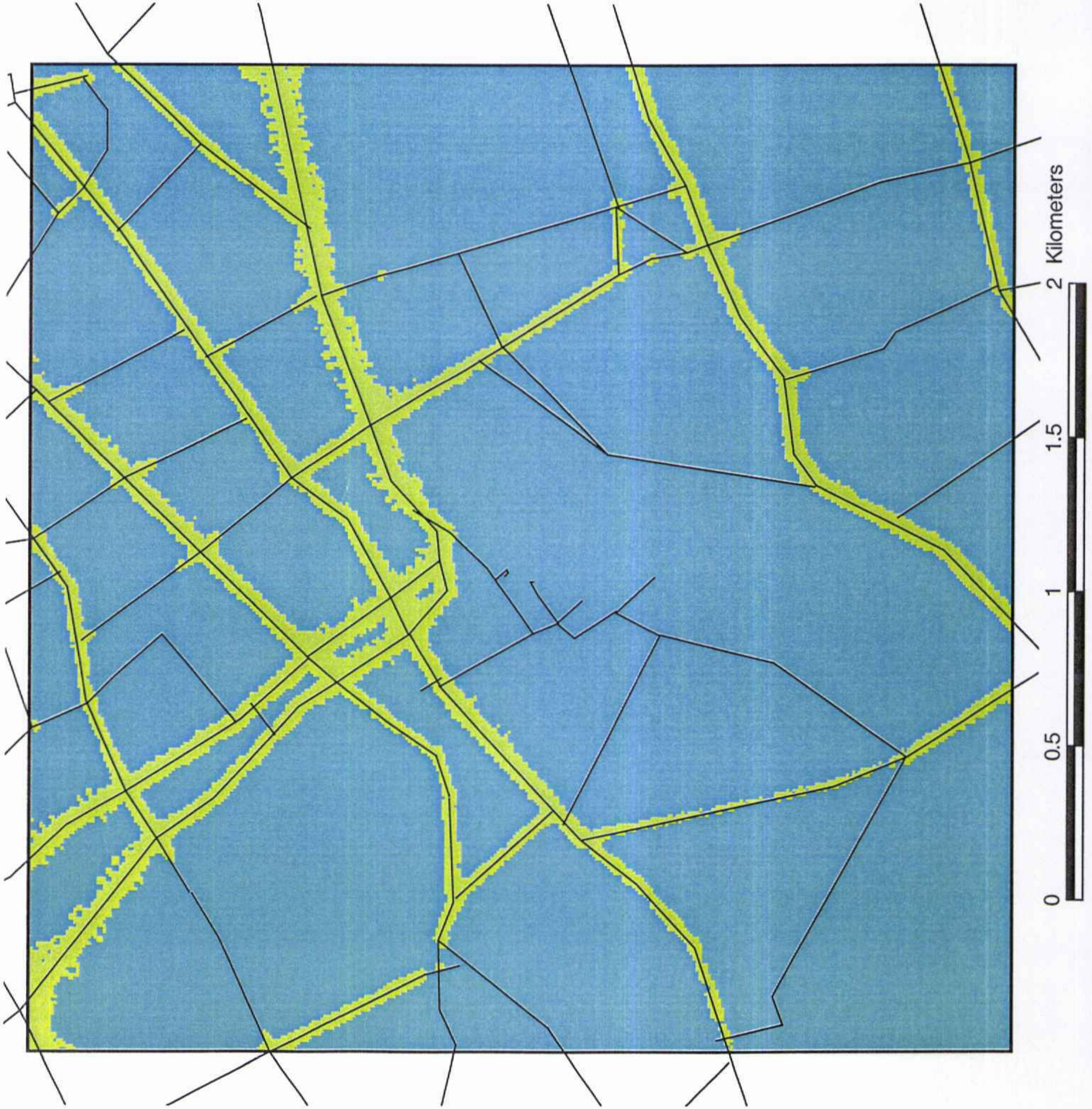


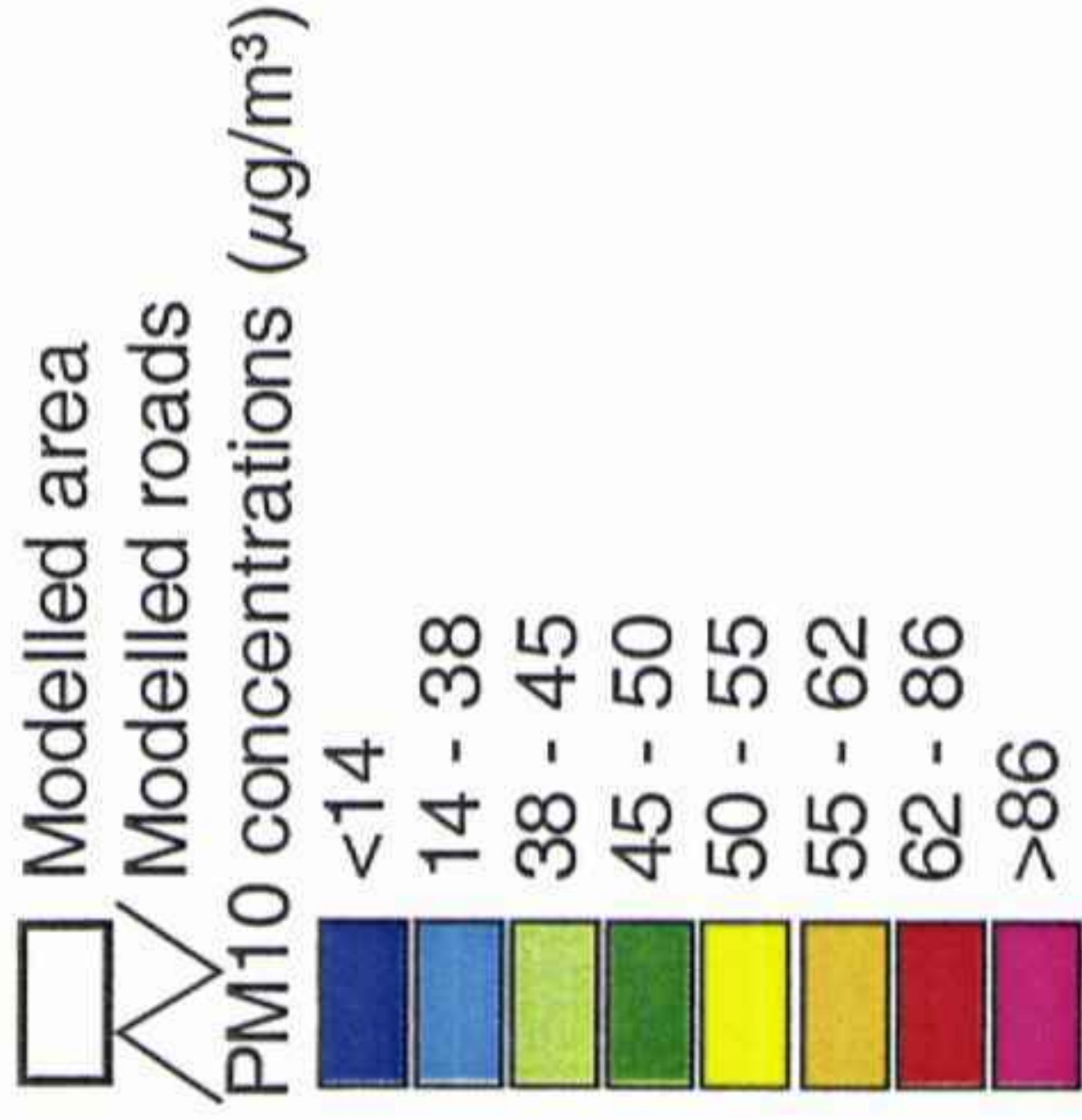
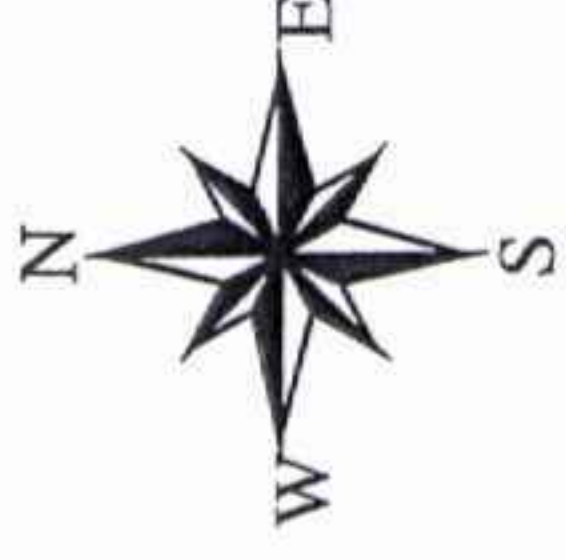
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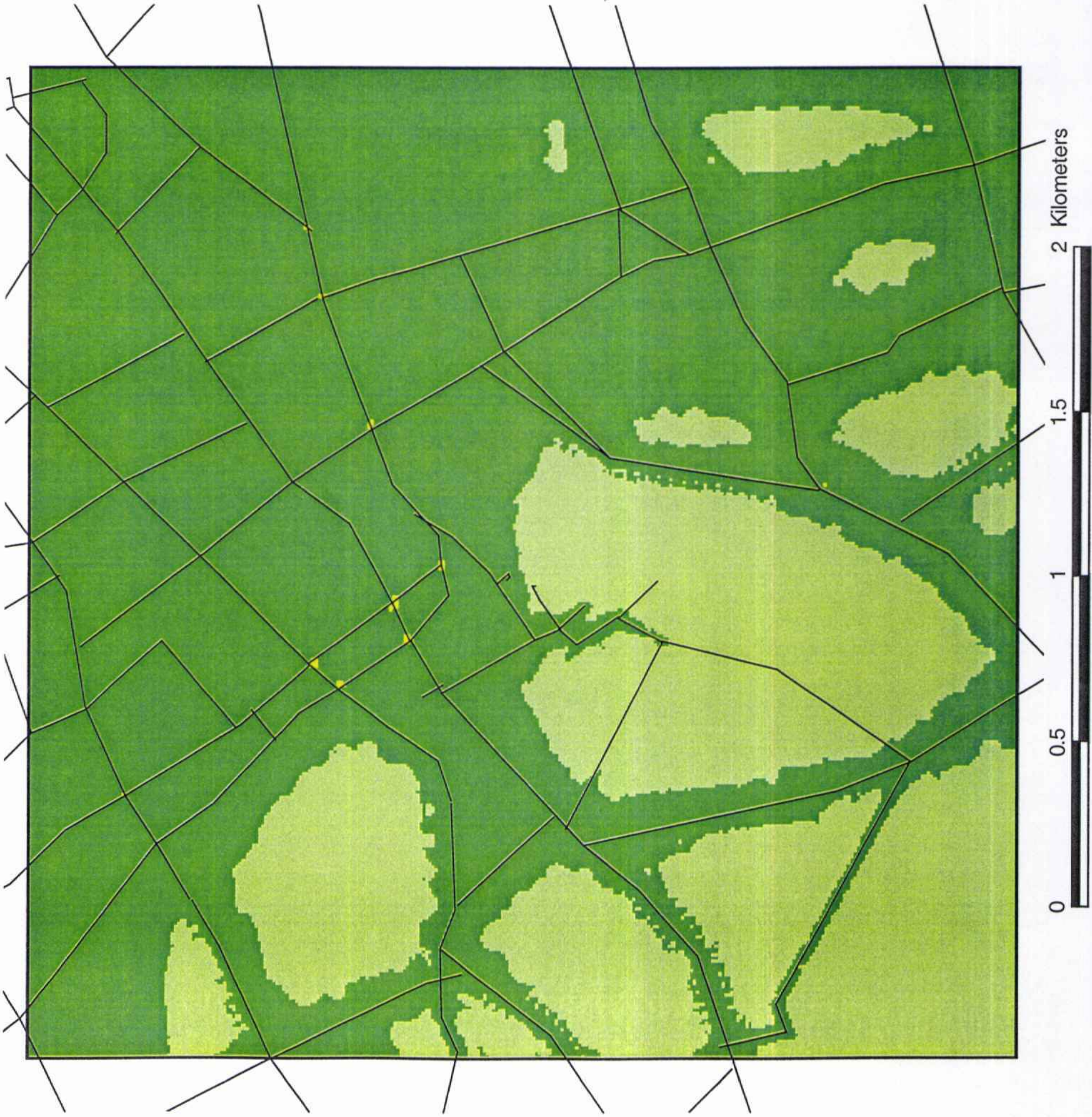
Predicted annual average
PM10 concentrations ($\mu\text{g}/\text{m}^3$)
for 2004 with proposed
development

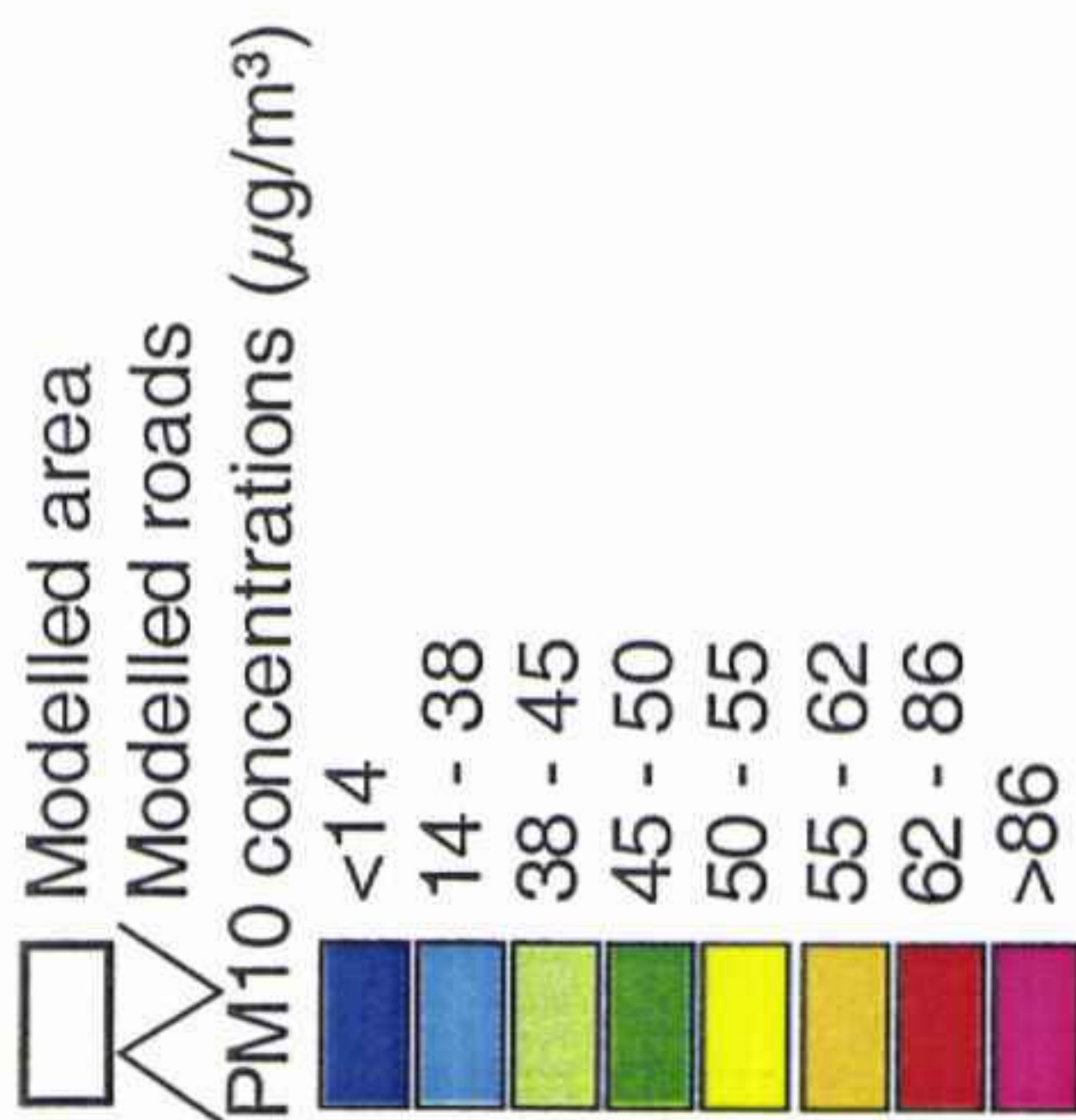
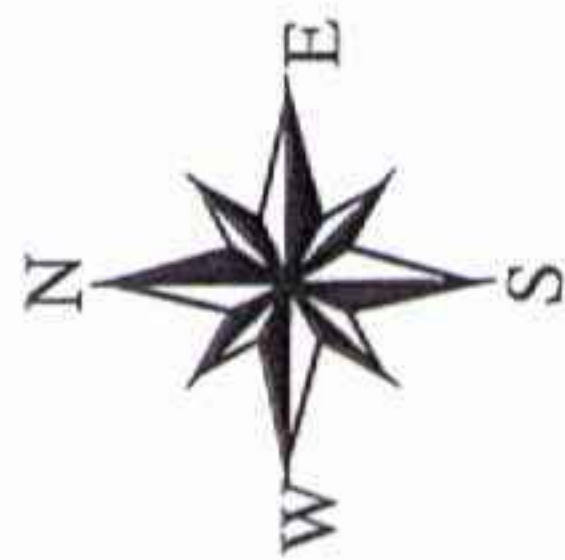
Figure 7.1b





CERC
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Predicted 90.41st percentiles of 24-hour average PM10 concentrations ($\mu\text{g}/\text{m}^3$) for 2004 without proposed development
Figure 7.2a



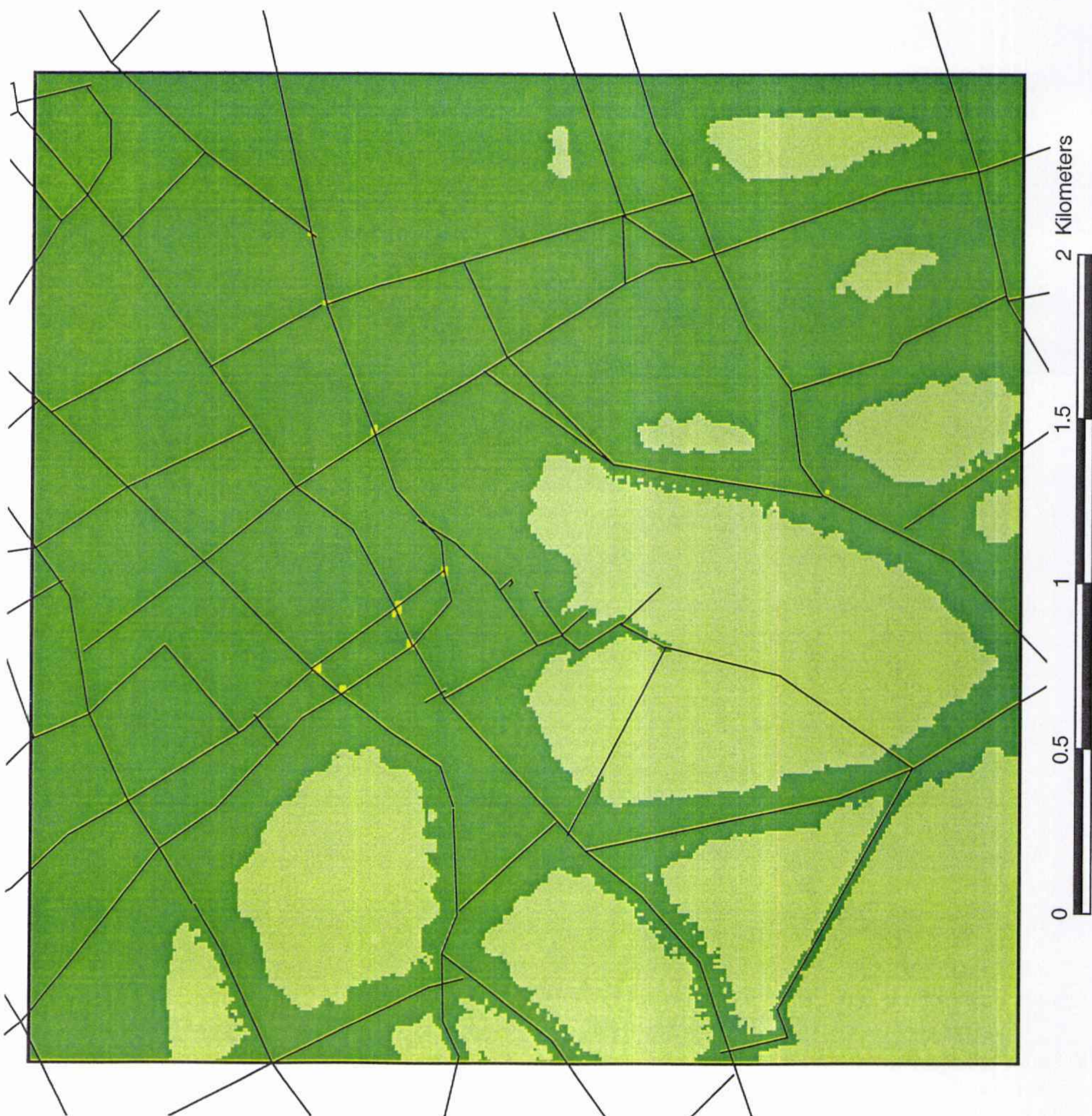


CERC

Waterman Environmental

Predicted 90.41st percentiles
of 24-hour average
PM10 concentrations ($\mu\text{g}/\text{m}^3$)
for 2004 with proposed
development

Figure 7.2b



7.2 Predicted Concentrations of NO₂

Figures 7.3a and 7.3b show plots of the predicted annual average NO₂ concentrations for 2005 without any proposed development and with the development's construction phase traffic, respectively. Figures 7.4a and 7.4b show the predicted 99.79th percentiles of hourly average NO₂ concentrations for the 'without development' and 'construction phase' scenarios respectively.

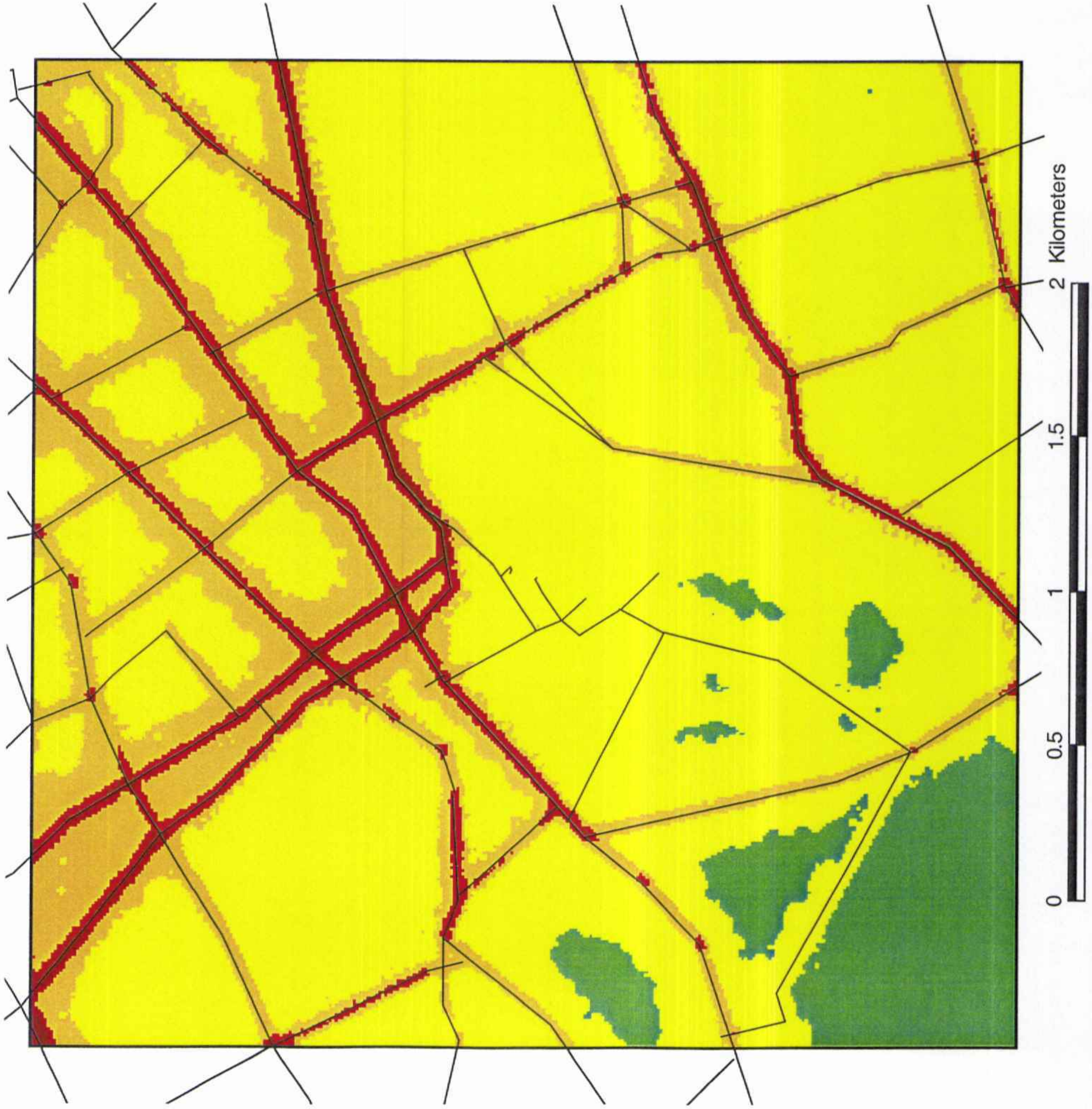
With no development, annual average NO₂ concentrations are predicted to exceed the AQS objective value of 21ppb throughout the majority of the modelled area. With the addition of the development's construction phase traffic, concentrations are predicted to increase slightly around Lots Road, while elsewhere in the area, the impact is predicted to be negligible. The area of exceedence of the objective is not predicted to be increased significantly.

With no development, the 99.79th percentile of hourly average NO₂ concentrations is not predicted to exceed the AQS objective value of 105ppb in the modelled area. The addition of the development construction phase traffic is not predicted to result in significant increases in the concentrations in the area.

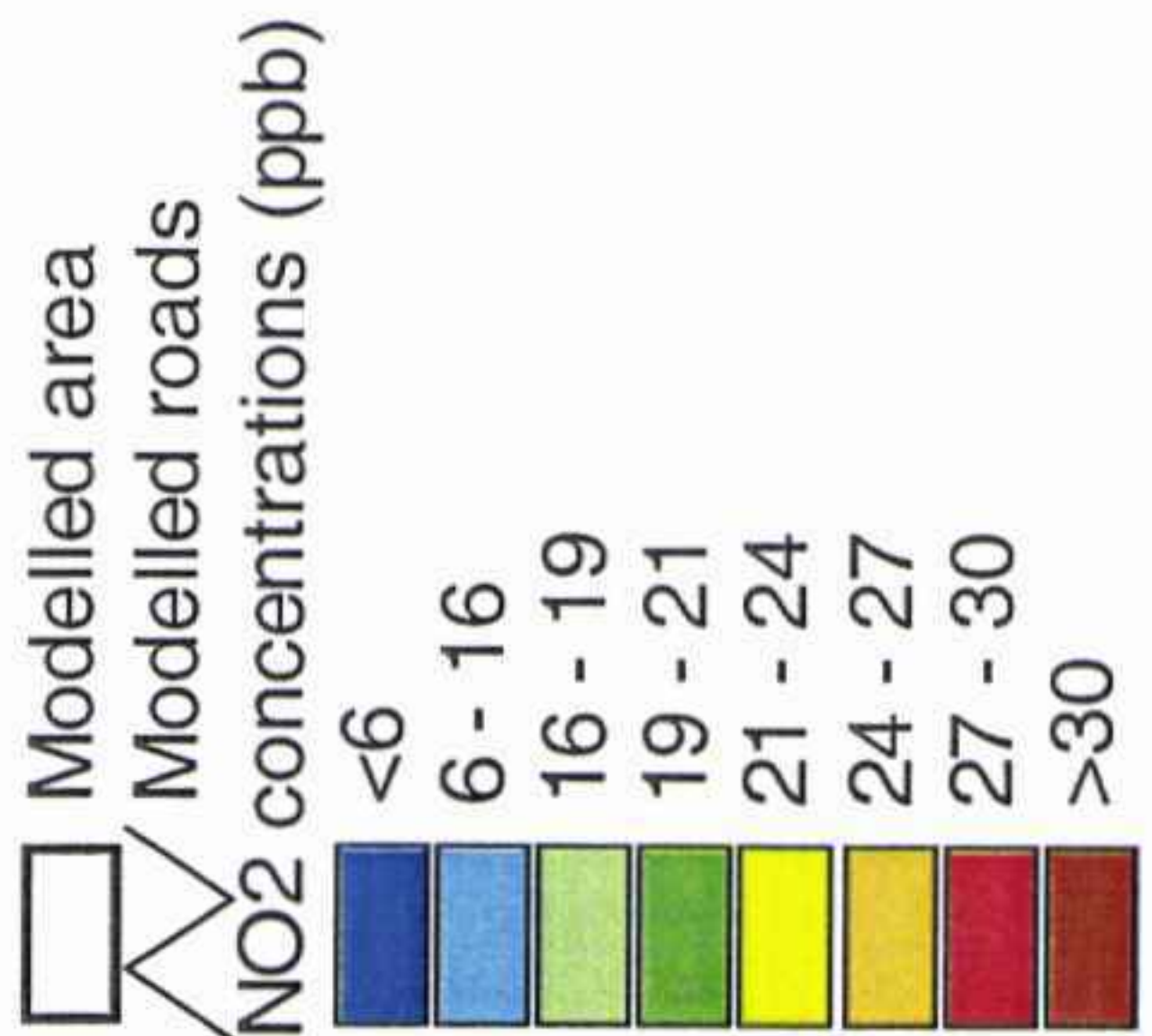
Table 7.2 shows predicted NO₂ concentrations at three selected receptor points without the proposed development and with the addition of the construction phase traffic. The table shows that concentrations close the proposed development are predicted to increase slightly with the addition of the construction phase traffic. The maximum predicted increase in annual average NO₂ concentrations at the three locations is 0.3 ppb, while the maximum predicted increase in the 99.79th percentile of hourly average concentrations is 0.8ppb. It should be noted that the increase in concentrations close to the site is due in part to the increased traffic emissions but also to the emissions from the construction plant which have been estimated from HGV emission factors and represented as a volume source covering the site. The assumed emission rates are equivalent to the emissions generated by two HGVs travelling within the site at 5km/hr continuously during the day.

Table 7.2. Predicted NO₂ concentrations at example receptor locations (ppb)

	Lots Road East		Lots Road West		Chelsea Harbour Drive	
	Without dev.	With dev.	Without dev.	With dev.	Without dev.	With dev.
Annual average	23.0	23.3	23.3	23.4	22.1	22.4
99.79 th percentile	86.3	86.4	86.8	86.8	83.2	84.0

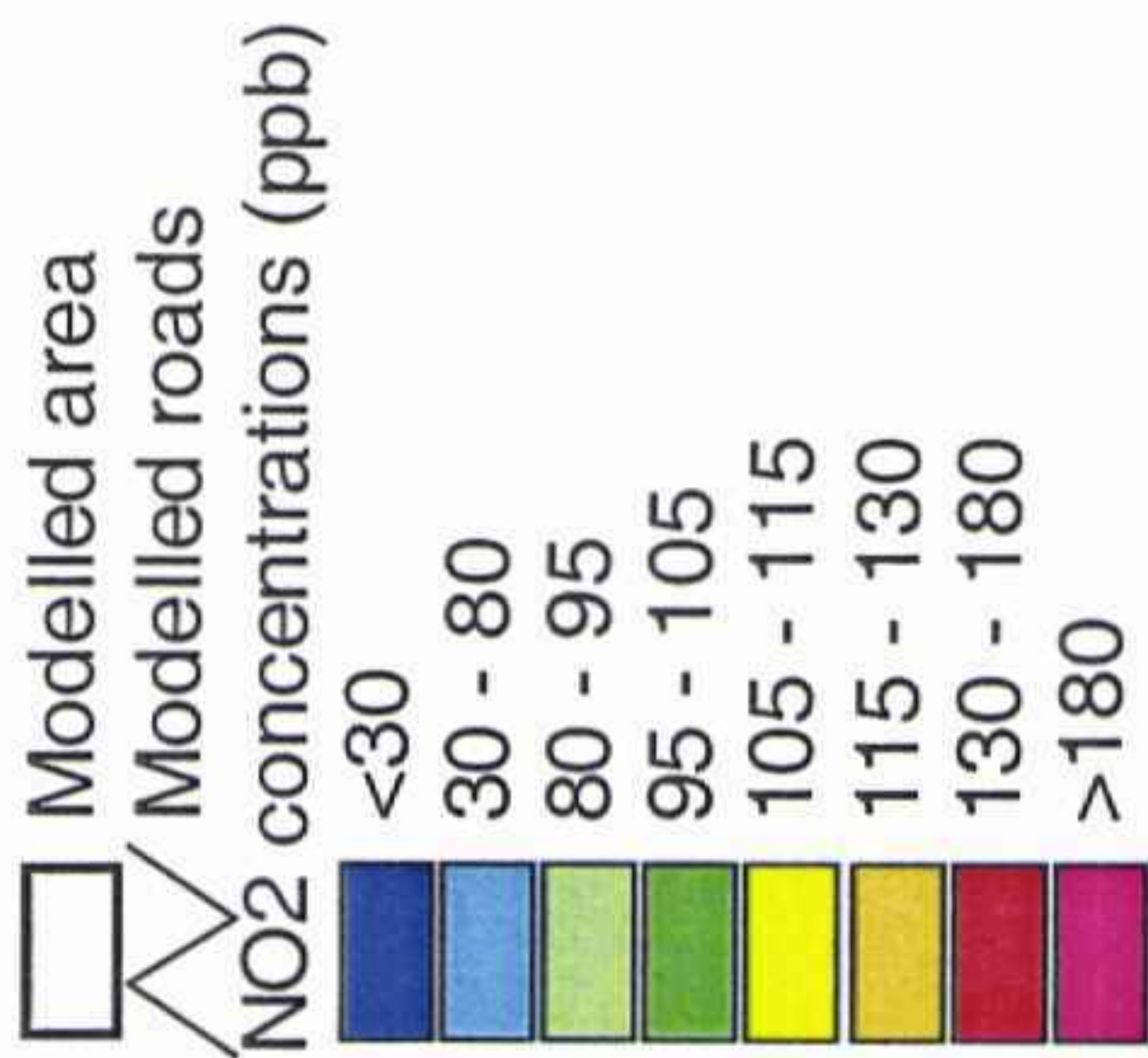


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Predicted annual average NO2 concentrations (ppb) for 2005 without proposed development
Figure 7.3a



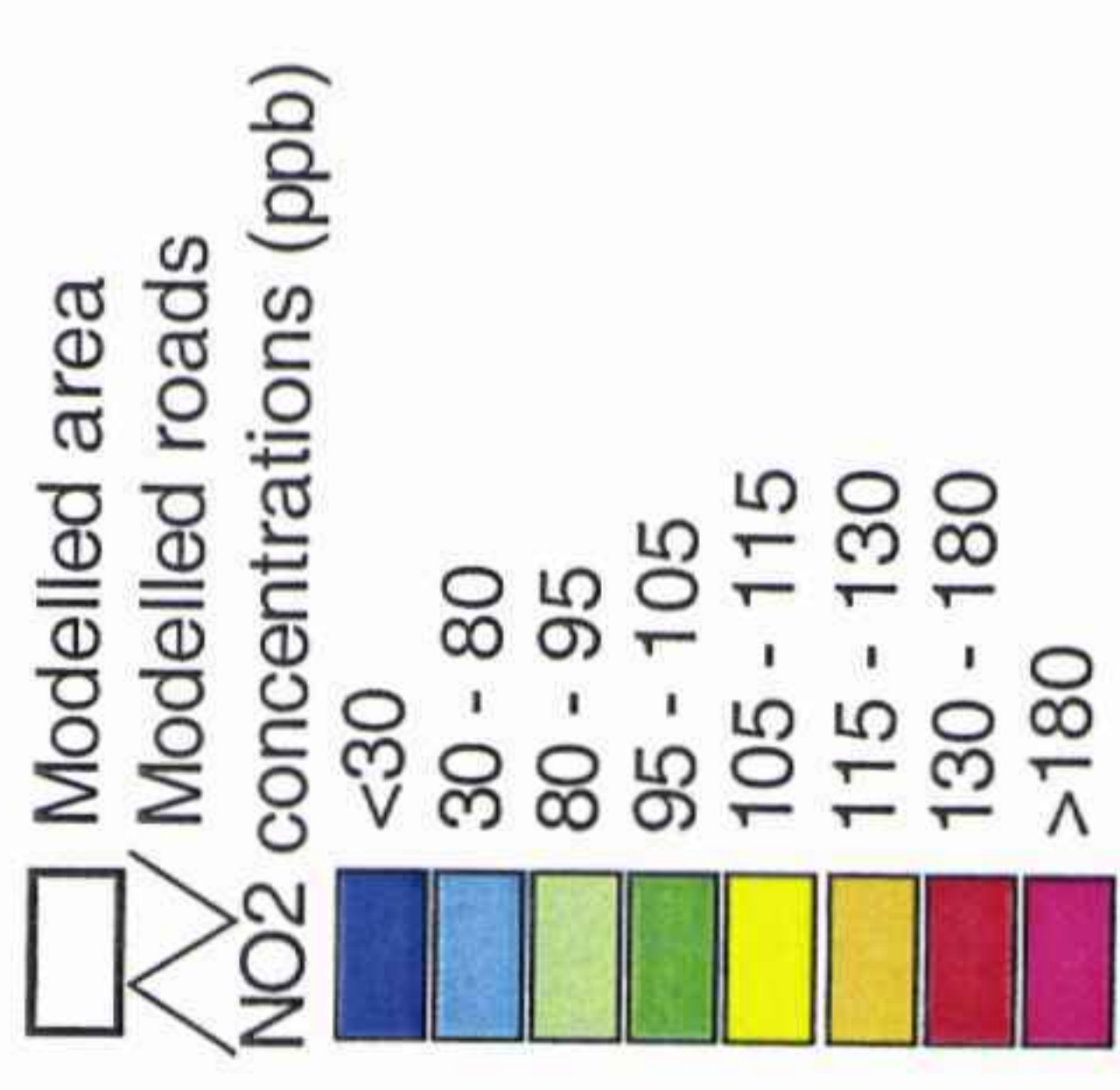
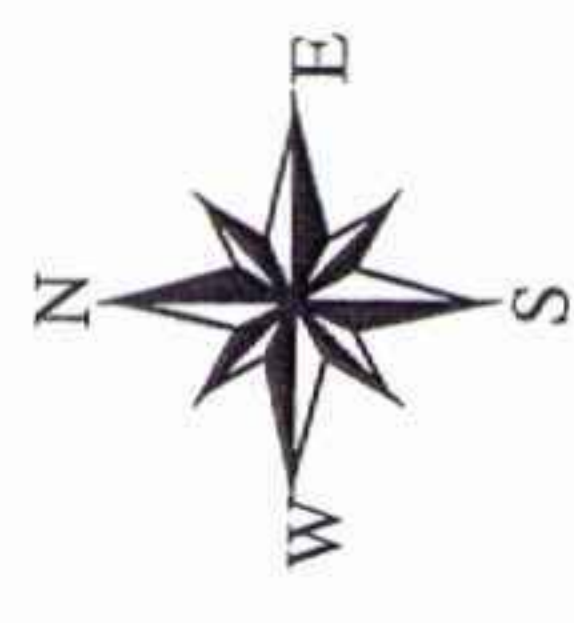
CERC
Waterman Environmental
Predicted annual average NO2 concentrations (ppb) for 2005 with proposed development
Figure 7.3b





CERC	
Waterman Environmental	
Predicted 99.79th percentiles of hourly average NO ₂ concentrations (ppb) for 2005 without proposed development	
Figure 7.4a	





CERC
Waterman Environmental
Predicted 99.79th percentiles of hourly average NO2 concentrations (ppb) for 2005 with proposed development
Figure 7.4b

8. Discussion

Modelling of NO_2 and PM_{10} has been carried out in the area surrounding the proposed Lots Road Power Station and Land at Thames Drive development. Symonds Group Ltd provided construction phase traffic data for the roads immediately around the site. This data relates to construction vehicles, construction workers' vehicles, and also residents' vehicles from the schemes' units that would be occupied by 2005. Data for the other roads surrounding the development were taken from the GLA emissions inventory for London, February 2002. Emissions from other sources in the area and from the rest of London were also considered, and data for these were also taken from the GLA inventory.

With no development, modelling of PM_{10} has shown that there are no predicted exceedences of the AQS objective for annual average PM_{10} concentrations. The addition of the construction phase traffic is not predicted to result in significant increases in the annual average concentrations.

The AQS objective value for the 90.41st percentile of 24-hour concentrations of $50\mu\text{g}/\text{m}^3$ is predicted to be exceeded over small areas around road junctions in the absence of the development. The modelling shows that the addition of the construction phase traffic is predicted to result in minor increases in concentrations near the site although the areas of exceedence of the AQS objective are not predicted to be significantly larger. The maximum predicted increase in the 90.41st percentile of 24-hour average PM_{10} concentrations at three selected receptor locations is $0.1\mu\text{g}/\text{m}^3$.

With no development, annual average concentrations of NO_2 are predicted to exceed the AQS objective throughout the majority of the modelled area. The addition of the construction phase traffic is predicted to result in a minor increase in concentrations around Lots Road although the impact is predicted to be negligible elsewhere in the modelled area. The maximum increase in annual NO_2 concentrations at three selected receptor locations is 0.3 ppb.

With no development, the AQS objective value for the 99.79th percentile of hourly average concentrations of NO_2 is not predicted to be exceeded in the study area. The addition of the construction phase predicted to result in minor increases in the 99.79th percentiles of hourly average concentrations near the site, but elsewhere the impact is predicted to be insignificant. The maximum predicted increase at the three receptor locations is 0.8ppb.

APPENDIX A: Summary of ADMS-Urban

ADMS-Urban is a practical air pollution modelling tool, which has been developed to provide detailed predictions of pollution concentrations for all sizes of study area. The model can be used to look at concentrations near a single road junction or over a region extending across the whole of a major city. ADMS-Urban has therefore been extensively used for Stage 3 of the Review and Assessment of Air Quality carried out by Local Authorities in the UK, and for the follow-up work required in Stage 4 and the development of Action Plans for improving air quality. The following is a summary of the capabilities and validation of ADMS-Urban. More details can be found on the CERC web site at www.cerc.co.uk.

ADMS-Urban is a development of the Atmospheric Dispersion Modelling System (ADMS) which has been developed to investigate the impacts of emissions from industrial facilities. ADMS-Urban allows full characterisation of the wide variety of emissions in urban areas, including an extensively validated road traffic emissions model. It also boasts a number of other features, which include consideration of:

- the effects of vehicle movement on the dispersion of traffic emissions;
- the behaviour of material released into street-canyons;
- the chemical reactions occurring between nitrogen oxides, ozone and Volatile Organic Compounds (VOCs);
- the pollution entering a study area from beyond its boundaries;
- the effects of complex terrain on the dispersion of pollutants; and
- the effects of a building on the dispersion of pollutants emitted nearby.

More details of these features are given below.

Studies of extensive urban areas are necessarily complex, requiring the manipulation of large amounts of data. To allow users to cope effectively with this requirement, ADMS-Urban has been designed to operate in the widely familiar PC environment, under Windows NT. The manipulation of data is further facilitated by the possible integration of ADMS-Urban with a Geographical Information System (GIS) such as MapInfo or ArcView, and with the CERC Emissions Inventory Toolkit, EMIT.

Dispersion Modelling

ADMS and ADMS-Urban use boundary layer similarity profiles to parameterise the variation of turbulence with height within the boundary layer, and the use of a skewed-Gaussian distribution to determine the vertical variation of pollutant concentrations in the plume under convective conditions.

The main dispersion modelling features of ADMS-Urban are as follows:

- ADMS-Urban is an **advanced dispersion model** in which the boundary layer structure is characterised by the height of the boundary layer and the Monin-Obukhov length, a length scale dependent on the friction velocity and the heat flux at the surface. This method supercedes methods based on Pasquill Stability Categories, as used in, for example, Caline and ISC. Concentrations are calculated hour by hour and are fully dependent on prevailing weather conditions.
- For convective conditions, a **non-Gaussian vertical profile of concentration** allows for the skewed nature of turbulence within the atmospheric boundary layer, which can lead to high concentrations near to the source.
- A **meteorological pre-processor** calculates boundary layer parameters from a variety of input data, typically including date and time, wind speed and direction, surface temperature and cloud cover. Meteorological data may be raw hourly averaged or statistically analysed data.

Emissions

Emissions into the atmosphere across an urban area typically come from a wide variety of sources. There are likely to be industrial emissions from chimneys as well as emissions from road traffic and domestic heating systems. To represent the full range of emissions configurations, the explicit source types available within ADMS-Urban are:

- **Industrial points**, for which plume rise and stack downwash are included in the modelling.
- **Roads**, for which emissions are specified in terms of vehicle flows and the additional initial dispersion caused by moving vehicles is also taken into account.
- **Areas**, where a source or sources is best represented as uniformly spread over an area.
- **Volumes**, where a source or sources is best represented as uniformly spread throughout a volume.

In addition, sources can also be modelled as a regular grid of emissions. This allows the contributions of large numbers of minor sources to be efficiently included in a study while the majority of the modelling effort is used for the relatively few significant sources.

ADMS-Urban can be used in conjunction with CERC's Emissions Inventory Toolkit, EMIT, which facilitates the management and manipulation of large and complex data sets into usable emissions inventories.

Presentation of Results

The results from the model can be based on a wide range of averaging times, and include rolling averages. Maximum concentration values and percentiles can be calculated where appropriate meteorological input data have been input to the model. This allows ADMS-Urban to be used to calculate concentrations for direct comparison with existing air quality limits, guidelines and objectives, in whatever form they are specified.

ADMS-Urban can be integrated with the ArcView or MapInfo GIS to facilitate both the compilation and manipulation of the emissions information required as input to the model and the interpretation and presentation of the air quality results provided.

Complex Effects - Street Canyons

The *Operational Street Pollution Model (OSPM)*¹, developed by the Danish National Environmental Research Institute (NERI), has been incorporated within ADMS-Urban. The OSPM uses a simplified flow and dispersion model to simulate the effects of the vortex that occurs within street canyons when the wind-flow above the buildings has a component perpendicular to the direction of the street. The model takes account of vehicle induced turbulence. The model has been validated against Danish and Norwegian data.

Complex Effects - Chemistry

ADMS-Urban includes the *Generic Reaction Set (GRS)*² atmospheric chemistry scheme. The original scheme has seven reactions, including those occurring between nitrogen oxides and ozone. The remaining reactions are parameterisations of the large number of reactions involving a wide range of Volatile Organic Compounds (VOCs). In addition, an eighth reaction has been included within ADMS-Urban for the situation when high concentrations of nitric oxide (NO) can convert to nitrogen dioxide (NO₂) using molecular oxygen.

In addition to the basic GRS scheme, ADMS-Urban also includes a trajectory model³ for use when modelling large areas. This permits the chemical conversions of the emissions and background concentrations upwind of each location to be properly taken into account.

¹ Hertel, O., Berkowicz, R. and Larssen, S., 1990, 'The Operational Street Pollution Model (OSPM).' *18th International meeting of NATO/CCMS on Air Pollution Modelling and its Applications*. Vancouver, Canada, pp741-749.

² Venkatram, A., Karamchandani, P., Pai, P. and Goldstein, R., 1994, 'The Development and Application of a Simplified Ozone Modelling System.' *Atmospheric Environment*, Vol 28, No 22, pp3665-3678.

³ Singles, R.J., Sutton, M.A. and Weston, K.J., 1997, 'A multi-layer model to describe the atmospheric transport and deposition of ammonia in Great Britain.' In: *International Conference on Atmospheric Ammonia: Emission, Deposition and Environmental Impacts*. *Atmospheric Environment*, Vol 32, No 3.

Complex Effects - Terrain

As well as the effect that complex terrain has on wind direction and, consequently, pollution transport, it can also enhance turbulence and therefore increase dispersion. These effects are taken into account in ADMS-Urban using the FLOWSTAR⁴ model developed by CERC.

Data Comparisons – Model Validation

ADMS-Urban is a development of the Atmospheric Dispersion Modelling System (ADMS), which is used throughout the UK by industry and the Environment Agency to model emissions from industrial sources. ADMS has been subject to extensive validation, both of individual components (e.g. point source, street canyon, building effects and meteorological pre-processor) and of its overall performance.

ADMS-Urban has been extensively tested and validated against monitoring data for large urban areas in the UK, including Central London and Birmingham, for which a large scale project was carried out on behalf of the DETR (now DEFRA).

Further details of ADMS-Urban and model validation, including a full list of references, are available from the CERC web site at www.cerc.co.uk.

⁴ Carruthers D.J., Hunt J.C.R. and Weng W-S. 1988. 'A computational model of stratified turbulent airflow over hills – FLOWSTAR I.' Proceedings of Envirosoft. In: *Computer Techniques in Environmental Studies*, P. Zanetti (Ed) pp 481-492. Springer-Verlag.

Appendix A2

Completed Development Air Quality Modelling Report (2010)

**Cambridge
Environmental
Research
Consultants Ltd**

Dispersion Modelling Study of
Operational Traffic Emissions from the
Proposed Lots Road Power Station and
Land at Thames Avenue Development in 2010

Final Report

Prepared for
Circadian Ltd

3rd December 2002

C E R C

Report Information

CERC Job Number: FM570

Job Title: Dispersion modelling study of traffic emissions from the proposed Lots Road Power Station and land at Thames Avenue development

Prepared for: Circadian Ltd

Report Status: Final

Report Reference: FM570/R3/02

Issue Date: 3rd December 2002

Author(s): Matthew Williams

Reviewer(s): Sarah Wilkinson

Issue	Date	Comments
1	28/11/02	Draft
2	03/12/02	Second draft
3	03/12/02	Final report

Main File(s): FM570_R3_03Dec02.doc

Figures and Tables **Model Run Reference(s)**

Figures 7.1a & 7.2a	lr10np2.upl
Figures 7.2b & 7.2b	lr10wp2.upl
Figures 7.3a & 7.4a	lr10nnb.upl
Figures 7.3b & 7.4b	lr10wnc.upl
Table 7.1	lr10npr2.upl, lr10wpr2.upl
Table 7.2	lr10nnr.upl & lr10wnr.upl

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1. Summary

CERC has been commissioned by Circadian Ltd to undertake dispersion modelling to assess the impact of NO_x and PM_{10} emissions from traffic at the proposed Lots Road Power Station and Land at Thames Avenue development on local air quality using the ADMS-Urban model (version 1.7).

This study has used emissions data from the GLA emissions inventory for London, February 2002, together with some amendments to traffic flows supplied by the Royal Borough of Kensington and Chelsea and predicted traffic flows with and without the development supplied by Symonds Group. The model has been set up to be consistent with other modelling being carried out in the area.

The development is not programmed to be fully operational until 2009. Annual and 24-hour average concentrations of particulates (PM_{10}) and annual and hourly average concentrations of nitrogen dioxide (NO_2) have therefore been modelled for 2010 for comparison with the provisional Air Quality Strategy (AQS) objectives for PM_{10} and the EU limit values for NO_2 . Two scenarios have been modelled, each over a 12-month period:

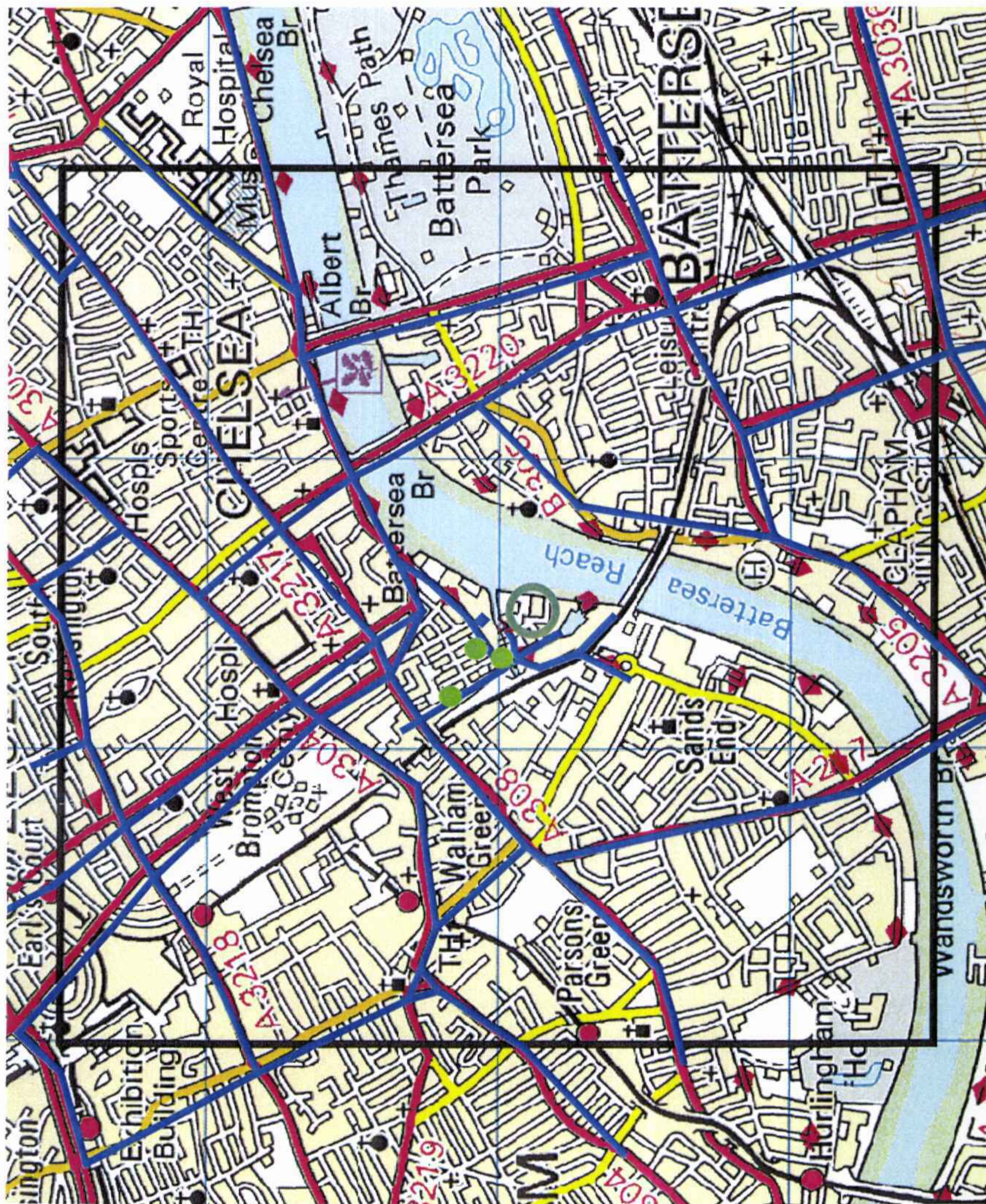
- The future (2010) situation without any proposed development, and;
- The future (2010) situation with the proposed Lots Road Power Station and Land at Thames Avenue development.

The modelling used hourly sequential meteorological data from Heathrow for 1996 and 1997 which is consistent with the other work being carried out in the area. Emissions of pollutants from the whole of London have been considered in the study by including them as a set of 1km square grid sources.

Traffic flow data for the development have been provided by Symonds Group, based on the assumption of a total of 696 car parking spaces. A lower total of 667 spaces are actually proposed and therefore the traffic data are based on a worst-case assumption. The baseline (no development) traffic data include the traffic expected due to developments at 552 King's Road and Imperial Wharf.

Modelling of PM_{10} has shown that, with no development, annual average concentrations are predicted to exceed the provisional AQS objective value of $23\mu\text{g}/\text{m}^3$ over the whole study area. The 97.26th percentiles of 24-hour average concentrations are also predicted to exceed the provisional objective value of $50\mu\text{g}/\text{m}^3$ over the whole study area. The modelling shows that the addition of the development traffic is predicted to result in minor increases to the annual average and 97.26th percentile of 24-hour average concentrations close to the site but elsewhere the impact is predicted to be negligible. Annual average and 97.26th percentiles of 24-hour average PM_{10} concentrations at three selected receptor locations close to the site are predicted to increase by less than $0.1\mu\text{g}/\text{m}^3$ as a result of the Lots Road Power Station and Land at Thames Avenue development.

Modelling of NO_2 concentrations has shown that, with no development, annual average concentrations of NO_2 are predicted to exceed the EU limit value of 21ppb over a large part of the modelled area. The addition of the proposed development is predicted to result in minor increases in the annual average concentrations. The area of exceedence of the limit value is predicted to grow slightly in the immediate vicinity of the site but is



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Extent of modelled area

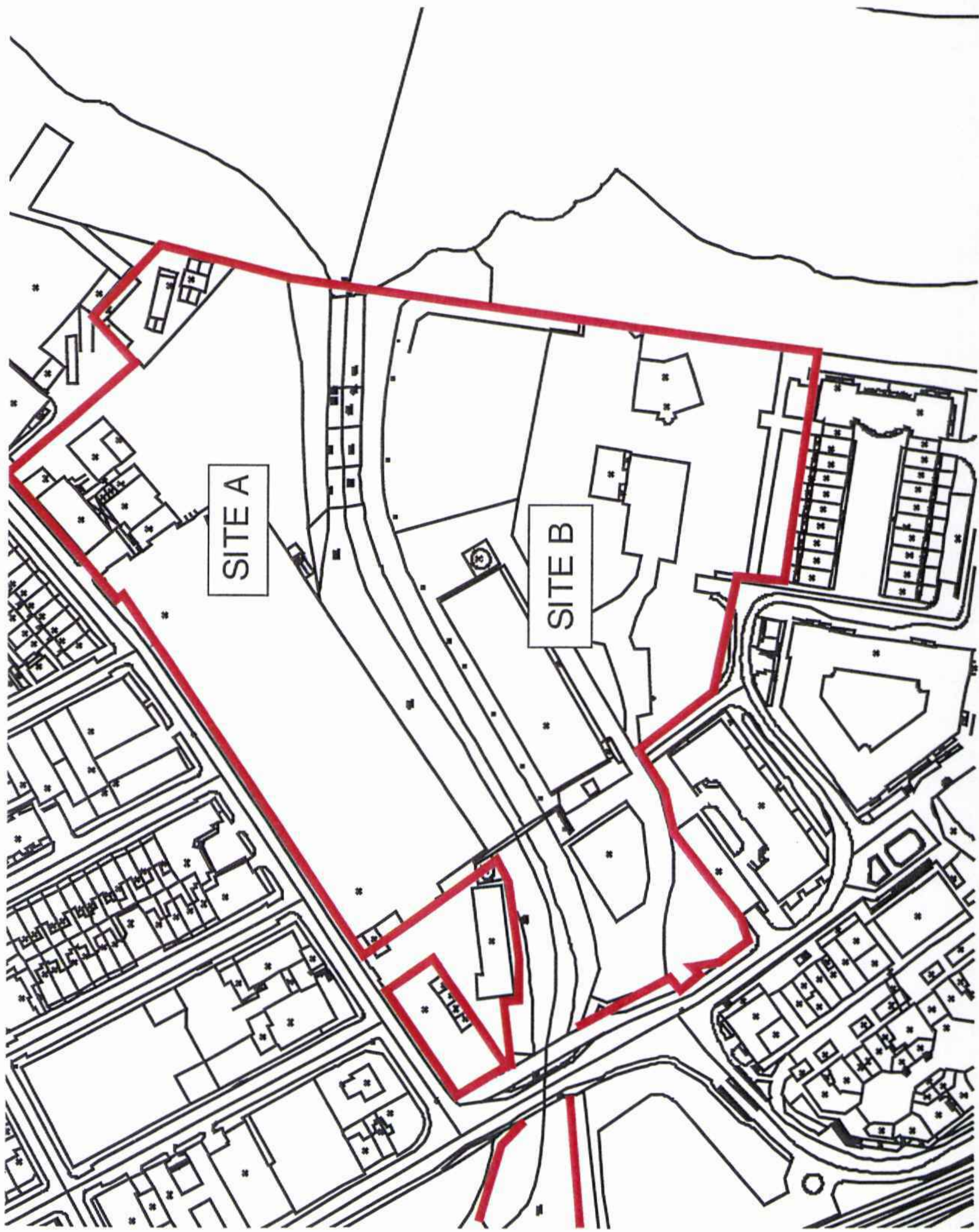
3 Kilometers

2

1

0

Figure 3.1



CERC
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Locations of proposed development
Figure 3.2

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not predicted to change significantly elsewhere. The maximum predicted increase in annual average NO₂ concentrations at three selected receptor locations close to the site is 0.1 ppb.

With no development, the EU limit value for the 99.79th percentile of hourly average concentrations of NO₂ is not predicted to be exceeded anywhere in the study area. With the addition of the proposed development, the concentrations are not predicted to increase significantly. The maximum predicted increase in concentrations at the three example receptor locations is 0.2ppb.

2. Introduction

CERC has been commissioned by Circadian Ltd to undertake dispersion modelling to assess the impact of traffic emissions from the proposed Lots Road Power Station and Land at Thames Avenue development on local NO_2 and PM_{10} concentrations using ADMS-Urban (version 1.7).

Traffic flow data for the development have been provided by Symonds Group, based on the assumption of a total of 696 car parking spaces. A lower total of 667 spaces are actually proposed and therefore the traffic data are based on a worst-case assumption. Please refer to Figure 3.2. The following scenarios were modelled:

- Year 2010 with no development, and;
- Year 2010 with the Lots Road Power Station and Land at Thames Avenue development.

Details of the study carried out and the sources of data are given in Section 3, and information concerning the meteorological data used is given in Section 4. Section 5 presents the background data used. The relevant limits and objectives for PM_{10} and NO_2 are given in Section 6. The modelling results are presented in Section 7, with a discussion of their implications in Section 8. A description of the ADMS model used in the study is included in Appendix A.

3. The Site

The location of the proposed development site is presented in Figures 3.1 and 3.2. The land use surrounding the site is urban, so a surface roughness of 1m has been used in the study. This is consistent with other studies being carried out in this area. Figure 3.1 also shows the locations of three example receptor points near the proposed development, which are further discussed in Section 7.

3.1 Traffic data

Symonds Group Ltd provided traffic data for the roads surrounding the site for each of the development scenarios. The figures for traffic flows expected in 2004 without any proposed development take into account both the existing traffic flows and those expected due to developments at 552 King's Road and Imperial Wharf. The annual average daily total (AADT) traffic flows for each scenario, taken from the Symonds Group data, are given in Table 3.1.

Data for other roads in the study area have been taken from the GLA emissions inventory for London, February 2002. Emissions from all of the roads have been calculated using the most up-to-date emission factors published by the Department of Transport, Local Government and the Regions in February 2002. The modelled road network in the area is shown in Figure 3.1.

Table 3.1. Traffic flows with and without development

Road	AADT without development	AADT with development	% increase
Gunter Grove	25686	26299	2.4
Edith Grove North	24206	24725	2.1
King's Road A	39683	39985	0.8
King's Road B	39508	39318	-0.5
King's Road C	36933	36901	-0.1
King's Road D	28087	28241	0.5
Lots Road West	7106	7476	5.2
Lots Road East	9705	11873	22.3
Chelsea Harbour North	8458	9785	15.7
Chelsea Harbour West	6831	7688	12.5
Chelsea Harbour East	2965	2520	-15.0
Ashburnham Road	22994	23853	3.7
Edith Grove South	21227	21923	3.3
Cremorne Road	38309	39614	3.4
Battersea Bridge	28284	28327	0.2
Beaufort Street	19796	19831	0.2
Cheyne Walk East	52327	53054	1.4
Cheyne Walk West	47556	46879	-1.4
Car Park A	184	954	418
Car Park B	0	967	-
552 King's Road	1943	1943	0
Townmead Road	5005	5568	11.2
Bour Avenue	933	925	-0.1

Other relevant traffic data, for example traffic speeds and proportions of Heavy Goods Vehicles (HGVs), were taken from the GLA emissions inventory. For Lots Road, HGV data were provided by Symonds Group. The northern section has an HGV percentage of 4.4% and the eastern section has an HGV percentage of 1.5%.

Development car parks and access roads have been represented as two roads with the vehicles travelling at 5 kph. King's Road has been split into four sections A, B C and D, between junctions with major roads running from west to east. No traffic speed data is available for 552 King's Road as the development is currently unfinished, so it has been assumed that traffic on this road will travel at 5 kph.

3.2 Other emissions

The modelling has taken into account all of the emissions in London by treating them as a set of aggregated grid sources with a 1km resolution. These emissions have been taken from the GLA emissions inventory for London, February 2002.

It should be noted that emissions from the Lots Road power station have not been included in the modelling because the power station will not be operational in 2010.

4. Meteorological Data

Predictions of future concentrations were made using meteorological data from Heathrow. For NO₂, 1997 data were used and for PM₁₀, 1996 data were used for consistency with other work being carried out in the area.

Table 4.1 shows a summary of the meteorological data for each year.

Table 4.1: Summary of meteorological data

	Minimum	Maximum	Mean
1996			
Temperature (°C)	-5.0	31.1	10.5
Wind speed (m/s)	0	13.4	3.6
Cloud cover (oktas)	0	8	5.6
1997			
Temperature (°C)	-5.2	31.4	11.9
Wind speed (m/s)	0	12.9	2.9
Cloud cover (oktas)	0	8	5.4

The ADMS meteorological pre-processor, written by the Meteorological Office, uses the data provided to calculate the parameters required by the program. Figures 4.1 and 4.2 show wind roses for the site showing the frequency of occurrence of wind from different directions for a number of wind speed ranges.

Figure 4.1: Wind Rose for Heathrow, 1996

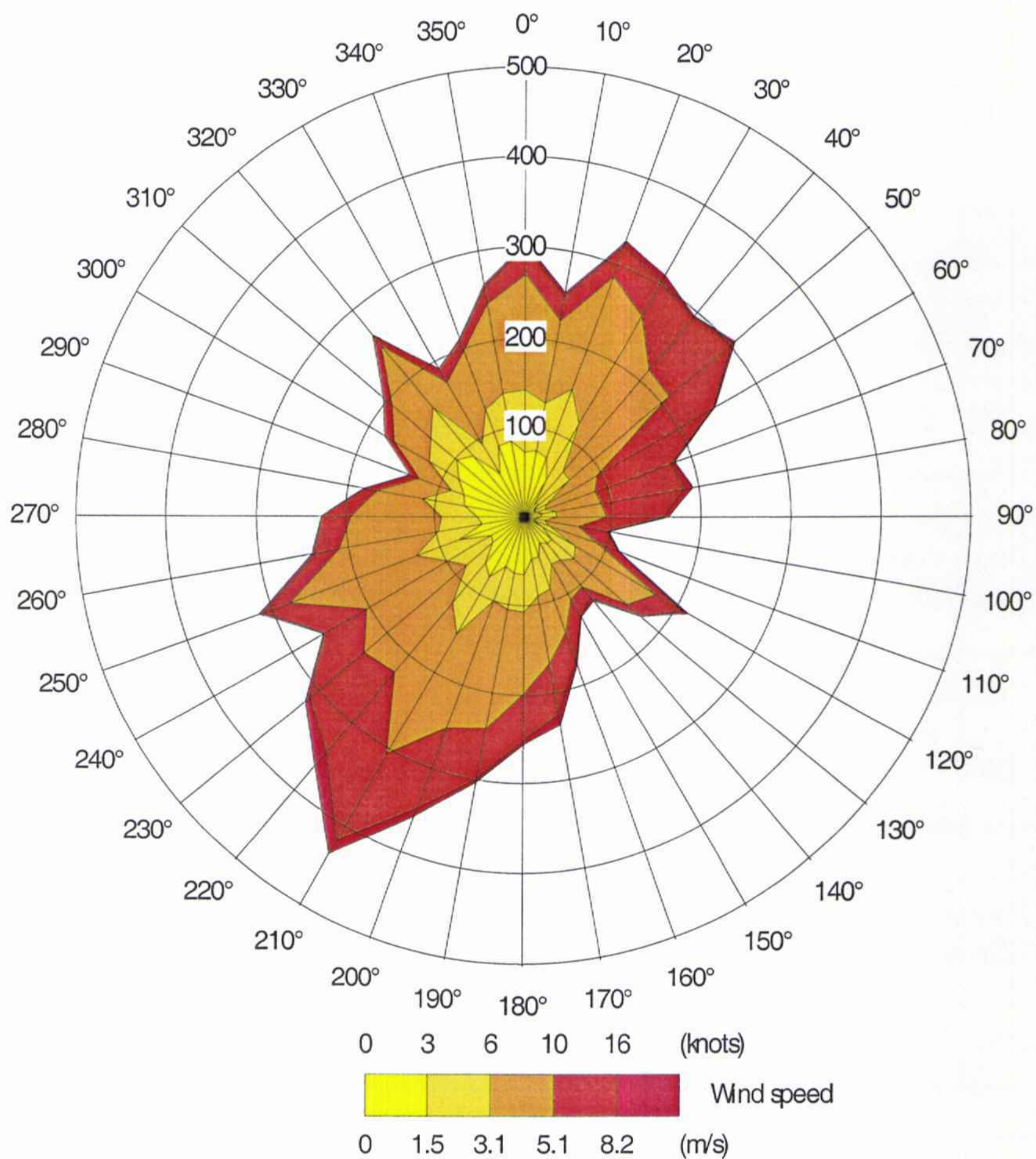
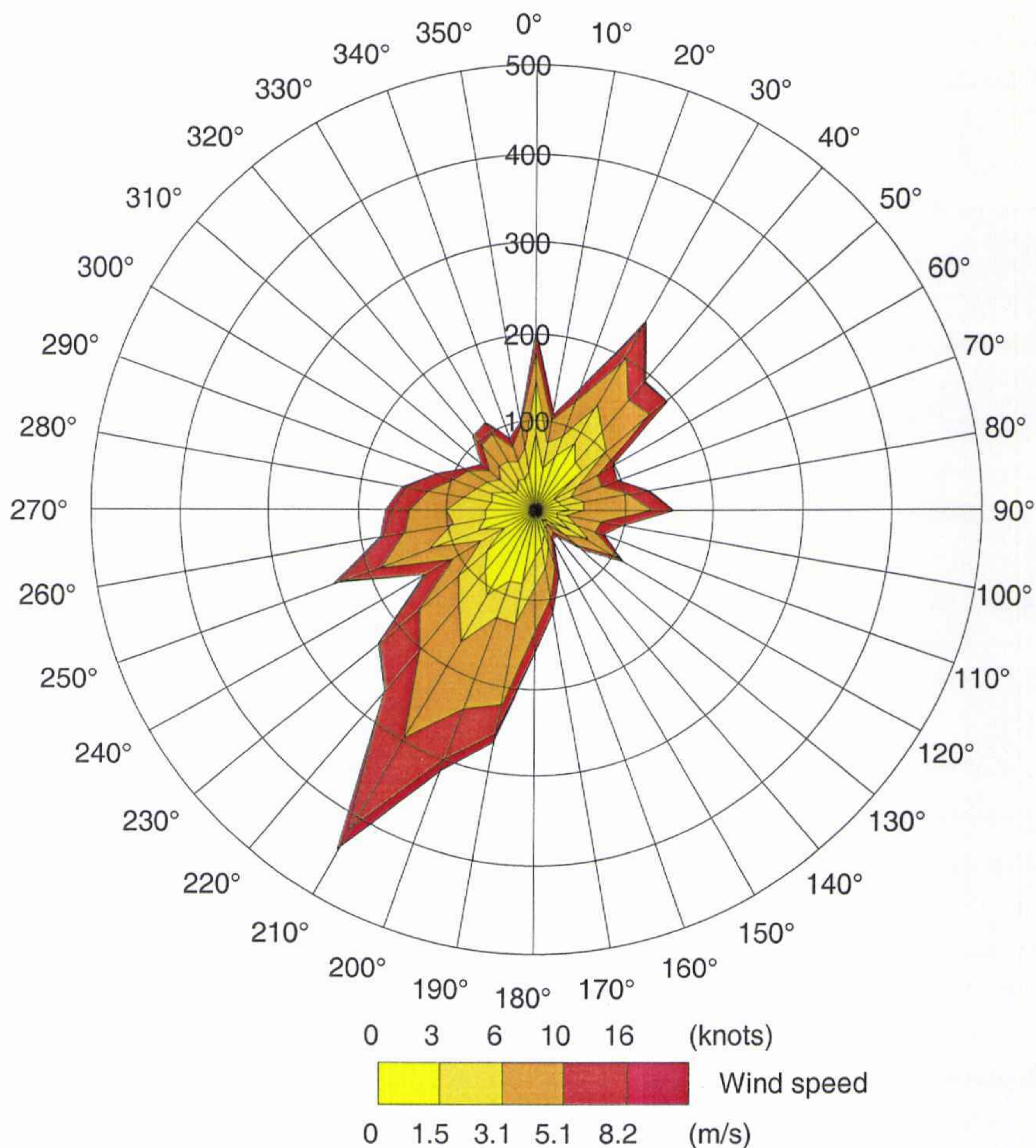


Figure 4.2: Wind Rose for Heathrow, 1997



5. Background data

For each hour of meteorological data for 1997, NO_x, NO₂ and ozone concentrations have been obtained from one of five rural monitoring sites around London according to wind direction. The hourly average concentrations have then been scaled according to the predicted decreases in concentrations in future, as for the other studies carried out for the area. Background concentrations of PM₁₀ have been derived from sulphate measurements from Bridge Place for 1996. Table 5.1 shows a summary of the background data used in the study.

Table 5.1 Background concentration data for 2010

	NO _x (ppb)	NO ₂ (ppb)	O ₃ (ppb)	PM ₁₀ (µg/m ³)
Annual average	8	7	29	23
Maximum hourly average	113	37	119	185
99.8 th percentile	80	33	90	89

6. Air Quality Standards

The Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland, Working Together for Clean Air, January 2000 defines air quality objective values for NO_2 and PM_{10} to be achieved by 2005 and 2004 respectively. These objectives are the subject of Statutory Instrument 2000 No. 928, *The Air Quality (England) Regulations 2000*, which came into force on 6th April 2000.

Provisional AQS objective values for PM_{10} for 2010 also exist and, since the development is not programmed to be fully operational until 2009, these are the standards with which the predicted PM_{10} concentrations have been compared.

EU limit values for NO_2 for 2010 are laid out in the EU Daughter Directive on Air Quality 99/30/EC. Note that the EU limit values for 2010 are the same as the AQS objective values for 2005.

The air quality standards considered in this study are presented in Table 6.1.

Table 6.1: Air quality standards for 2010

	Value	Description of standard	Source
PM_{10}	$50 \mu\text{g}/\text{m}^3$	24 hour average (not to be exceeded more than 10 times per year, assumed equivalent to a 97.26 th percentile)	AQS
	$23 \mu\text{g}/\text{m}^3$	Annual average	AQS
NO_2	105ppb	Maximum hourly average (not to be exceeded more than 18 times per year, assumed equivalent to a 99.79 th percentile)	EU
	21ppb	Annual average	EU

7. Calculated Concentrations

7.1 Predicted Concentrations of PM₁₀

Figures 7.1a and 7.1b show contours of the predicted annual average PM₁₀ concentrations for 2010 without any proposed development and with the Lots Road Power Station and Land at Thames Avenue development, respectively. Figures 7.2a and 7.2b show the predicted 97.26th percentiles of 24-hour average PM₁₀ concentrations for the 'without' and 'with development' scenarios respectively.

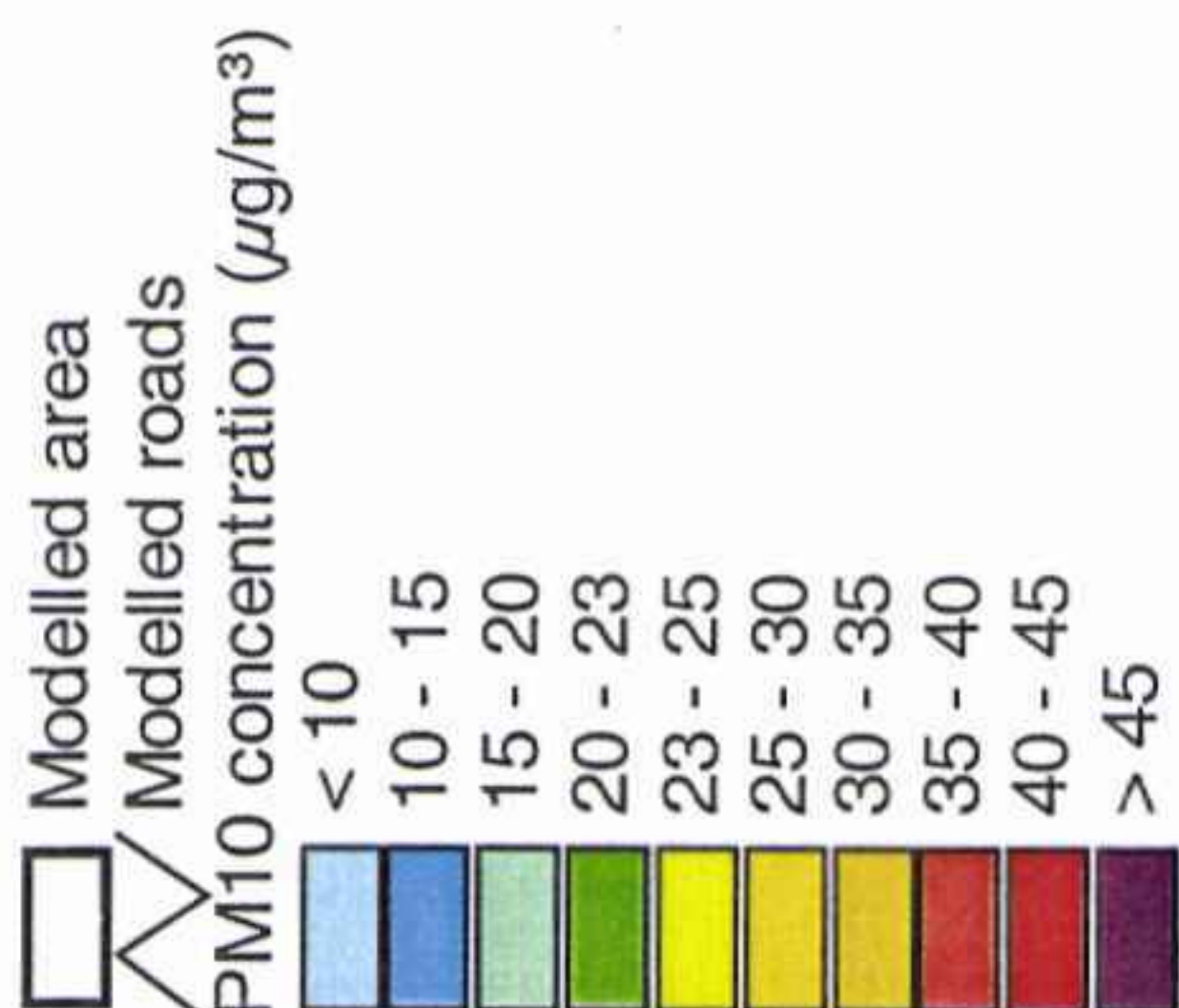
The annual average PM₁₀ concentrations are predicted to exceed the provisional AQS objective value of 23µg/m³ over the whole study area. Along the major roads concentrations are predicted to be greater than 25µg/m³. With the addition of the traffic due the proposed development, concentrations are predicted to increase slightly around the development but elsewhere the impact is predicted to be insignificant.

The 97.26th percentiles of 24-hour average PM₁₀ concentrations are predicted to exceed the provisional AQS objective value of 50µg/m³ over the whole study area. The impact of the proposed development on the 97.26th percentiles of 24-hour average PM₁₀ concentrations is predicted to be insignificant.

Concentrations have also been calculated at three example receptor points near the proposed development, as shown in Figure 3.1. Each receptor is located about 10m from the edge of the nearest road. Table 7.1 shows predicted PM₁₀ concentrations at the three example receptor points. The table shows that there are no significant increases predicted; in fact the annual average and 97.26th percentile PM₁₀ concentrations are predicted to increase by less than 0.1µg/m³ due to the proposed development.

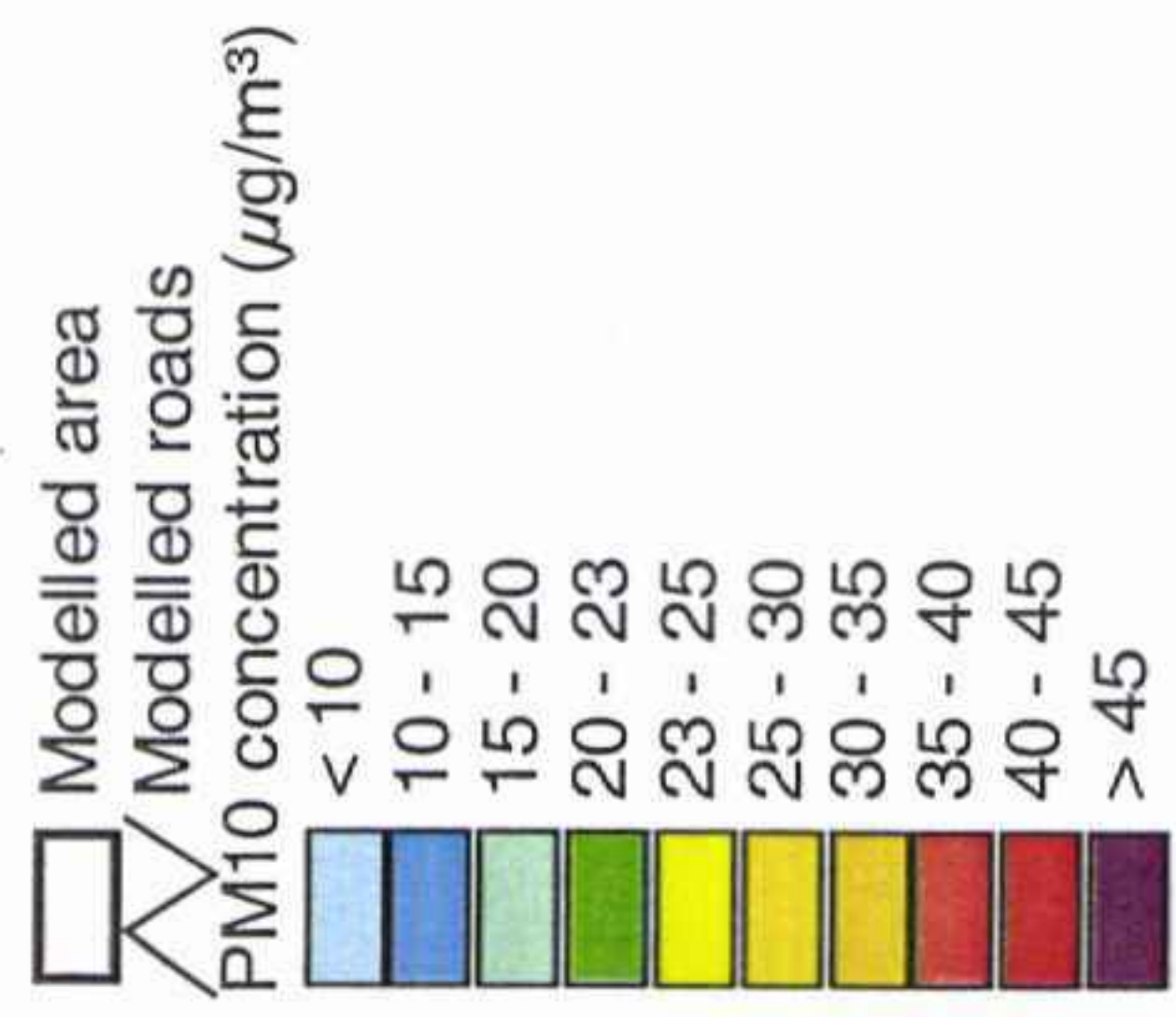
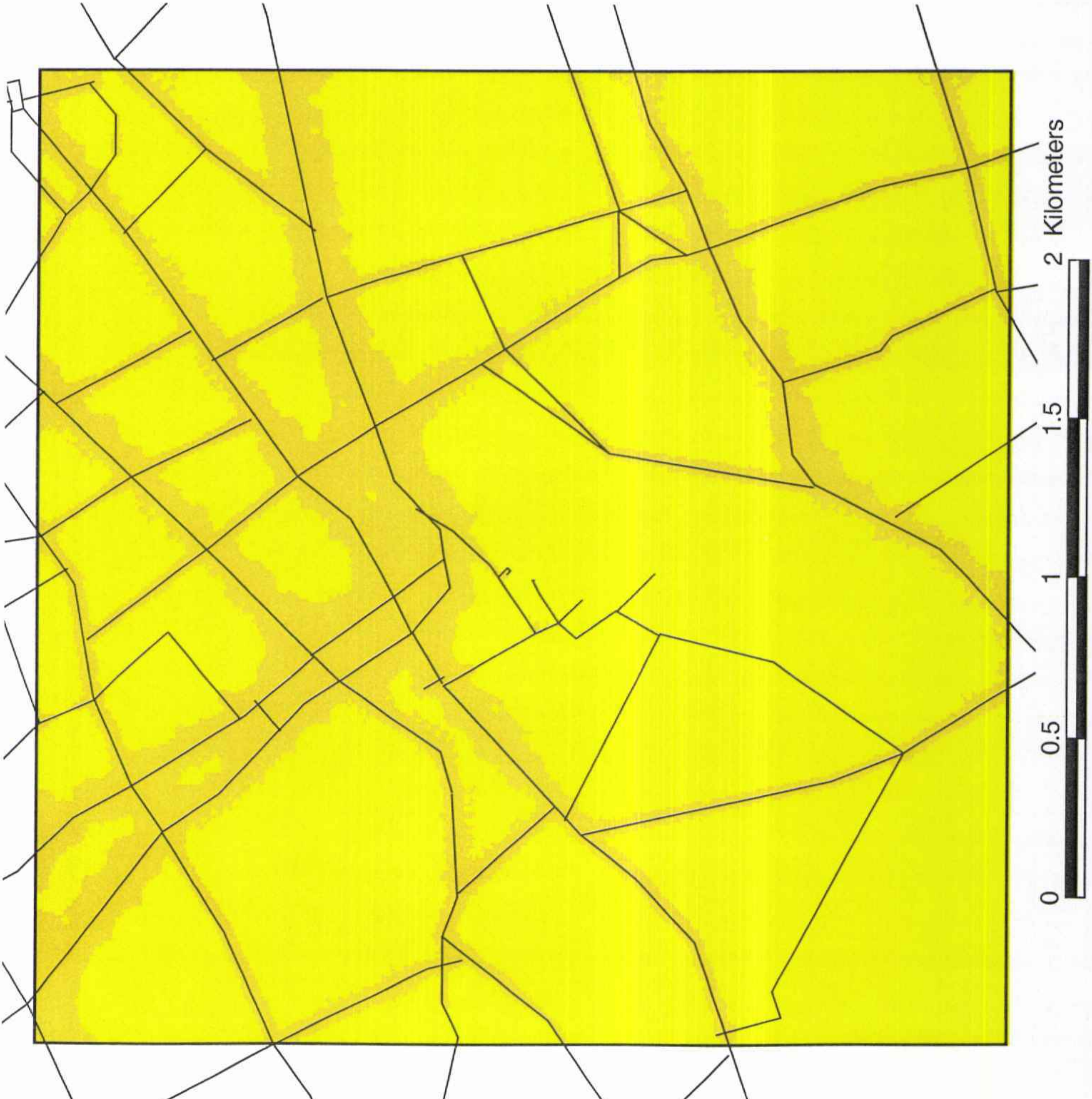
Table 7.1. Predicted PM₁₀ concentrations at example receptor locations (µg/m³)

	Lots Road East		Lots Road West		Chelsea Harbour Drive	
	Without dev.	With dev.	Without dev.	With dev.	Without dev.	With dev.
Annual average	24.9	24.9	24.9	24.9	24.9	24.9
97.26 th percentile	51.1	51.1	51.1	51.1	51.2	51.2

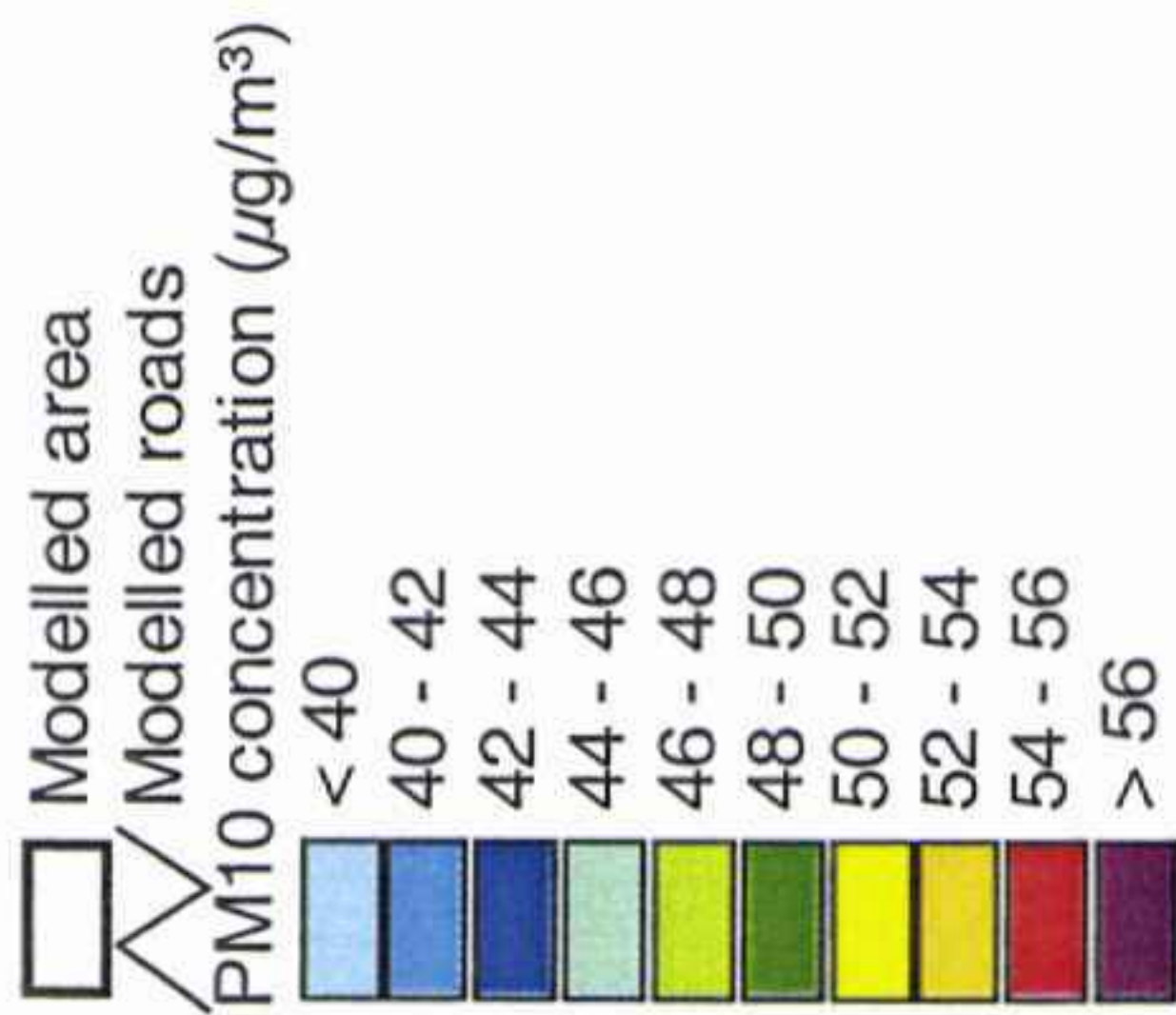
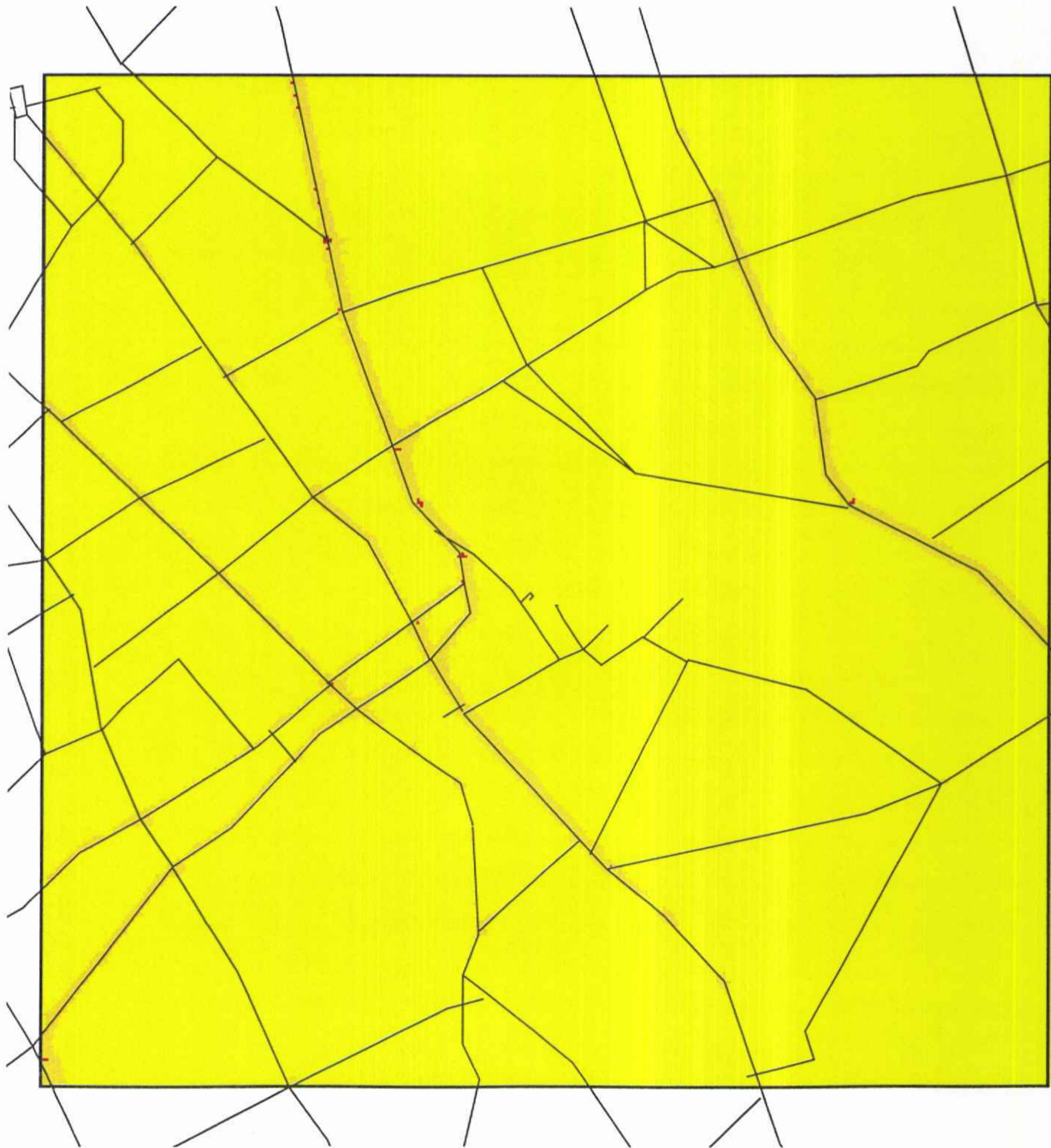


CERC
Circadian Ltd
Predicted annual average PM10 concentrations (ppb) 2010 without proposed development
Figure 7.1a





CERC
Circadian Ltd
Predicted annual average PM10 concentrations (ppb) 2010 with proposed development
Figure 7.1b



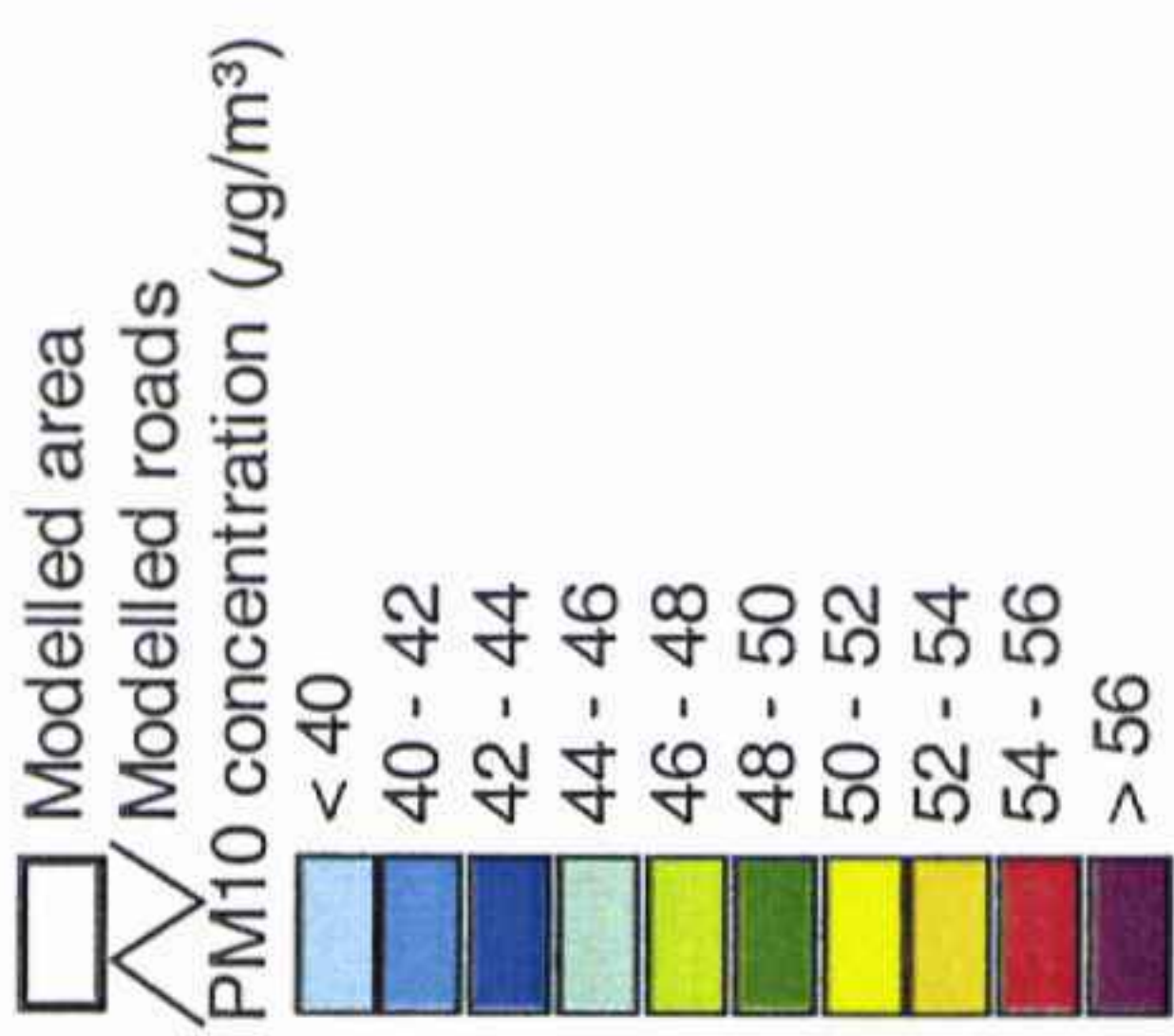
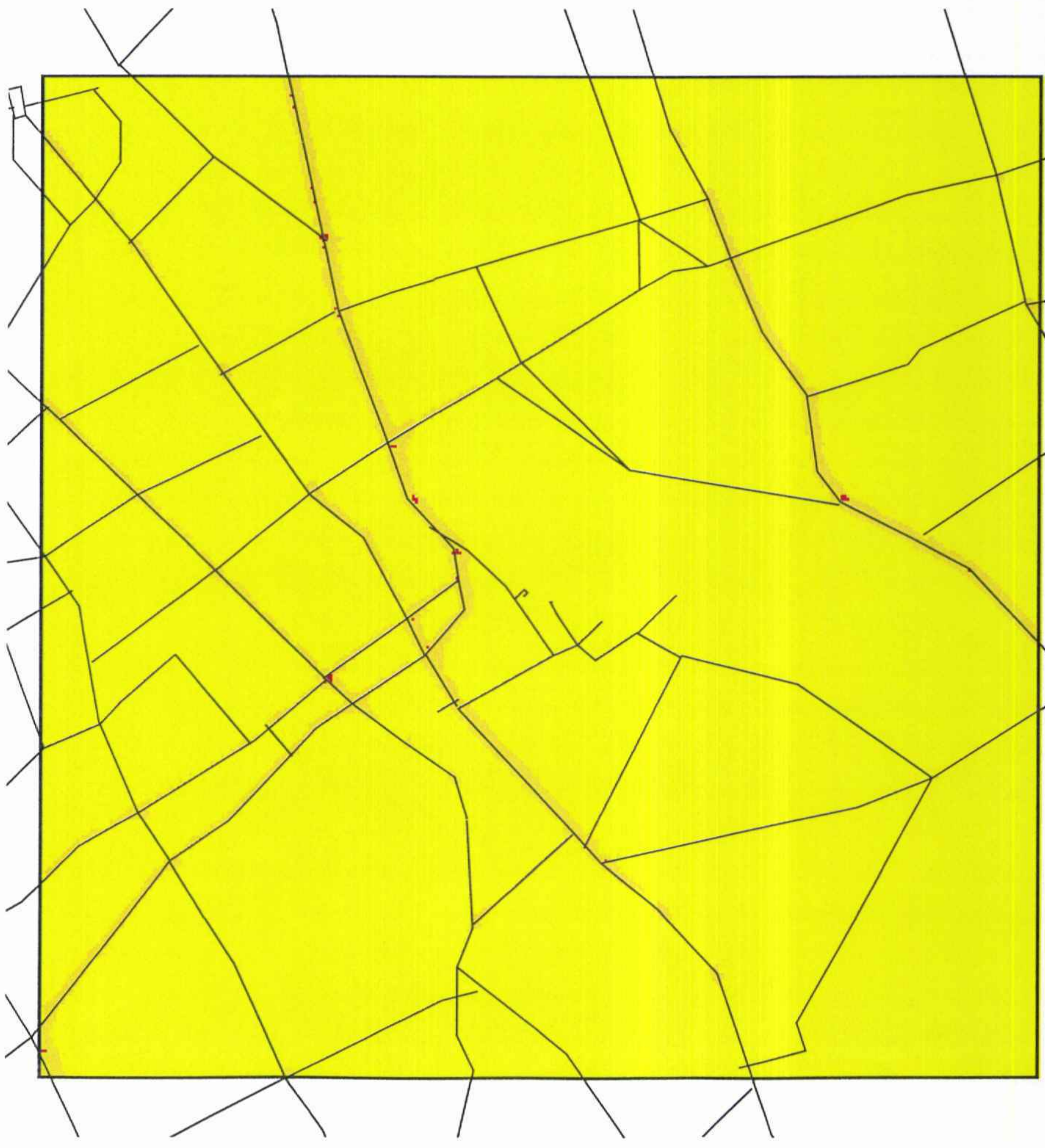
CERC

Circadian Ltd

Predicted 97.26th percentile
 of 24-hour average
 PM10 concentrations (ppb)
 2010 without proposed
 development

Figure 7.2a

0 0.5 1 1.5 2 Kilometers



CERC
Circadian Ltd
Predicted 97.26th percentile of 24-hour average PM10 concentrations (ppb) 2010 with proposed development
Figure 7.2b

7.2 Predicted Concentrations of NO₂

Figures 7.3a and 7.3b show the predicted annual average concentrations of NO₂ for 2010 without any proposed development and with the Lots Road Power Station and Land at Thames Avenue development respectively. Figures 7.4a and 7.4b show the predicted 99.79th percentiles of hourly average concentrations for the 'without' and 'with development' scenarios respectively.

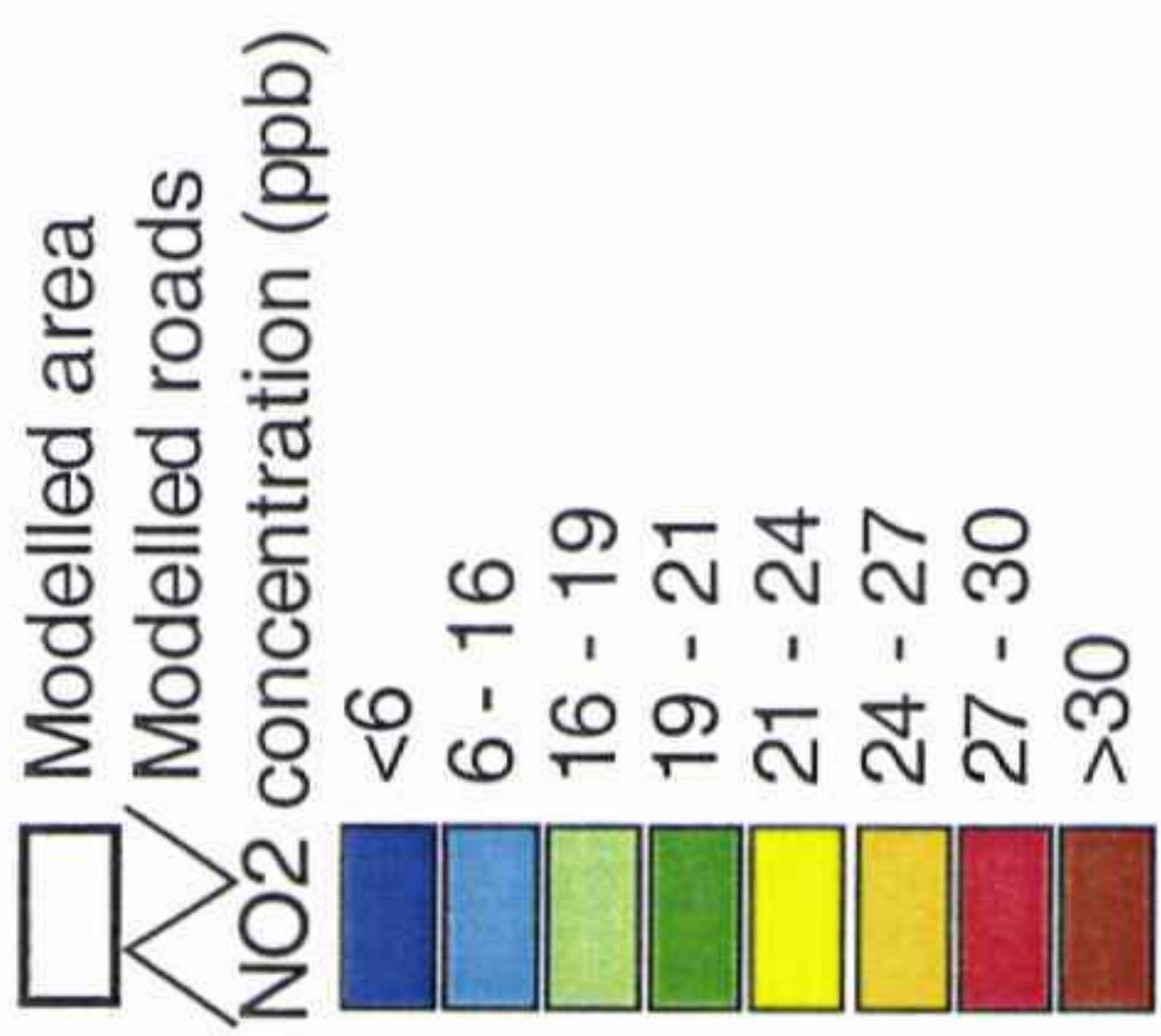
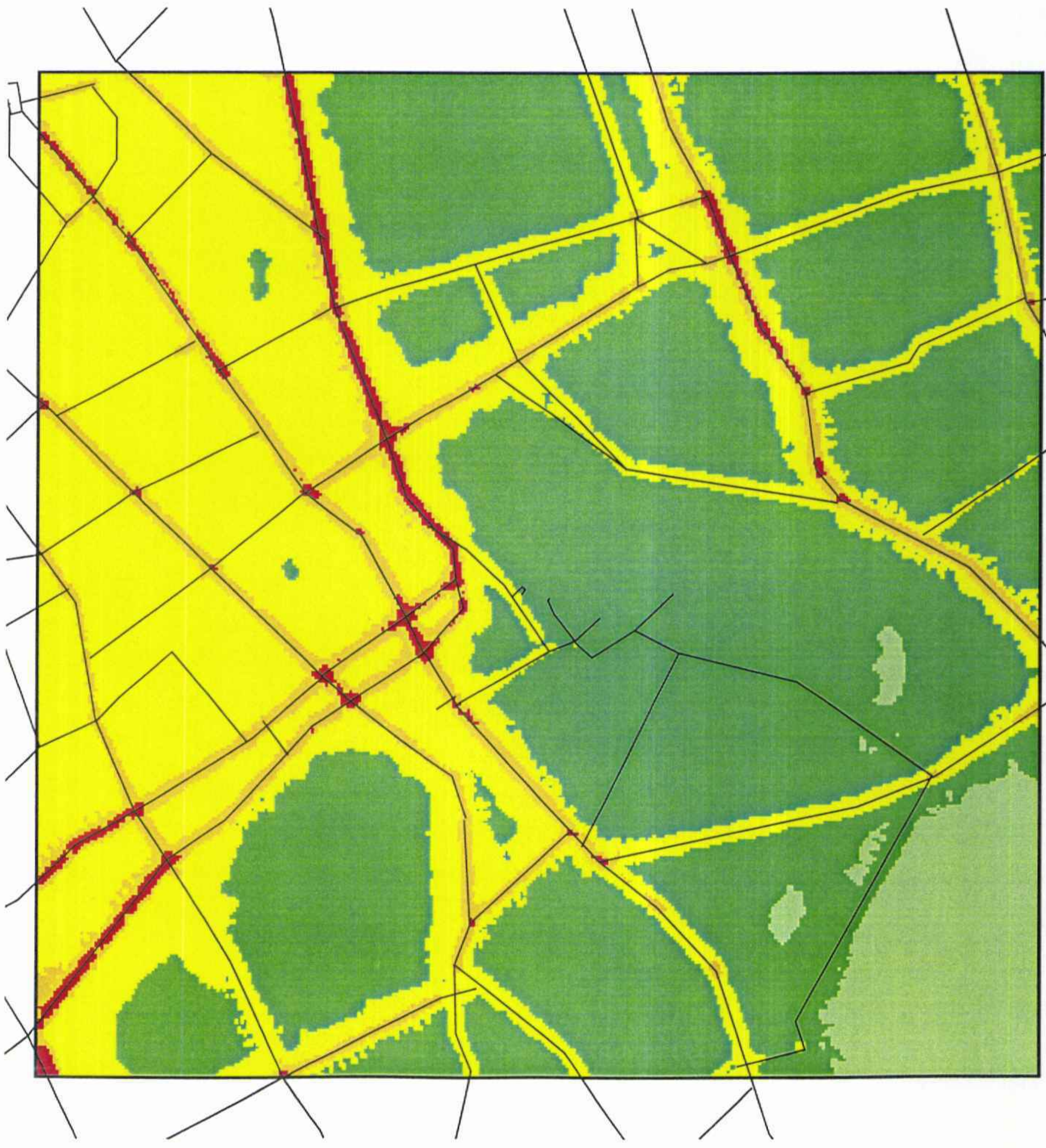
With no development, annual average NO₂ concentrations are predicted to exceed the EU limit value of 21ppb over a large part of the modelled area. With the addition of the proposed development, concentrations are predicted to increase slightly near the site but elsewhere the impact is predicted to be insignificant. The area over which the EU limit value is exceeded is predicted to grow slightly, for example along Chelsea Harbour Drive, although any growth is limited to the immediate vicinity of the development site.

With no development, the 99.79th percentile of hourly average NO₂ concentrations is not predicted to exceed the EU limit value of 105ppb anywhere in the study area. The addition of the proposed development is not predicted to result in significant increases in the 99.79th percentiles of hourly average NO₂ concentrations anywhere in the modelled area.

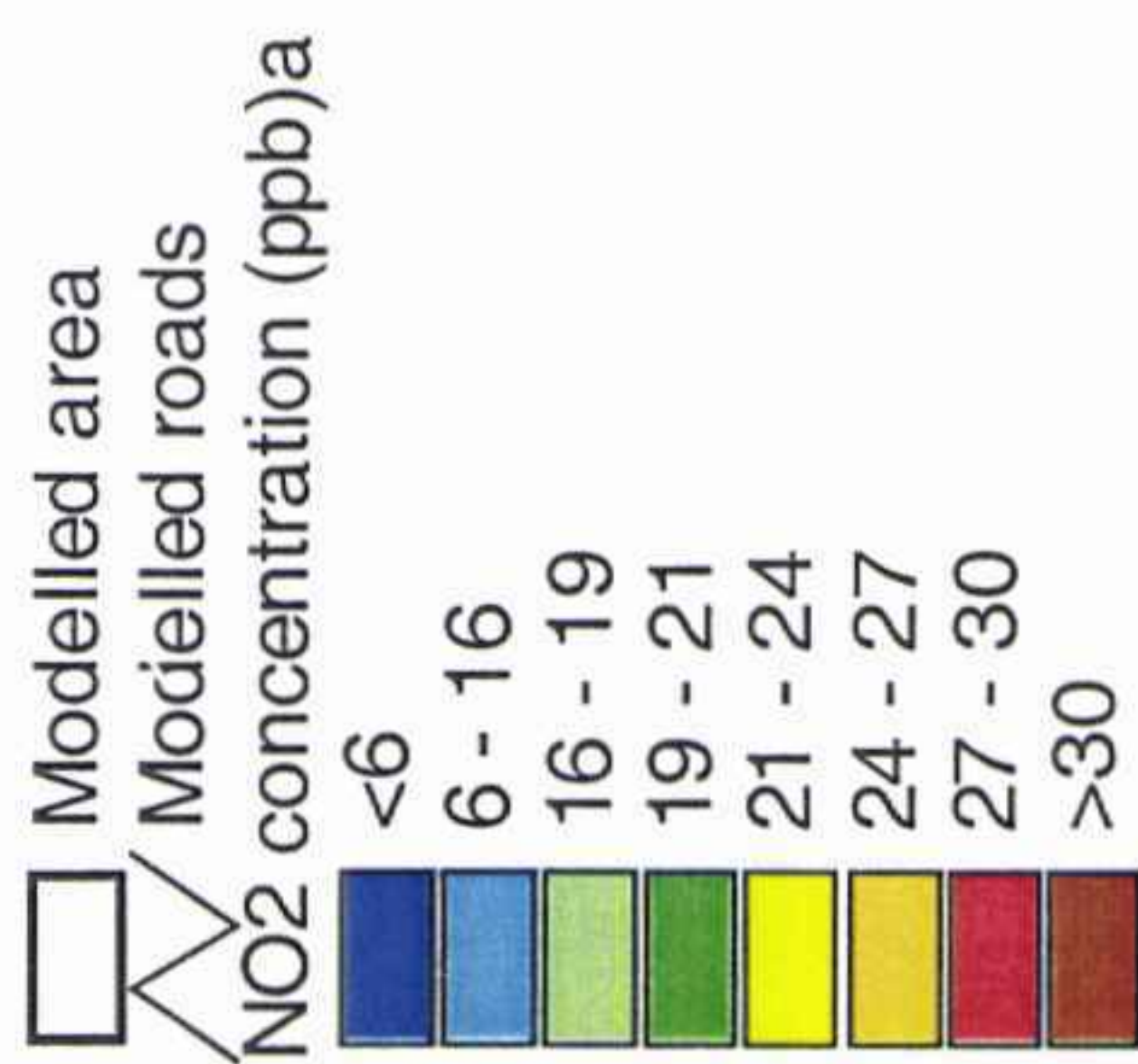
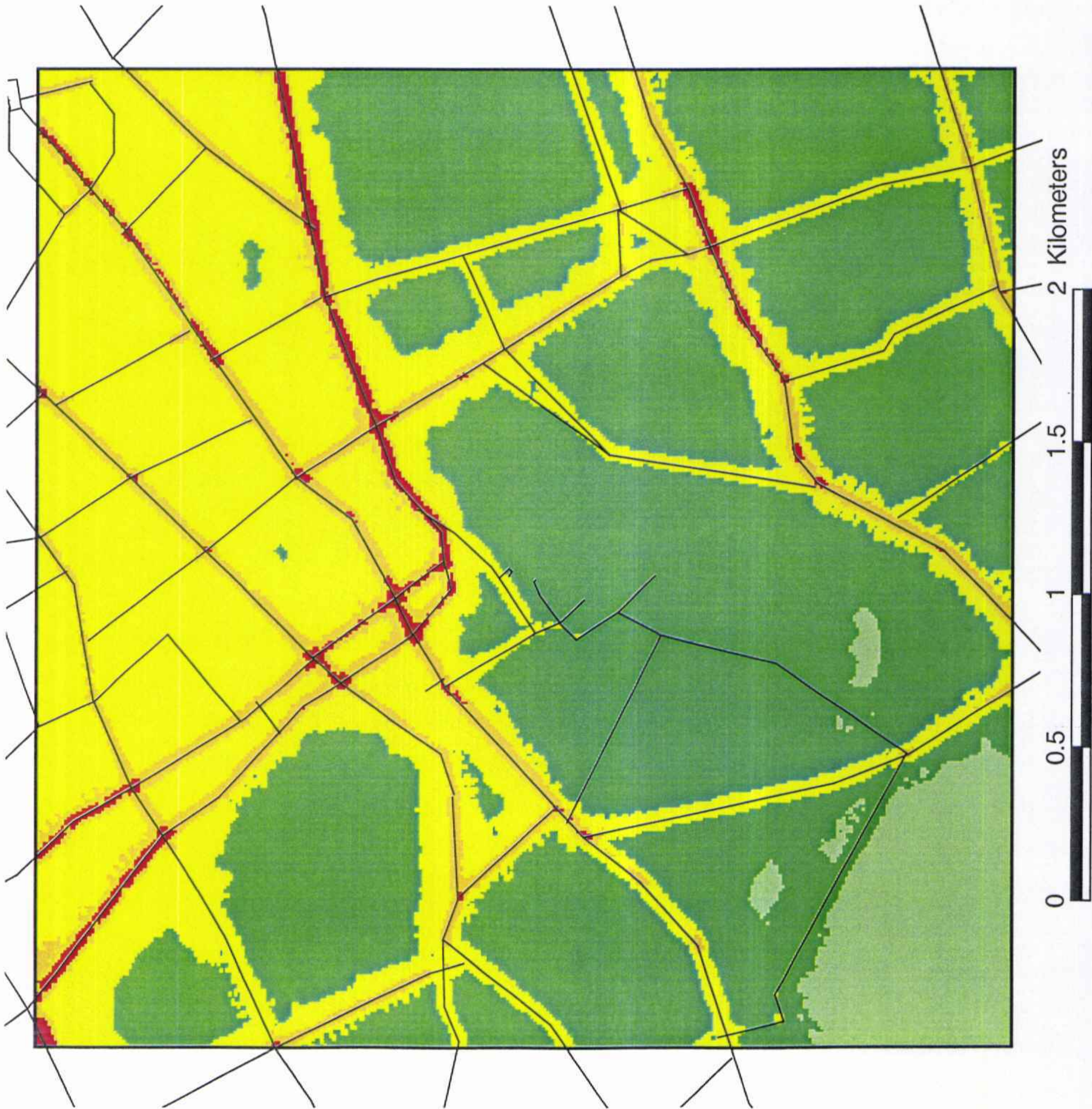
Table 7.2 shows predicted NO₂ concentrations at the three example receptor points with and without the proposed development. The table shows that concentrations near the proposed development are predicted to increase slightly with the addition of traffic due to the development. The maximum predicted increase in annual average NO₂ concentrations at the three locations is 0.1ppb, while the maximum predicted increase in the 99.79th percentile of hourly average concentrations is 0.2ppb.

Table 7.2: Predicted NO₂ concentrations at example receptor locations (ppb)

	Lots Road East		Lots Road West		Chelsea Harbour Drive	
	Without dev.	With dev.	Without dev.	With dev.	Without dev.	With dev.
Annual average	20.9	21.0	21.1	21.2	20.0	20.1
99.79 th percentile	76.0	76.0	77.6	77.6	75.3	75.5



CERC
Circadian Ltd
Predicted annual average NO2 concentrations (ppb) 2010 without proposed development
Figure 7.3a

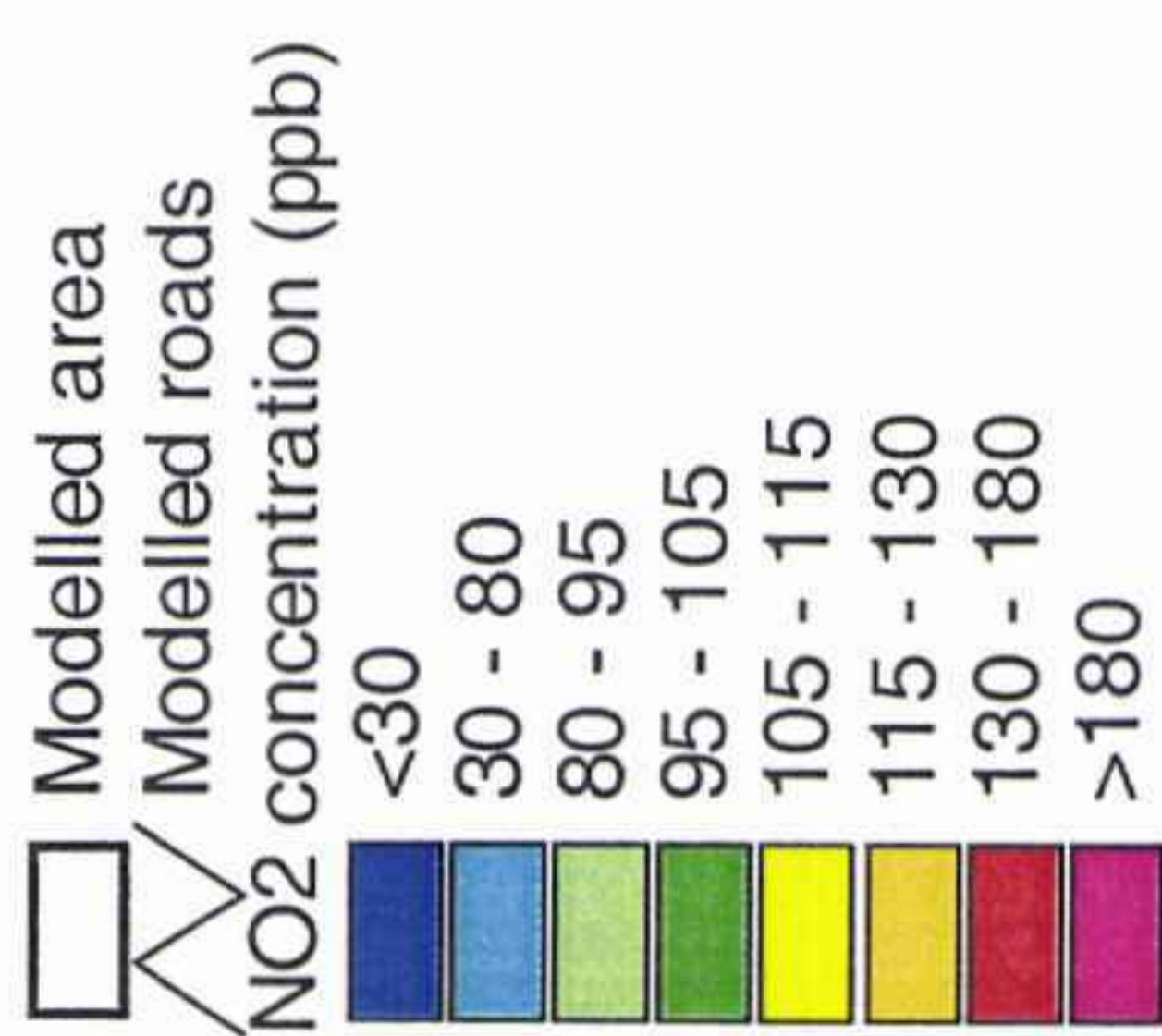
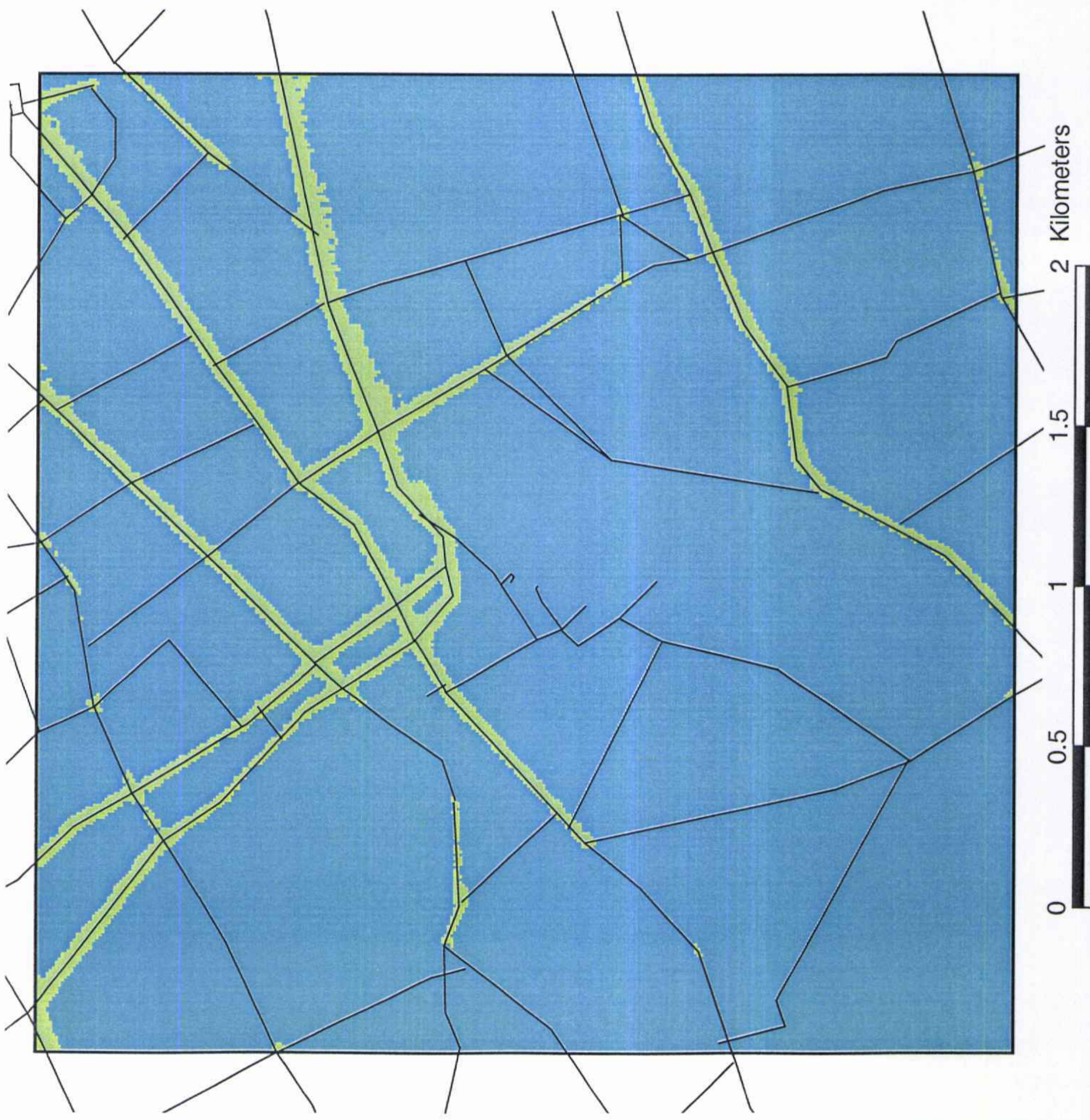


CERC

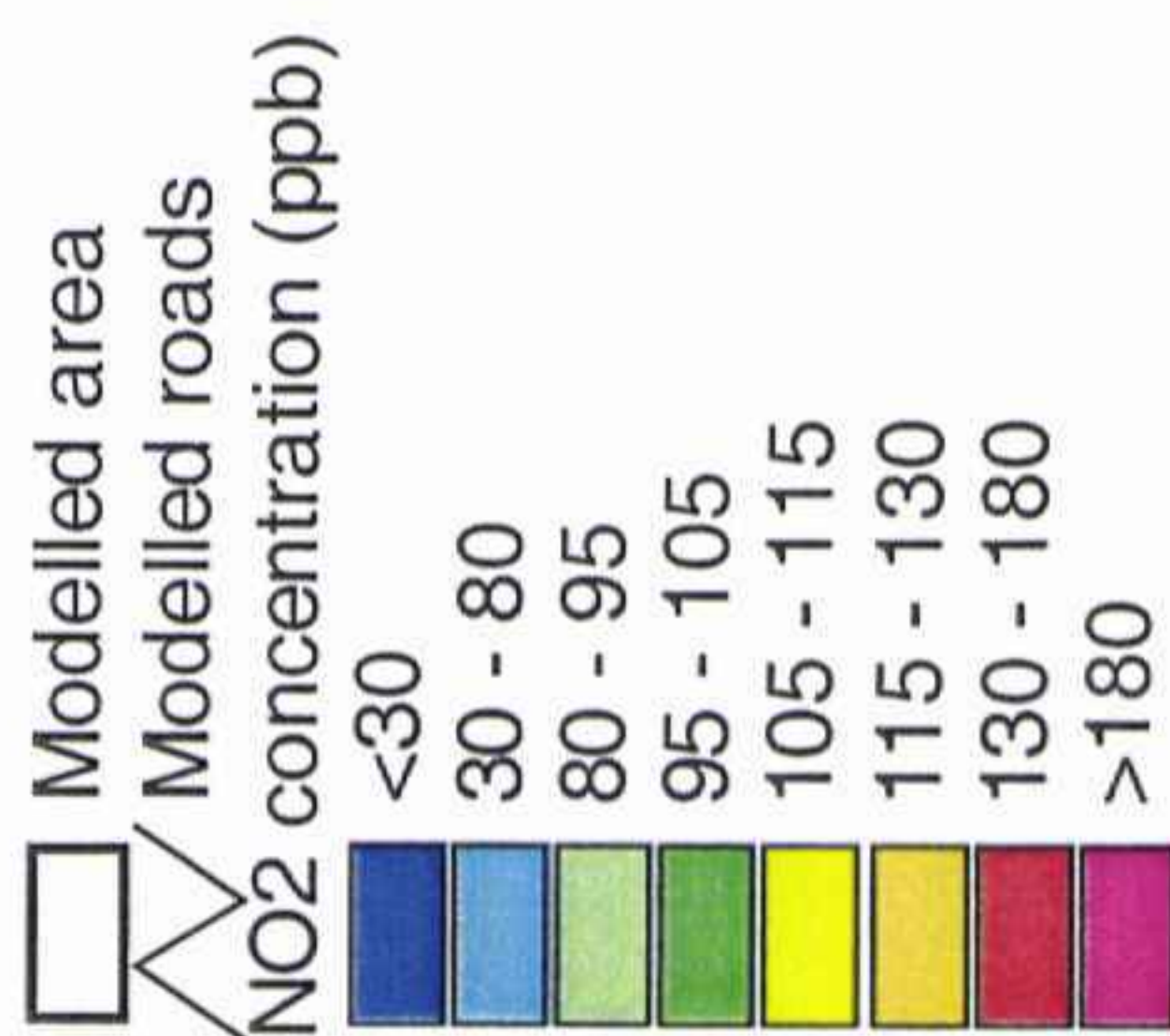
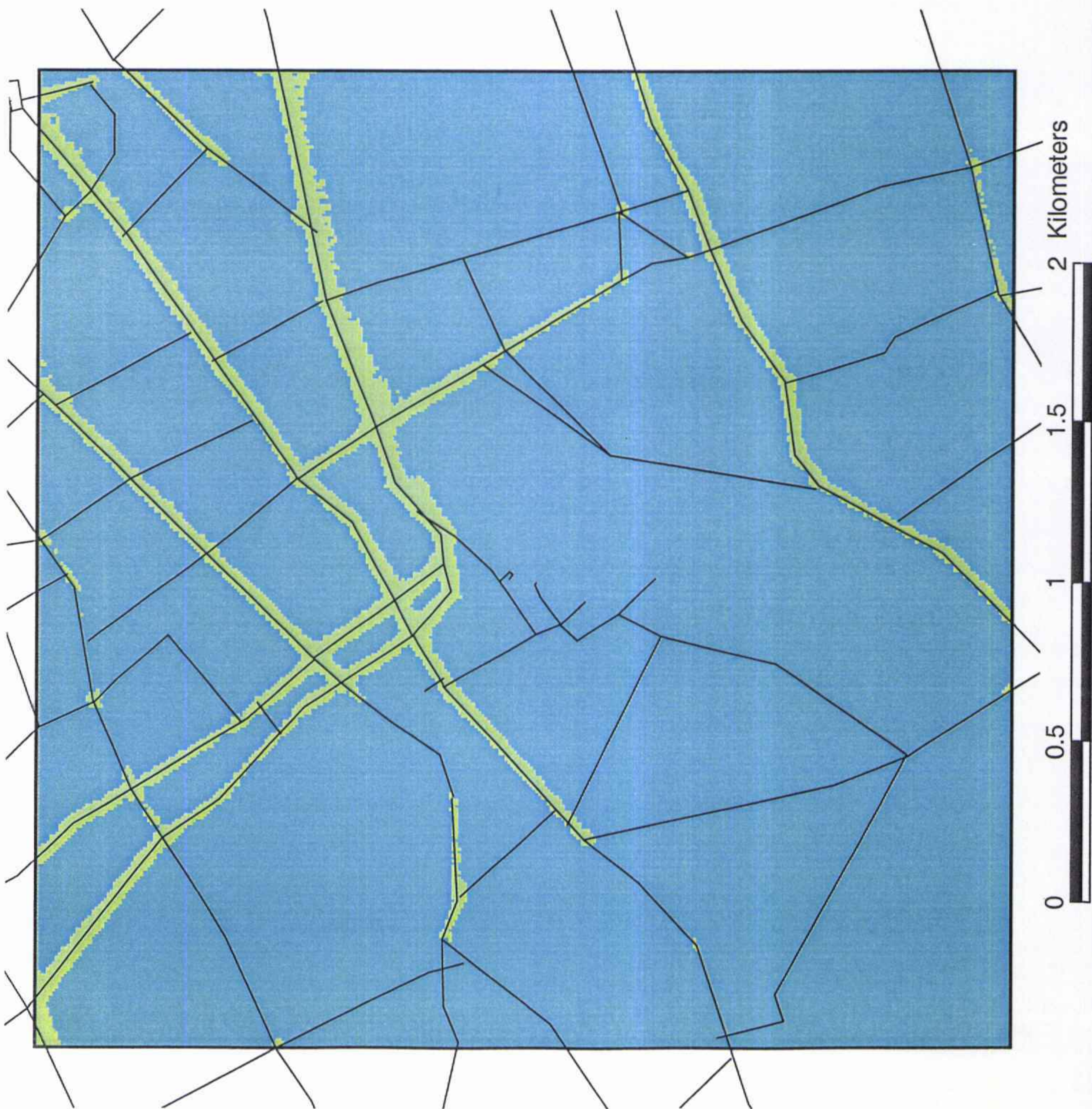
Circadian Ltd

Predicted annual average
NO₂ concentrations (ppb)
2010 with proposed
development

Figure 7.3b



CERC
Circadian Ltd
Predicted 99.79th percentile of hourly average NO2 concentrations (ppb) 2010 without proposed development
Figure 7.4a



CERC

Circadian Ltd

Predicted 99.79th percentile
of hourly average
NO2 concentrations (ppb)
2010 with proposed
development

Figure 7.4b

8. Discussion

Modelling of NO_2 and PM_{10} has been carried out in the area surrounding the proposed Lots Road Power Station and Land at Thames Avenue development. Symonds Group Ltd provided traffic data for the roads immediately around the site, and data for the other roads surrounding the development were taken from the GLA emissions inventory for London, February 2002. Emissions from other sources in the area and from the rest of London were also considered, and data for these were also taken from the GLA inventory.

With no development, modelling of PM_{10} has shown that concentrations are predicted to exceed the provisional AQS objective values for both the annual average and the 97.26th percentile of 24-hour average PM_{10} concentrations. The modelling shows that the addition of the development traffic is predicted to result in minor increases in concentrations near the site although the impact further from the site is predicted to be insignificant. The annual average and the 97.26th percentile of 24-hour average PM_{10} concentrations are predicted to increase by less than $0.1\mu\text{g}/\text{m}^3$ at the three example receptor locations close to the development.

With no development, annual average concentrations of NO_2 are predicted to exceed the EU limit value of 21ppb over a large part of the modelled area. The addition of the proposed development is predicted to result in minor increases in the concentrations near the site resulting in a small growth in the area of exceedence of the limit value. Any growth in the area of exceedence is predicted to be limited to the immediate vicinity of the site. The maximum increase in annual average NO_2 concentrations at three example receptor locations is 0.1ppb.

With no development, the 99.79th percentiles of hourly average concentrations of NO_2 are not predicted to exceed the EU limit value anywhere in the study area. The addition of the proposed development is not predicted to result in significant increases in the 99.79th percentile concentrations. The maximum predicted increase in concentrations at the three example receptor locations is 0.2ppb.

APPENDIX A: Summary of ADMS-Urban

ADMS-Urban is a practical air pollution modelling tool, which has been developed to provide detailed predictions of pollution concentrations for all sizes of study area. The model can be used to look at concentrations near a single road junction or over a region extending across the whole of a major city. ADMS-Urban has therefore been extensively used for Stage 3 of the Review and Assessment of Air Quality carried out by Local Authorities in the UK, and for the follow-up work required in Stage 4 and the development of Action Plans for improving air quality. The following is a summary of the capabilities and validation of ADMS-Urban. More details can be found on the CERC web site at www.cerc.co.uk.

ADMS-Urban is a development of the Atmospheric Dispersion Modelling System (ADMS) which has been developed to investigate the impacts of emissions from industrial facilities. ADMS-Urban allows full characterisation of the wide variety of emissions in urban areas, including an extensively validated road traffic emissions model. It also boasts a number of other features, which include consideration of:

- the effects of vehicle movement on the dispersion of traffic emissions;
- the behaviour of material released into street-canyons;
- the chemical reactions occurring between nitrogen oxides, ozone and Volatile Organic Compounds (VOCs);
- the pollution entering a study area from beyond its boundaries;
- the effects of complex terrain on the dispersion of pollutants; and
- the effects of a building on the dispersion of pollutants emitted nearby.

More details of these features are given below.

Studies of extensive urban areas are necessarily complex, requiring the manipulation of large amounts of data. To allow users to cope effectively with this requirement, ADMS-Urban has been designed to operate in the widely familiar PC environment, under Windows NT. The manipulation of data is further facilitated by the possible integration of ADMS-Urban with a Geographical Information System (GIS) such as MapInfo or ArcView, and with the CERC Emissions Inventory Toolkit, EMIT.

Dispersion Modelling

ADMS and ADMS-Urban use boundary layer similarity profiles to parameterise the variation of turbulence with height within the boundary layer, and the use of a skewed-Gaussian distribution to determine the vertical variation of pollutant concentrations in the plume under convective conditions.

The main dispersion modelling features of ADMS-Urban are as follows:

- ADMS-Urban is an **advanced dispersion model** in which the boundary layer structure is characterised by the height of the boundary layer and the Monin-Obukhov length, a length scale dependent on the friction velocity and the heat flux at the surface. This method supercedes methods based on Pasquill Stability Categories, as used in, for example, Caline and ISC. Concentrations are calculated hour by hour and are fully dependent on prevailing weather conditions.
- For convective conditions, a **non-Gaussian vertical profile of concentration** allows for the skewed nature of turbulence within the atmospheric boundary layer, which can lead to high concentrations near to the source.
- A **meteorological pre-processor** calculates boundary layer parameters from a variety of input data, typically including date and time, wind speed and direction, surface temperature and cloud cover. Meteorological data may be raw hourly averaged or statistically analysed data.

Emissions

Emissions into the atmosphere across an urban area typically come from a wide variety of sources. There are likely to be industrial emissions from chimneys as well as emissions from road traffic and domestic heating systems. To represent the full range of emissions configurations, the explicit source types available within ADMS-Urban are:

- **Industrial points**, for which plume rise and stack downwash are included in the modelling.
- **Roads**, for which emissions are specified in terms of vehicle flows and the additional initial dispersion caused by moving vehicles is also taken into account.
- **Areas**, where a source or sources is best represented as uniformly spread over an area.
- **Volumes**, where a source or sources is best represented as uniformly spread throughout a volume.

In addition, sources can also be modelled as a regular grid of emissions. This allows the contributions of large numbers of minor sources to be efficiently included in a study while the majority of the modelling effort is used for the relatively few significant sources.

ADMS-Urban can be used in conjunction with CERC's Emissions Inventory Toolkit, EMIT, which facilitates the management and manipulation of large and complex data sets into usable emissions inventories.

Presentation of Results

The results from the model can be based on a wide range of averaging times, and include rolling averages. Maximum concentration values and percentiles can be calculated where appropriate meteorological input data have been input to the model. This allows ADMS-Urban to be used to calculate concentrations for direct comparison with existing air quality limits, guidelines and objectives, in whatever form they are specified.

ADMS-Urban can be integrated with the ArcView or MapInfo GIS to facilitate both the compilation and manipulation of the emissions information required as input to the model and the interpretation and presentation of the air quality results provided.

Complex Effects - Street Canyons

The *Operational Street Pollution Model (OSPM)*¹, developed by the Danish National Environmental Research Institute (NERI), has been incorporated within ADMS-Urban. The OSPM uses a simplified flow and dispersion model to simulate the effects of the vortex that occurs within street canyons when the wind-flow above the buildings has a component perpendicular to the direction of the street. The model takes account of vehicle induced turbulence. The model has been validated against Danish and Norwegian data.

Complex Effects - Chemistry

ADMS-Urban includes the *Generic Reaction Set (GRS)*² atmospheric chemistry scheme. The original scheme has seven reactions, including those occurring between nitrogen oxides and ozone. The remaining reactions are parameterisations of the large number of reactions involving a wide range of Volatile Organic Compounds (VOCs). In addition, an eighth reaction has been included within ADMS-Urban for the situation when high concentrations of nitric oxide (NO) can convert to nitrogen dioxide (NO₂) using molecular oxygen.

In addition to the basic GRS scheme, ADMS-Urban also includes a trajectory model³ for use when modelling large areas. This permits the chemical conversions of the emissions and background concentrations upwind of each location to be properly taken into account.

¹ Hertel, O., Berkowicz, R. and Larssen, S., 1990, 'The Operational Street Pollution Model (OSPM).' *18th International meeting of NATO/CCMS on Air Pollution Modelling and its Applications*. Vancouver, Canada, pp741-749.

² Venkatram, A., Karamchandani, P., Pai, P. and Goldstein, R., 1994, 'The Development and Application of a Simplified Ozone Modelling System.' *Atmospheric Environment*, Vol 28, No 22, pp3665-3678.

³ Singles, R.J., Sutton, M.A. and Weston, K.J., 1997, 'A multi-layer model to describe the atmospheric transport and deposition of ammonia in Great Britain.' In: *International Conference on Atmospheric Ammonia: Emission, Deposition and Environmental Impacts*. *Atmospheric Environment*, Vol 32, No 3.

Complex Effects - Terrain

As well as the effect that complex terrain has on wind direction and, consequently, pollution transport, it can also enhance turbulence and therefore increase dispersion. These effects are taken into account in ADMS-Urban using the FLOWSTAR⁴ model developed by CERC.

Data Comparisons – Model Validation

ADMS-Urban is a development of the Atmospheric Dispersion Modelling System (ADMS), which is used throughout the UK by industry and the Environment Agency to model emissions from industrial sources. ADMS has been subject to extensive validation, both of individual components (e.g. point source, street canyon, building effects and meteorological pre-processor) and of its overall performance.

ADMS-Urban has been extensively tested and validated against monitoring data for large urban areas in the UK, including Central London and Birmingham, for which a large scale project was carried out on behalf of the DETR (now DEFRA).

Further details of ADMS-Urban and model validation, including a full list of references, are available from the CERC web site at www.cerc.co.uk.

⁴ Carruthers D.J., Hunt J.C.R. and Weng W-S. 1988. 'A computational model of stratified turbulent airflow over hills – FLOWSTAR I.' Proceedings of Envirosoft. In: *Computer Techniques in Environmental Studies*, P. Zanetti (Ed) pp 481-492. Springer-Verlag.

Appendix A3
Modelling Validation

2 January, 2003

James Blake
Waterman Environmental
Delphian House
Riverside
New Bailey Street
Manchester M3 5AP

Dear James

Validation report for the Royal Borough of Kensington & Chelsea

In response to your request, please find enclosed a description of the validation work carried out as part of our Central London study.

This work is part of the air quality modelling study carried out for the nine boroughs comprising the Central London Cluster Group for the Stage 4 Review and Assessment of Air Quality. The enclosed description is Section 7 of the final report provided to the Royal Borough of Kensington & Chelsea in June 2002.

Comparisons of modelled and measured NO₂ and PM₁₀ data for 1999 were made at monitoring sites within the Central London Cluster Group area. The comparison shows good agreement between modelled and measured data at the majority of monitoring sites, indicating that the modelling approach and emissions data are suitable for the current situation. Provided that the estimates of emissions for future years are accurate, the predicted future concentrations will therefore give a robust indication of whether or not the AQS objectives will be met by 2004 and 2005.

Please let me know if you need any further information about this.

Yours sincerely

Sarah Wilkinson
Consultancy Team Leader

CERC Ltd.
3 King's Parade
Cambridge
CB2 1SJ

7. Current situation

For the current situation the model set-up has been validated by comparing predicted concentrations with measured values at monitoring sites with the modelled area. The monitoring sites considered in this study are shown in Figure 7.1. Table 7.1 lists the monitoring sites and shows the data availability for each pollutant.

Table 7.1. Monitoring sites

Monitoring site	Borough	Data capture (%)	
		NO ₂	PM ₁₀
Cromwell Road	Kensington and Chelsea	98	-
Southwark Urban	Southwark	93	-
Southwark Roadside	Southwark	50	-
Lewisham	Lewisham	95	-
Hackney	Hackney	71	-
Bridge Place	Westminster	86	-
Marylebone Road	Westminster	93	95
North Kensington	Kensington and Chelsea	97	99
Swiss Cottage	Camden	97	94
West London	Kensington and Chelsea	98	-
Islington	Islington	81	80
Senator House	Corporation	95	-
Bloomsbury	Camden	92	96
Oxford Street	Westminster	-	94
Hyde Park	Westminster	-	83

7.1 NO₂ concentrations

Tables 7.2 and 7.3 show the measured and modelled annual average and 99.79th percentile of hourly average NO_x and NO₂ concentrations. Figures 7.2 and 7.3 show the modelled annual average NO_x and NO₂ concentrations plotted against the measured values together with lines of equality and lines showing over- and under-prediction by a factor of two.

Table 7.2. Measured and modelled NO_x concentrations

Monitoring site	Annual average (µg/m ³)		99.79 th percentile (µg/m ³)	
	Monitored	ADMS	Monitored	ADMS
Cromwell Road	199.2	199.2	689.4	860.8
Southwark Urban	96.6	81.6	525.3	667.5
Southwark Roadside	174.8	193.8	717.0	879.9
Lewisham	108.9	93.0	582.2	638.3
Hackney	103.9	92.1	694.8	692.5
Bridge Place	90.1	88.8	476.5	635.0
Marylebone Road	287.2	270.7	1028.0	1038.9
North Kensington	68.7	82.3	538.1	636.7
Swiss Cottage	158.8	153.4	742.6	1100.5
West London	83.7	73.4	515.0	637.4
Islington	72.5	85.8	522.1	658.3
Senator House	101.7	112.2	555.2	789.7
Bloomsbury	111.2	95.4	571.7	738.4

Table 7.3. Measured and modelled NO₂ concentrations

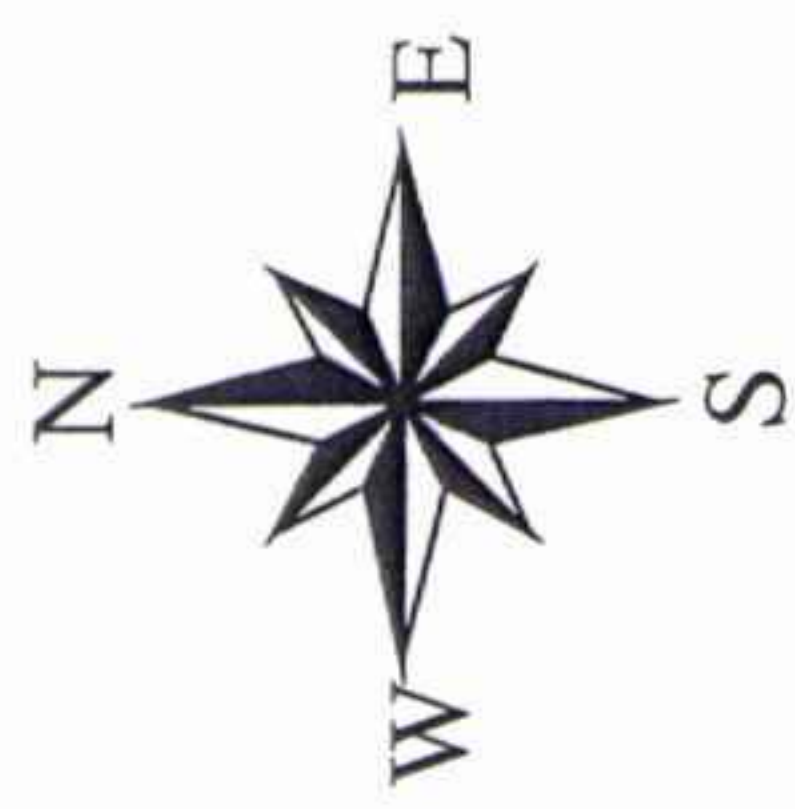
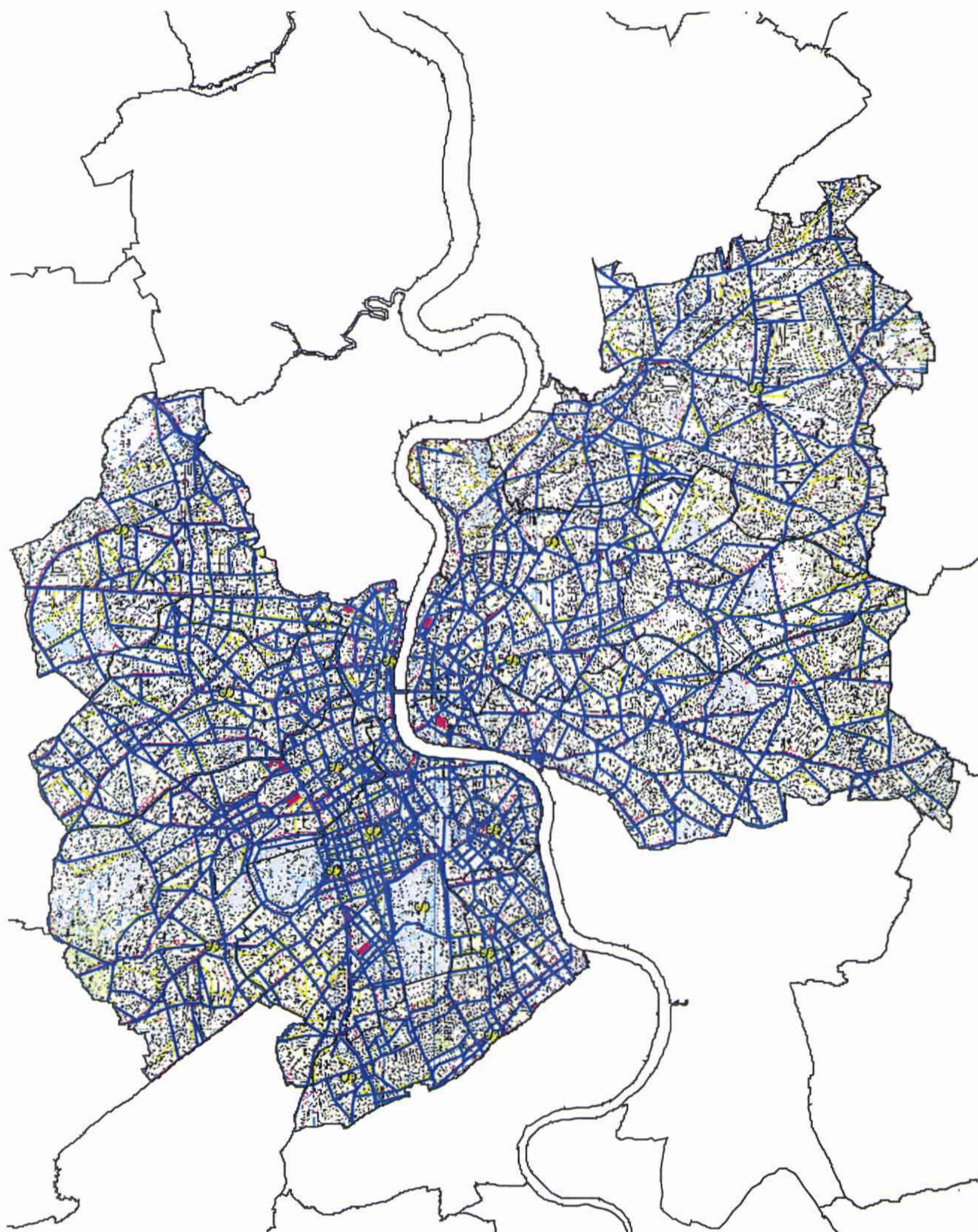
Monitoring site	Annual average (µg/m ³)		99.79 th percentile (µg/m ³)	
	Monitored	ADMS	Monitored	ADMS
Cromwell Road	92.5	76.9	196.7	240.4
Southwark Urban	55.8	48.5	147.1	205.8
Southwark Roadside	74.7	73.2	176.3	223.7
Lewisham	53.9	54.0	131.8	196.6
Hackney	61.0	55.1	188.2	200.3
Bridge Place	62.8	52.5	150.8	192.0
Marylebone Road	90.8	84.7	228.7	243.1
North Kensington	45.7	51.0	139.4	179.8
Swiss Cottage	65.6	69.5	179.5	237.3
West London	54.7	46.9	142.8	178.4
Islington	53.7	51.3	128.4	185.8
Senator House	62.0	60.1	200.8	225.9
Bloomsbury	66.8	55.7	188.6	208.2

7.2 PM₁₀ concentrations

Table 7.4 shows the measured and modelled annual average and 90.41st percentile of 24-hour average PM₁₀ concentrations. Figure 7.4 shows the modelled annual average PM₁₀ concentrations plotted against the measured values with the line of equality and lines showing over- and under prediction by a factor of two.

Table 7.4. Measured and modelled PM₁₀ concentrations

Monitoring site	Annual average (µg/m ³)		90.41 st percentile (µg/m ³)	
	Monitored	ADMS	Monitored	ADMS
Marylebone Road	46.0	47.7	66.1	65.9
North Kensington	26.8	26.8	41.9	39.0
Swiss Cottage	34.0	33.1	49.5	47.3
Islington	27.5	27.2	43.0	39.4
Bloomsbury	28.3	28.3	41.8	40.4
Oxford Street	42.6	38.7	64.7	54.4
Hyde Park	23.9	27.3	42.3	38.4



Monitoring sites
Major Roads

CERC
Central London Cluster Group
Locations of monitoring sites in Central London
Figure 7.1

15 Kilometers

10

5

0



Figure 7.2 Comparison of measured and modelled NO_x concentrations for 1999

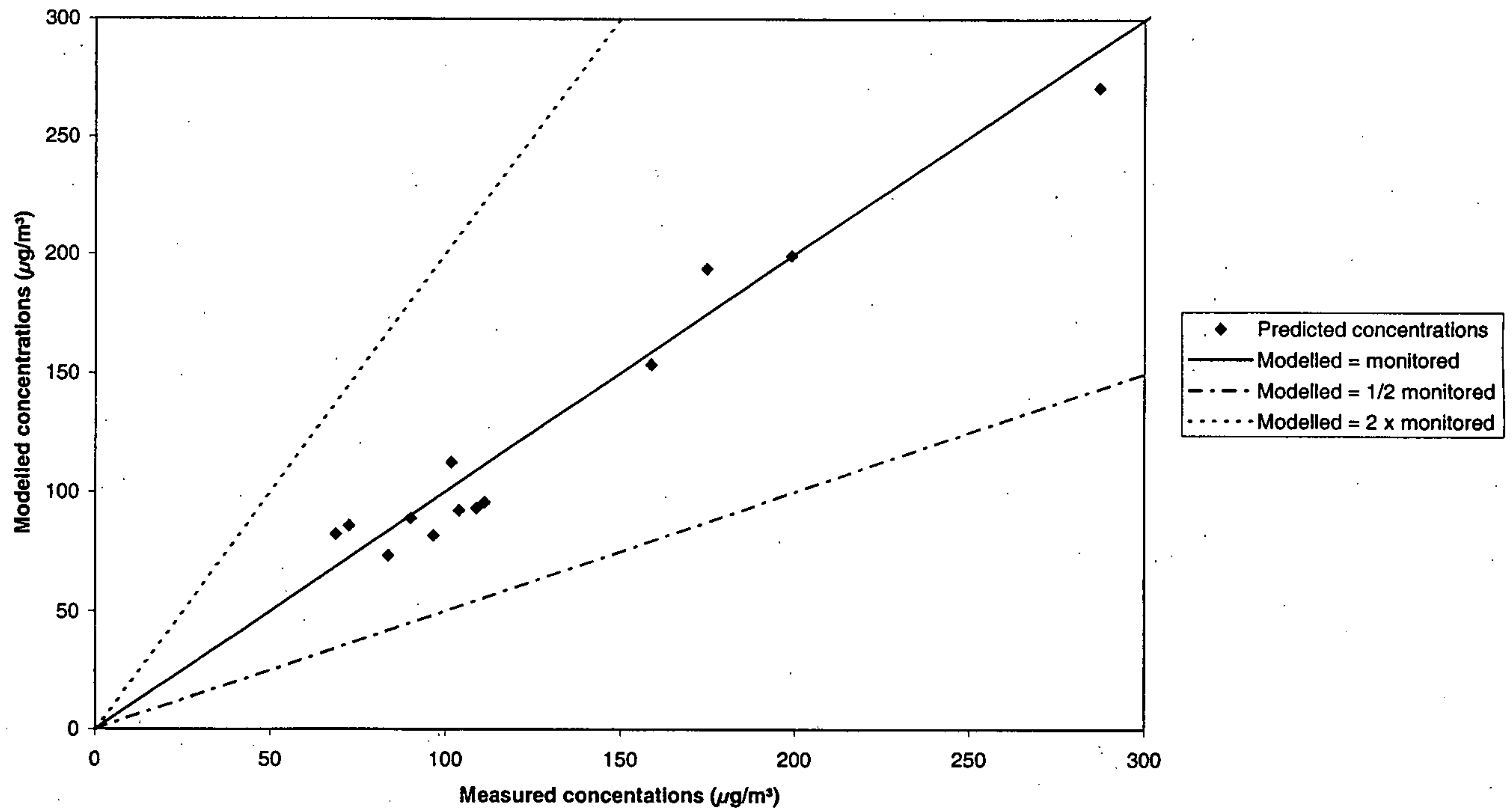


Figure 7.3 Comparison of measured and modelled NO₂ concentrations for 1999

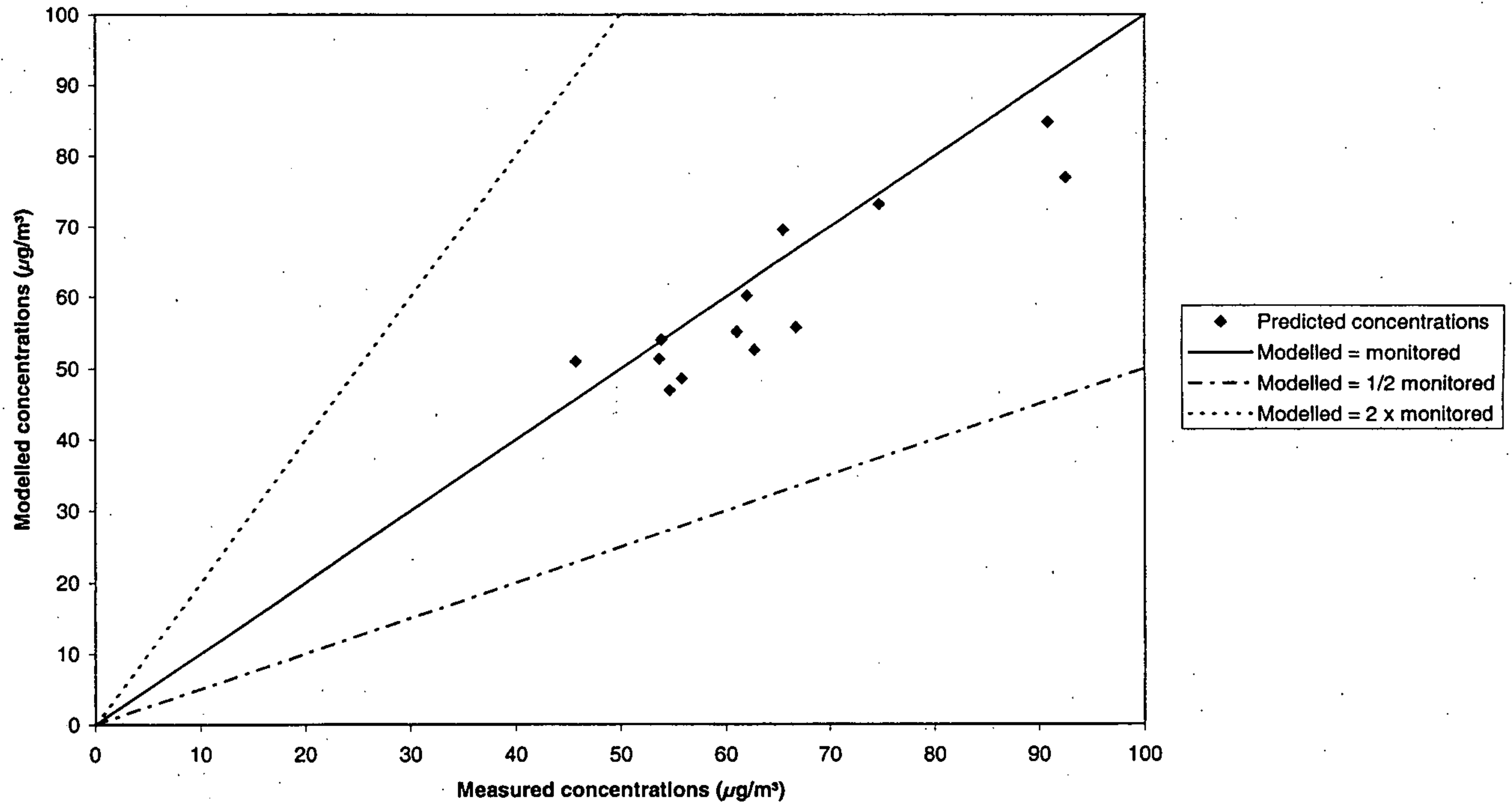
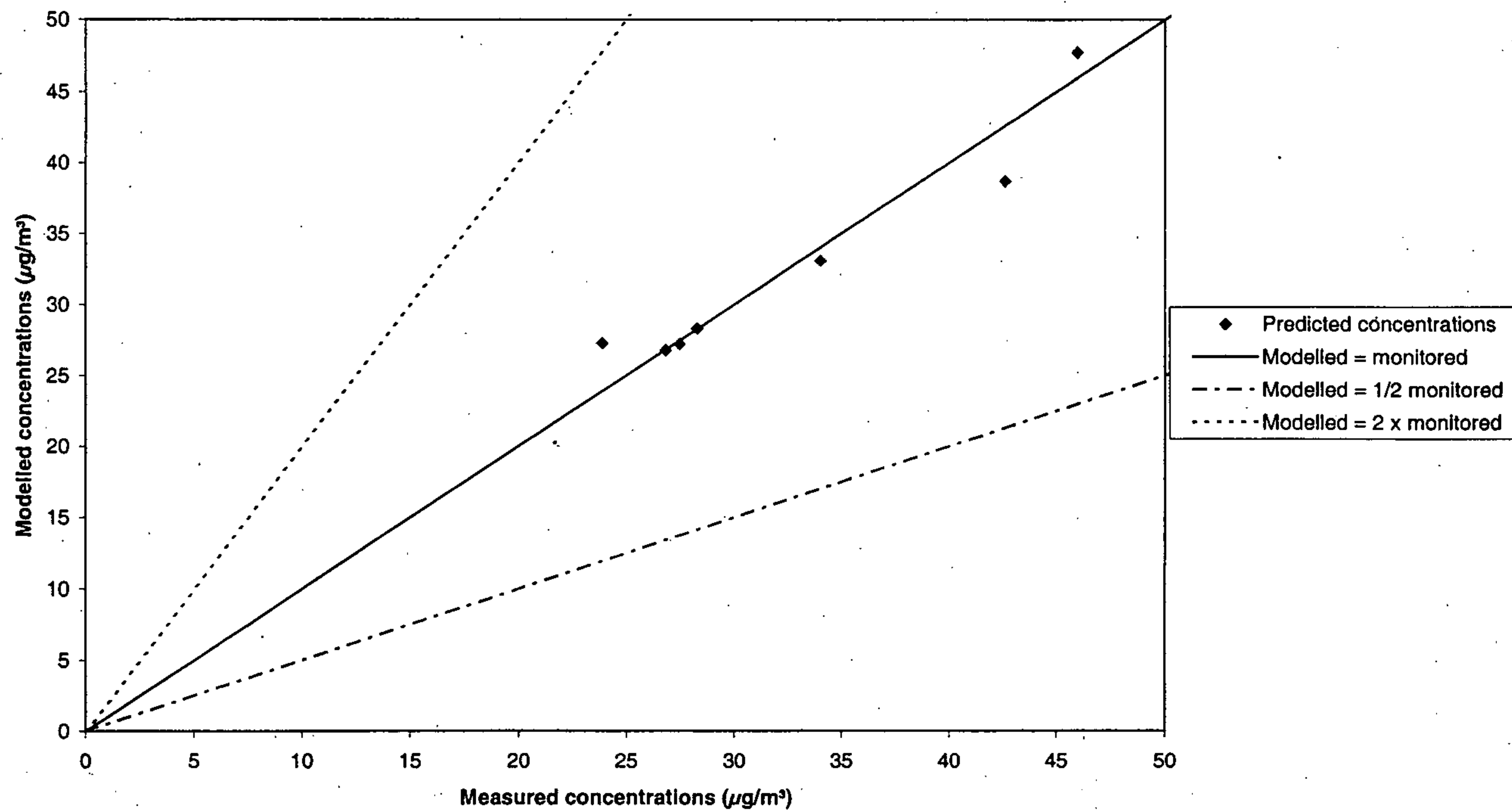


Figure 7.4 Comparison of measured and modelled PM10 concentrations



APPENDIX B.

Traffic Assessment.

Circadian Limited

**Addendum to the Transport Assessment
And Environmental Statement**

**Symonds Group Ltd
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Document ref: 3T49673

February 2003

Symonds

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- Figure 2 AM Worst Case Net increase (pcu's)
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- Appendix B2 LINSIG Results
- Appendix B3 Swept path drawings

EXECUTIVE SUMMARY

This addendum to the Environmental Statement of December 2002 provides additional transport information as requested by the boroughs. The conclusions of this additional work are outlined below with details provided in the main report. The conclusions that were made in the Environmental Statement are still valid.

Amended TRANSYT Analysis

A small error has been found in the original survey data where the traffic flows at the Lots Road/King's Road junction were overstated in the AM analysis. The baseline TRANSYT analysis has been re-run with this error eliminated. The result of this is that conditions at the Lots Road King's Road junction have improved for both the base and future scenarios.

Sensitivity tests

The Royal Borough of Kensington & Chelsea have requested that we undertake sensitivity tests of the road network using higher trip rates than those used in the Transport Assessment. This work has been completed and demonstrates that even with these higher trip rates the development will not have an unacceptable impact on the road network.

T LRN and Cremorne Road junction

We have undertaken further Linsig analysis of the Lots Road/Cremorne Road junction using the higher trip rates suggested by RBKC. This reconfirms that the proposals at the junction are adequate to accommodate both the addition of traffic generated by the development and the new buses associated with improved public transport access in the area.

Impact on parking

We have considered the impact of restaurant car parking at the development. This work has demonstrated that there will be adequate public car parking within the basement of the development to accommodate restaurant customers who choose to arrive by car. There will therefore be no adverse impact on the surrounding road network.

Detailed geometry

RBKC have asked us to look at a number of issues with regard to the detailed geometry and layout of the proposed development. We have completed this work and it has demonstrated that the design proposals are adequate to accommodate service vehicles.

1. INTRODUCTION

- 1.1 This addendum to the Transport Assessment and Environmental Statement submitted in December 2002 provides additional information for the Lots Road development requested by the Boroughs. This includes sensitivity tests on the road network using higher trip rates, further detailed analysis of the Lots Road/Cremorne Road junction, an analysis of the impact of restaurant car parking and a review of detailed geometry issues with regard to the scheme design. We have also provided corrected TRANSYT analysis correcting a small error found in the original survey data where the traffic flows at the Lots Road/King's Road junction were overstated.

- 3.4 We have compared the RBKC worst case trip rates with, those in the Transport Assessment, rates from Chelsea Harbour, national statistics and the TRAVL database. Table 3.1 below, compares the trip rates in ascending order:

Table 3.1: Comparison of residential car trip rates

Source		Two-way AM peak hour trip rate	Two-way PM peak hour trip rate
Chelsea Harbour		0.09	Not available
Calculation from national travel survey and census data		0.15	0.12
Lots Road Transport Assessment	Private housing	0.16	0.13
	Affordable housing	0.16	0.13
TRAVL database average		0.21	0.20
RBKC worst case sensitivity test	Private housing	0.21	0.25
	Affordable housing	0.41	0.31

- 3.5 Table 3.1 illustrates that the trip rates used in the Transport Assessment are 75% higher than those surveyed at the adjacent Chelsea Harbour development. The RBKC worst case sensitivity test produces the highest trip rates. When compared with the adjacent Chelsea Harbour the RBKC trip rates are 133% higher for private housing and 355% higher for social housing. The RBKC rates are also significantly higher than the TRAVL average for affordable housing, 95% higher in the AM peak and 55% higher in the PM peak.
- 3.6 The very high RBKC trip rates combined with the already extreme assumptions from the Transport Assessment produce a very robust worst case analysis which would not occur in practice. Indeed we believe the net effect of the development with its £5million package of off site transport improvements could be to reduce total car travel in the area.
- 3.7 Tables 3.2 and 3.3 below give the traffic generation from the Transport Assessment worst case scenario and the RBKC worst case sensitivity test both before implementing the proposed transport improvements associated with the development. The tables also examine the net addition of traffic to the road network. This net addition allows for traffic that will be removed as a result of closing the Power Station (closed Nov 2002) and traffic that would be generated by the existing planning permission on part of the site if constructed.

**Table 3.2: Traffic generation before transport improvements (pcu's)
Transport Assessment scenario**

	AM peak hour			PM peak hour		
	In	Out	Total	In	Out	Total
Site A residential	20	33	53	27	17	44
Site A non-residential	12	4	16	0	8	8
Site B residential	16	26	42	21	13	34
Total generated traffic	48	63	111	48	38	86
Power station	-4	-1	-5	-7	-8	-15
Existing planning permission	-10	-17	-28	-14	-9	-23
Net increase in trips	34	45	78	27	21	48

**Table 3.3: Traffic generation before transport improvements (pcu's)
RBKC Worst case scenario**

	AM peak hour			PM peak hour		
	In	Out	Total	In	Out	Total
Site A residential	48	75	123	68	47	115
Site A non-residential	25	9	34	6	26	32
Site B residential	26	47	78	43	30	73
Total generated traffic	103	132	235	117	103	220
Power station	-4	-1	-5	-7	-8	-15
Existing planning permission	-16	-24	-40	-26	-17	-43
Net increase in trips	83	107	190	84	77	162

3.8 Tables 3.2 and 3.3 illustrate that, on the basis of the Transport Assessment worst case the net increase in trips as a result of the development is 78 pcu's in the AM and 48 in the PM peak. The RBKC worst case sensitivity tests result in a net addition of 190 pcu's in the AM peak and 162 in the PM peak. This net addition of traffic from the development is before any account is taken of the proposed transport improvements, which will benefit 26,000 people who live within a 10 minute walking distance of the development, and over 50,000 people in the wider area.

3.9 We have assigned the development traffic to the surrounding road network and analysed the impact using TRANSYT. The attached figures 1 to 4 illustrate the net change in traffic. These demonstrate that development traffic dissipates quickly on to the road network and therefore only adds a small number of vehicles at individual locations even before any allowance has been made for the transport improvements.

3.10 At the Lots Road/Kings Road junction the development adds 17 pcu's in the AM peak for the Transport Assessment worst case scenario and 54 pcu's in the RBKC worst case

scenario. At the Lots Road/Cremorne Road junction the development adds 87 pcu's in the AM peak for the Transport Assessment worst case scenario and 115 pcu's in the RBKC worst case scenario. However it should be noted that at the Lots Road /Cremorne Road junction 56 of the additional PCU's are as a result of the new bus services using this section of Lots Road. These new bus services are proposed as part of the development to improve public transport and reduce car use in the area, i.e. the analysis reflects the increase in the number of buses paid for by the developer but not the benefits gained in terms of increased public transport patronage and reduced car use.

- 3.11 Table 3.4 and 3.5 below summarise the TRANSYT analysis of the RBKC worst case scenario. The detailed results are attached.

Table 3.4: TRANSYT AM peak results

Arm	Baseline		RBKC Worst Case	
	Degree of saturation	Queue (PCU's)	Degree of saturation	Queue (PCU's)
Junction: King's Road/Lots Road				
King's Road Eastbound (inside lane)	91	33	94	36
King's Road Eastbound (outside lane)	44	3	55	4
Lots Road Northbound	93	12	100	15
King's Road Westbound (inside lane)	76	22	79	24
King's Road Westbound (outside lane)	4	0	4	0
Southbound	37	3	70	3
Junction: King's Road/Gunter Grove				
King's Road Eastbound	66	22	66	22
Gunter Grove Northbound	80	28	80	30
King's Road Westbound (inside lane)	66	10	68	10
King's Road Westbound (outside lane)	73	4	64	4
Junction: King's Road/Edith Grove				
King's Road Eastbound (inside lane)	54	4	52	4
King's Road Eastbound (outside lane)	53	9	51	13
Edith Road Southbound	63	26	67	27
King's Road Westbound	51	11	49	11
Junction: Cremorne Road/Lots Road				
Cremorne Road Eastbound (inside lane)	22	0	75	19
Cremorne Road Eastbound (outside lane)			30	1
Lots Road Northbound	67	3	83	8
Cheyne Walk Westbound	31	0	85	31
Junction: Cheyne Walk/Battersea Bridge				
Cheyne Walk Eastbound	94	30	97	39
Battersea Bridge Northbound	100	29	101	31
Cheyne Walk Westbound (inside lane)	96	20	98	21
Cheyne Walk Westbound (outside lane)	49	11	51	12
Beaufort Street Southbound (inside lane)	11	1	11	1
Beaufort Street Southbound (outside lane)	92	18	92	18

Table 3.5: TRANSYT PM peak results

	Baseline		RBKC Worst Case	
	Degree of saturation	Queue (PCU's)	Degree of saturation	Queue (PCU's)
Junction: King's Road/Lots Road				
King's Road Eastbound (inside lane)	80	25	80	25
King's Road Eastbound (outside lane)	34	2	37	2
Lots Road Northbound	88	12	90	13
King's Road Westbound (inside lane)	76	23	77	23
King's Road Westbound (outside lane)	13	1	12	1
Southbound	27	1	28	1
Junction: King's Road/Gunter Grove				
King's Road Eastbound	60	24	62	23
Gunter Grove Northbound	69	23	71	30
King's Road Westbound (inside lane)	74	11	76	12
King's Road Westbound (outside lane)	71	5	74	5
Junction: King's Road/Edith Grove				
King's Road Eastbound (inside lane)	50	4	46	5
King's Road Eastbound (outside lane)	38	6	36	7
Edith Road Southbound	63	28	69	29
King's Road Westbound	59	13	56	13
Junction: Cremorne Road/Lots Road				
Cremorne Road Eastbound (inside lane)	40	9	82	27
Cremorne Road Eastbound (outside lane)			27	1
Lots Road Northbound	67	3	77	6
Cheyne Walk Westbound	49	7	89	40
Junction: Cheyne Walk/Battersea Bridge				
Cheyne Walk Eastbound	100	45	96	36
Battersea Bridge Northbound	88	16	95	21
Cheyne Walk Westbound (inside lane)	109	51	104	36
Cheyne Walk Westbound (outside lane)	44	10	44	10
Beaufort Street Southbound (inside lane)	10	1	10	1
Beaufort Street Southbound (outside lane)	112	71	112	71

- 3.12 The enclosed TRANSYT runs of the RBKC worst case scenario demonstrate that even with this extreme test the new Lots Road/Cremorne Road signal controlled junction will work within capacity. At Lots Road/Kings Road the queues on Lots Road increase slightly. As stated before the analysis makes no allowance for the beneficial effects of the transport improvements. We would expect the proposed transport improvements to both reduce the traffic generation of the development and remove some existing car trips from the network by providing improved alternatives.

4. TLRN AND CREMORNE ROAD JUNCTION

- 4.1 As requested we have carried out further Linsig analysis on the Lots Road / Cremorne Road junction using both the traffic generation estimates from the Transport Assessment and RBKC worst case scenarios. The Linsig results are summarised below. The results can be found in Appendix B2.

Table 4.1: 160 second cycle with December 2002 flows

	Transport Assessment Worst Case				RBKC Worst Case			
	AM Dev		PM Dev		AM Dev		PM Dev	
	Sat	Queue	Sat	Queue	Sat	Queue	Sat	Queue
Cremorne Road Eastbound (inside lane)	69.4	7.2	79.8	8.7	71.7	7.5	80.6	8.9
Cremorne Road Eastbound (outside lane)	39.1	0.4	45.6	0.4	43.1	0.5	47.8	0.5
Lots Road Northbound	88.6	7.2	81.7	5.2	86.8	7.1	88.4	6.6
Cheyne Walk Westbound	79.5	10.8	85.1	12.6	81.6	11.7	86.6	13.2

- 4.2 Table 4.1 – Linsig results based on the December 2002 Transport Assessment and RBKC Worst Case scenarios. These scenarios work on a 160 second cycle time, with each traffic phase being called twice in that time and the pedestrian crossing only being called once. You can see from these results that even in the RBKC Worst case scenario this junction still operates with a degree of saturation of less than 90% on each of its arms.

Table 4.2: 90 second cycle with December 2002 flows

	Transport Assessment Worst Case				RBKC Worst Case			
	AM Dev		PM Dev		AM Dev		PM Dev	
	Sat	Queue	Sat	Queue	Sat	Queue	Sat	Queue
Cremorne Road Eastbound (inside lane)	81.4	10.8	90.7	14.4	82.3	11.1	91.6	15
Cremorne Road Eastbound (outside lane)	50.7	0.7	51.3	0.6	54.3	0.8	53.8	0.7
Lots Road Northbound	88.1	7.6	92	7.6	93.9	9.8	99.5	11.2
Cheyne Walk Westbound	92.4	19.3	96.5	24.3	93.4	20.2	98.2	28.2

4.3 Table 4.2 - Linsig results based on the December 2002 Transport Assessment and Worst Case scenarios. These results are based on the same flows as table 4.1, but instead of running on a 160 second cycle, it runs on 90 seconds with the pedestrian phase being called each cycle. In the Transport Assessment worst case PM scenario, the Saturation flow for Cheyne walk is the highest at 96.5%. In the RBKC worst case you can see that the Saturation level gets up to 99.5% on Lots Road. Although these saturation levels are only just under 100% we would like to point out that we think this is the worst possible scenario, as it doesn't take into account any of our planned transport improvements..

5. IMPACT ON PARKING

Restaurant car-parking

5.1 The proposed restaurant is planned to be 371 square metres gross floor area. The patrons of the restaurant if they arrive by car will be able to park in the basement car-park where up to 40 public car-parking spaces will be available. The basement car park provides a safe and convenient place for patrons to leave their cars while they dine. We have examined the level of car-parking likely to be generated by the restaurant. This analysis has been based on information supplied by RBKC and the TRAVL database. This demonstrates that the restaurant would generate no more than 18 car trips in an evening. There is therefore more than sufficient space available in the basement to accommodate this car-parking, so the restaurant will not cause any problems on street. The details of the car-parking analysis are set out below:

- (i) The Gross floor area of the restaurant is 371 square metres
- (ii) The number of covers is 1 to every 2 square metres of floor area, based on information supplied by RBKC.
- (iii) The percentage of patrons arriving by car is assumed to be 20% also based on RBKC information

5.2 If you use these figures you would get $371/2*20\%=37$ however this assumes that each person arriving by car arrives in a separate car. Looking at the 15 restaurants within the TRAVL, we have calculated that the average occupancy of a car is actually 2.14.

5.3 Therefore the equation should be:

$$\frac{371/2*20\%}{2.14} = 17.34 \quad \text{which we rounded up to 18 car trips.}$$

6. DETAILED GEOMETRY

Delivery and emergency service vehicles access to the Lots Road site

- 6.1 In order to avoid the congestion caused by large delivery vehicles stopping outside the places they're delivering to there's a service yard. This is situated on Lots Road almost opposite Upcerne Road. We have carried out a series of TRACK runs to show the vehicle movements. The first 6 swept paths show a 10m rigid manoeuvring in and out of the service yard, as you can see there is a turntable in the service yard that is 10m in diameter, and the service yard is 12metres wide.
- 6.2 Swept path 1 – This swept path shows a 10 metre rigid turning right from Lots Road into the service yard, and driving on to the turntable.
- 6.3 Swept path 2 – This swept path shows a 10 metre rigid turning left from Lots Road into the service yard, and driving on to the turntable.
- 6.4 Swept path 3 – This swept path shows a 10 metre rigid is reversing from the turntable into the left hand service bay.
- 6.5 Swept path 4 – This is similar to the previous swept path but the vehicle is reversing into the right hand bay instead of the left.
- 6.6 Swept path 5 – This swept path shows a 10 metre rigid driving off the turntable and turning right out of the service yard on to Lots Road, it has been assumed that the vehicle can get as far as the turntable.
- 6.7 Swept path 6 – This swept path shows a 10 metre rigid is turning left out of the service yard, in doing this the traffic on the other side of the road gets slightly constricted, but there is still 3 metres for the oncoming traffic to pass.
- 6.8 The remaining 2 swept paths show emergency service vehicles entering the site, the access point is on Lots Road next to the Transport Management office.
- 6.9 Swept path 7– This swept path shows a Fire Tender vehicle turning left from Lots Road into the site, turning round in one movement and then leaving, this vehicle is 7.33 metres long.

6.10 Swept path 8 – This swept path shows a Hydraulic Inspection Platform entering the site turning round and then leaving the site again turning left out on to Lots Road. This is the longest emergency service vehicle with the largest turning circle. This track run shows that the vehicle has room to turn around in one go. It also shows that when it is leaving turning left out of the site it will probably use both sides of the road, thus the oncoming traffic would have to wait. We do not think that this will cause a problem after all the vehicle will only need to enter and leave the site if there has been an emergency.

6.11 Swept path 9 – This swept path shows a Hydraulic Inspection Platform driving down the side of the lobby in order to get access the Tower (KC1) in case of an emergency. The swept path then shows the vehicle reversing round in front of the restaurant, before driving forwards back up the side of the Lobby, where it would then exit the site as in swept path 8.

The swept path drawings are shown in Appendix B3.

7. SUMMARY AND CONCLUSIONS

This addendum report addresses the additional information requested by the Boroughs. This has included undertaking sensitivity tests with higher trip rates, further analysis of Lots Road / Cremorne Road junction and an analysis of the restaurant car parking. This additional work has confirmed the robustness of the transport proposals and reconfirmed the conclusions of the Environmental Statement, that the development with its associated transport improvements will significantly improve access to the local area and make a positive improvement to the local environment.

Figures

Lots Road TRANSYT model
Traffic flow diagram

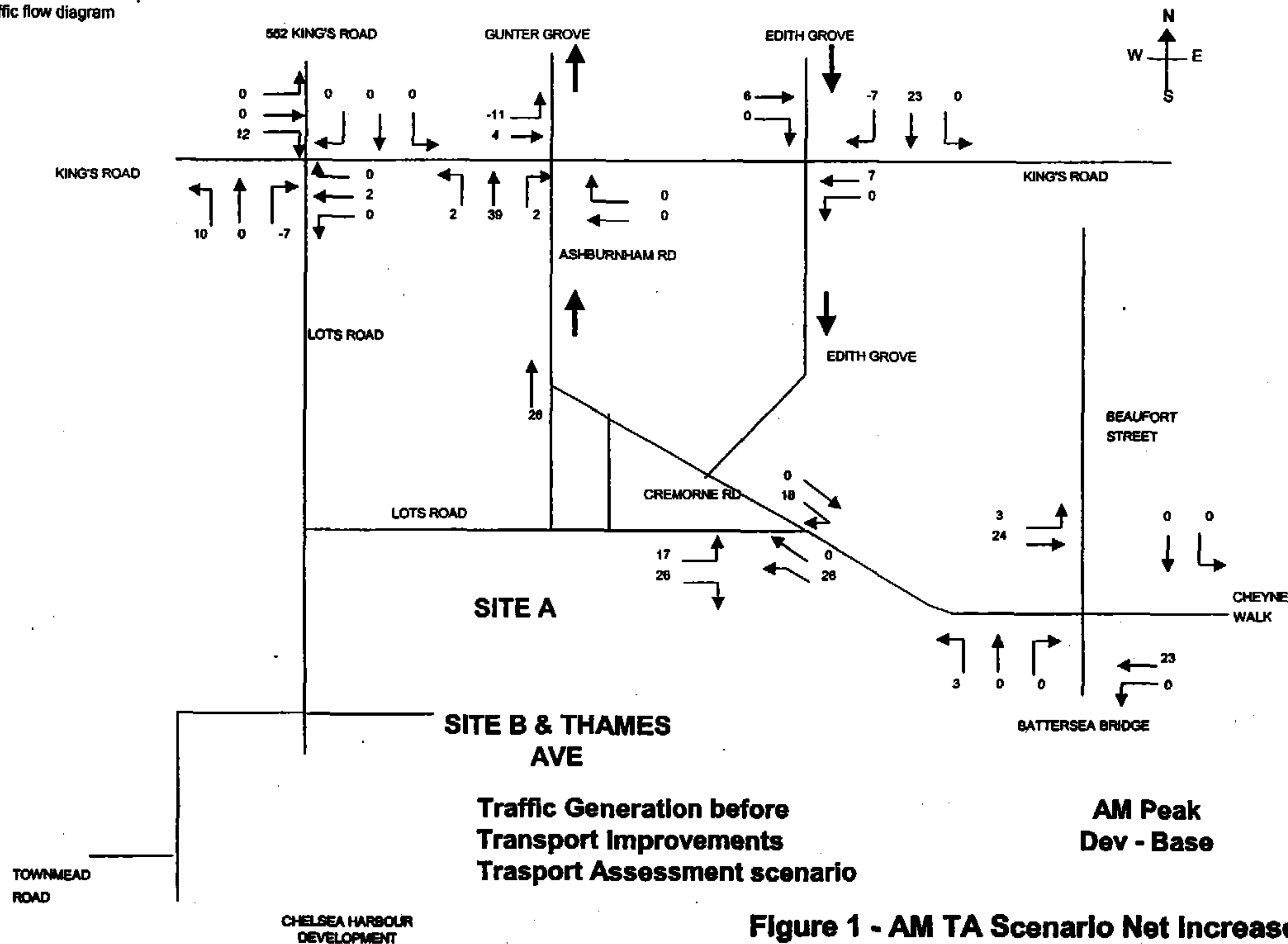


Figure 1 - AM TA Scenario Net Increase (pcu's)

Figure 2 - AM Worst Case Net Increase

The diagram illustrates the traffic flow and net increase in vehicle counts at the intersection of King's Road, Ashburnham Rd, Edith Grove, and Beaufort Street. The traffic counts are as follows:

- King's Road (Northbound):** 0 (left), 0 (through), 0 (right).
- King's Road (Southbound):** 11 (left), 0 (through), 4 (right).
- Ashburnham Rd (Northbound):** 10 (left), 5 (through), 4 (right).
- Ashburnham Rd (Southbound):** 19 (left), 0 (through), 2 (right).
- Edith Grove (Northbound):** 14 (left), 1 (right).
- Edith Grove (Southbound):** 0 (left), 20 (through), 0 (right).
- Beaufort Street (Northbound):** 0 (left), 0 (right).
- Beaufort Street (Southbound):** 5 (left), 0 (through), 0 (right).
- Cremerne Rd (Northbound):** 18 (left), 39 (right).
- Cremerne Rd (Southbound):** 0 (left), 38 (right).
- Chelmsford Road (Northbound):** 0 (left), 0 (through), 0 (right).
- Chelmsford Road (Southbound):** 0 (left), 0 (through), 0 (right).

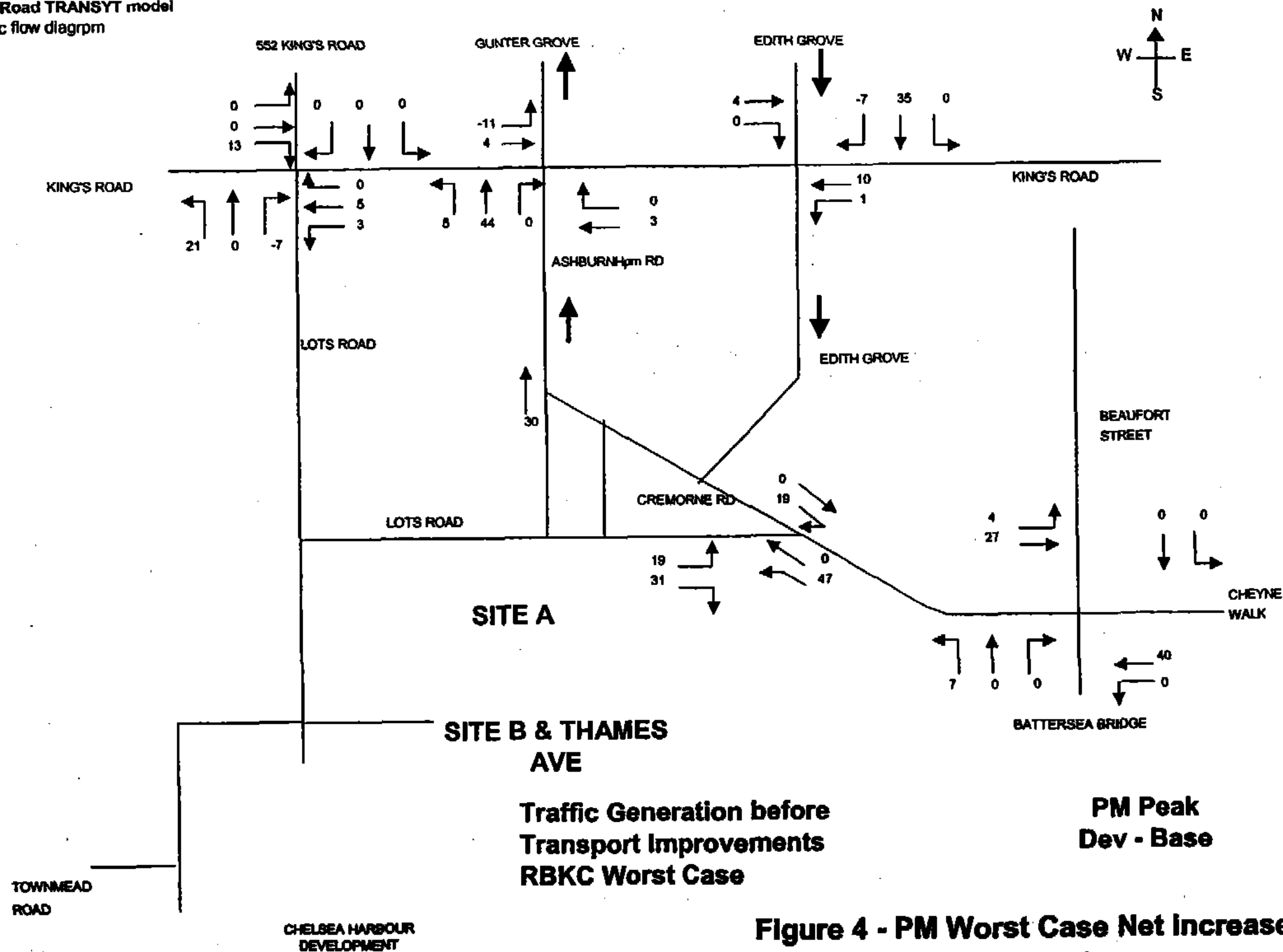
The diagram also shows the locations of Site A, Site B & Thames Ave, and Chelsea Harbour Development. The title of the diagram is "Traffic Generation before Transport Improvements RBKC Worst Case". The location is "AM Peak Dev - Base".

Figure 2 - AM Worst Case Net increase (pcu's)

[REDACTED]



Lots Road TRANSYT model
Traffic flow diagram



Appendices

Appendix B1

TRANSYT outputs

- Baseline
- RBKC Worst Case

Baseline

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	1
NUMBER OF LINKS	=	9
NUMBER OF OPTIMISED NODES	=	1
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	44
MAXIMUM NUMBER OF SHARED STOPLINES	=	2
MAXIMUM NUMBER OF TIMING POINTS	=	5
MAXIMUM LINKS AT ANY NODE	=	6

CORE REQUESTED = 3921 WORDS
CORE AVAILABLE = 72000 WORDS

0 DATA INPUT :-

OCARD NO.	CARD TYPE	CYCLE TIME	NO. OF STEPS PER CYCLE	TIME PERIOD 1-1200 MINS.	EFFECTIVE-DISPLACEMENTS START (SEC)	GREEN END (SEC)	EQUISAT SETTINGS 0=NO 1=YES	0=UNEQUAL 1=EQUAL CYCLE	FLOW SCALE 10-200 %	CRUISE-SCALE 50-200 %	SPEEDS CARD32 0=TIMES 1=SPEEDS	OPTIMISE 0=NONE 1=0/SET 2=FULL	EXTRA COPIES FINAL OUTPUT	HILL-CLIMB OUTPUT 1=FULL	DELAY VALUE P PER 1100	STOP VALUE P PER 200	
(1)=	TITLE:-	Baseline, 1/5/02 counts AM Baseline CH11 JP 24/02/03 - AMBas9.prt															
2)=	1	176	44	60	2	3	1	1	0	0	1	2	0	0	1100	200	
OCARD NO.	CARD TYPE	LIST OF NODES TO BE OPTIMISED															
3)=	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0		LINKS HAVING SHARED STOPLINES															
CARD NO.	CARD TYPE	FIRST SET.....					SECOND SET.....					THIRD SET.....					
4)=	7	93	90	0	0	0	0	0	0	0	0	0	0	0	0	0	
5)=	7	94	95	0	0	0	0	0	0	0	0	0	0	0	0	0	
6)=	7	98	99	0	0	0	0	0	0	0	0	0	0	0	0	0	
0		NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES															
CARD NO.	CARD TYPE	NODE NO.	STAGE 1		STAGE 2		STAGE 3		STAGE 4		STAGE 5		STAGE 6		STAGE 7		
7)=	15	9	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	
0			60	12	140	18	158	14	11	12	44	13	0	0	0	0	
		LINK CARDS: GIVEWAY DATA															
CARD NO.	CARD TYPE	LINK NO.	PRIORITY LINKS		LINK1 GIVEWAY COEFFS.			LINK		STOP		MAX		DELAY		DISPSN	
8)=	30	91	LINK1 NO.	LINK2 NO.	% FLOW	X100	A1 X100	A2 X100	LENGTH	WT.X100	FLOW	WT.X100	FLOW	WT.X100	DISPSN X100		
9)=	30	92	0	94	70	0	26	0	200	0	730	0	0	0	0		
10)=	30	94	98	0	0	24	0	0	200	0	790	0	0	0	0		
11)=	30	95	0	91	68	0	23	0	200	0	640	0	0	0	0		
			0	0	0	0	0	0	200	0	640	0	0	0	0		

12)=	30	96	93	0	0	21	0	0	0	0	0	40	0	750	0	0
0	LINK CARDS: FIXED DATA															
				FIRST		GREEN		SECOND		GREEN						
CARD	CARD	LINK	EXIT	START		END		START		END		LINK	STOP	SAT	DELAY	DISPSN
NO.	TYPE	NO.	NODE	STAGE	LAG	STAGE	LAG	STAGE	LAG	STAGE	LAG	LENGTH	WT.X100	FLOW	WT.X100	X100
13)=	31	90	0	0	0	0	0	0	0	0	0	200	0	0	0	0
14)=	31	91	9	3	7	4	2	5	6	1	2	200	0	1811	0	0
15)=	31	92	9	1	5	2	2	4	5	5	2	200	0	1773	0	0
16)=	31	93	9	1	5	2	0	4	5	5	0	200	0	1900	0	0
17)=	31	94	9	3	7	4	2	5	6	1	2	200	0	1719	0	0
18)=	31	95	0	0	0	0	0	0	0	0	0	200	0	0	0	0
19)=	31	96	9	1	5	2	2	4	5	5	2	40	0	1644	0	0
20)=	31	98	9	1	5	2	0	4	5	5	0	200	0	1908	0	0
21)=	31	99	0	0	0	0	0	0	0	0	0	200	0	0	0	0

LINK CARDS: FLOW DATA																
CARD		LINK	TOTAL	UNIFORM	ENTRY 1			ENTRY 2			ENTRY 3			ENTRY 4		
NO.	TYPE	NO.	FLOW	FLOW	LINK	FLOW	CRUISE	LINK	FLOW	CRUISE	LINK	FLOW	CRUISE	LINK	FLOW	CRUISE
22)=	32	90	30	0	0	0	40	0	0	0	0	0	0	0	0	0
23)=	32	91	79	0	0	0	40	0	0	0	0	0	0	0	0	0
24)=	32	92	10	0	0	0	40	0	0	0	0	0	0	0	0	0
25)=	32	93	826	0	0	0	40	0	0	0	0	0	0	0	0	0
26)=	32	94	192	0	0	0	40	0	0	0	0	0	0	0	0	0
27)=	32	95	12	0	0	0	3000	0	0	0	0	0	0	0	0	0
28)=	32	96	134	0	0	0	40	0	0	0	0	0	0	0	0	0
29)=	32	98	1004	0	0	0	40	0	0	0	0	0	0	0	0	0
30)=	32	99	30	0	0	0	3000	0	0	0	0	0	0	0	0	0

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

0 176 SECOND CYCLE 44 STEPS

0 INITIAL SETTINGS

- (SECONDS)

0	NO	NUMBER	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE								
	NO	OF STAGES	1	2	3	4	5	6	7								
9	5	60	93	111	167	24											
0	LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE DELAY (SEC)	-----DELAY----- UNIFORM (U+R+O=MEAN Q) (PCU-H/H)	RANDOM+ COST OF OVERSAT (\$/H)	----STOPS---- MEAN STOPS /PCU (%)	COST OF STOPS (\$/H)	-----QUEUE----- MEAN MAX. (PCU)	AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES START 1ST (SECONDS)	START 2ND (SECONDS)	END	
		(PCU/H)	(PCU/H)	(%)	(SEC)	(PCU-H/H)	(\$/H)	(%)	(\$/H)	(PCU)	(PCU)	(\$/H)					
	90	30	93L	137	18	570	0.7 + 4.1 (52.2)	261 (1.3)		149 +		53.6	9	65	93	172	24
	91	79	1811	14	18	17	0.3 + 0.1 (4.2)	60 (0.8)		1		5.0	9	118	169	30	62
	92	10	1773	7	18	34	0.1 + 0.0 (1.0)	78 (0.1)		0		1.2	9	65	95	172	26
	93	826	1900S	137	18	570	18.1 +112.7 (999.9)	261 (37.0)		149 +		1475.2	9	65	93	172	24
	94	192	1719S	39	18	21	0.8 + 0.3 (12.5)	73 (2.4)		4		14.9	9	118	169	30	62
	95BL	12	94L	39	24	21	0.1 + 0.0 (0.8)	73 (0.1)		4		0.9	9	118	169	30	62
	96	134	1644	88	4	108	1.3 + 2.7 (44.1)	163 (3.7)		7 +		47.8	9	65	95	172	26
	98	1004	1908S	164	18	816	29.5 +198.0 (999.9)	257 (44.3)		272 +		2546.5	9	65	93	172	24
	99BL	30	98L	164	24	816	0.9 + 5.9 (74.8)	257 (0.7)		272 +		75.5	9	65	93	172	24
0	TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT		MEAN JOURNEY SPEED		TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT 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)					
0	442.0	386.6		1.1		51.6	323.8	(4130.1) + (90.5)	+ (0.0)	=	4220.6		TOTALS				
0	8.4	7.1		1.2		0.9	5.9	(75.6) + (0.8)	+ (0.0)	=	76.4		BUSES				
0	433.6	379.4		1.1		50.7	317.9	(4054.5) + (89.7)	+ (0.0)	=	4144.2		OTHER				

0*****

0 CRUISE DELAY STOPS TOTALS
LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS 24.3 + 431.8 + 53.6 = 509.7

0
NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 12

0 176 SECOND CYCLE 44 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26
- (SECONDS)

9	5	86	119	137	17	50						
0 TOTAL		TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		
TRAVELLED		SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX		
(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES			
							(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0 442.0		385.3	1.1		47.4	326.8	(4116.3) + (	91.6)	+ (	0.0)	=	4208.0
0 8.4		7.1	1.2		0.8	5.9	(74.6) + (	0.8)	+ (	0.0)	=	75.4
0 433.6		378.3	1.1		46.6	320.9	(4041.7) + (	90.8)	+ (	0.0)	=	4132.5
												TOTALS
												BUSES
												OTHER

0
NO. OF ENTRIES TO SUBPT = 3
NO. OF LINKS RECALCULATED= 29

0 176 SECOND CYCLE 44 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70
- (SECONDS)

9	5	86	119	137	17	50						
0 TOTAL		TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		
TRAVELLED		SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX		
(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES			
							(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0 442.0		385.3	1.1		47.4	326.8	(4116.3) + (	91.6)	+ (	0.0)	=	4208.0
0 8.4		7.1	1.2		0.8	5.9	(74.6) + (	0.8)	+ (	0.0)	=	75.4
0 433.6		378.3	1.1		46.6	320.9	(4041.7) + (	90.8)	+ (	0.0)	=	4132.5
												TOTALS
												BUSES
												OTHER

0
NO. OF ENTRIES TO SUBPT = 3
NO. OF LINKS RECALCULATED= 29

0 176 SECOND CYCLE 44 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1
- (SECONDS)

9	5	64	144	162	16	49						
0 TOTAL		TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		
TRAVELLED		SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX		
(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES			
							(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0 442.0		37.6	11.8		15.5	10.9	(290.8) + (	37.4)	+ (	0.0)	=	328.2
0 8.4		1.0	8.3		0.4	0.4	(8.0) + (	0.5)	+ (	0.0)	=	8.5
0 433.6		36.5	11.9		15.2	10.5	(282.8) + (	36.9)	+ (	0.0)	=	319.7
												TOTALS
												BUSES
												OTHER

0
NO. OF ENTRIES TO SUBPT = 57
NO. OF LINKS RECALCULATED= 515

0 176 SECOND CYCLE 44 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26

9	5	64	144	162	16	49						
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)		
442.0		37.5	11.8		15.5	10.9	(290.5) + (	37.4)	+ (0.0)	=	327.9	TOTALS
8.4		1.0	8.4		0.4	0.4	(8.0) + (	0.5)	+ (0.0)	=	8.5	BUSES
433.6		36.5	11.9		15.2	10.5	(282.5) + (	37.0)	+ (0.0)	=	319.4	OTHER

0 176 SECOND CYCLE 44 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70
 - (SECONDS)

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0 176 SECOND CYCLE 44 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1
- (SECONDS)

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0 176 SECOND CYCLE 44 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1 -1
- (SECONDS)

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9	5	64	144	162	15	48						
0	TOTAL	TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
	DISTANCE	TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		
	TRAVELLED	SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX		
						DELAY	DELAY	STOPS	QUEUES			
	(PCU-KM/H)	(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0	442.0	37.4	11.8		15.4	10.9	(289.1) + (	37.4) +	(0.0) =	326.5	TOTALS	

0 8.4 1.0 8.3 0.4 0.4 (8.0) + (0.5) + (0.0) = 8.5 BUSES
 0 433.6 36.4 11.9 15.0 10.5 (281.1) + (37.0) + (0.0) = 318.0 OTHER
 0

NO. OF ENTRIES TO SUBPT = 13
 NO. OF LINKS RECALCULATED= 119

0 176 SECOND CYCLE 44 STEPS

OFINAL SETTINGS OBTAINED WITH INCREMENTS :- 26 70 -1 26 70 1 -1 1
 - (SECONDS)

0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
 NO OF STAGES 1 2 3 4 5 6 7

9	5	64	144	162	15	48	-----DELAY-----		-----STOPS-----		-----QUEUE-----		PERFORMANCE	EXIT	GREEN TIMES	
0 LINK	FLOW	SAT	DEGREE	MEAN TIMES	UNIFORM RANDOM+ COST		MEAN	COST	MEAN	AVERAGE	INDEX.	NODE	START	START	END	END
NUMBER	INTO	FLOW	OF	PER PCU	(U+R+O=MEAN Q) DELAY		STOPS	OF	MAX.	EXCESS	WEIGHTED SUM		1ST	2ND		
	LINK		SAT	CRUISE	(PCU-H/H)	(\$/H)	/PCU	STOPS	(PCU)	(PCU)	OF () VALUES		(SECONDS)			
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)		(%)	(\$/H)			(\$/H)					
90	30	93L	76	18	25	0.2 + 0.1 (2.3)	76	(0.4)	22		2.7	9	69	144	20	48
91	79	1811	37	18	49	0.8 + 0.3 (11.9)	94	(1.3)	3		13.2	9	169	17	54	66
92	10	1773	4	18	15	0.0 + 0.0 (0.5)	41	(0.1)	0		0.5	9	69	146	20	50
93	826	1900S	76	18	25	4.3 + 1.5 (63.5)	76	(10.8)	22		74.3	9	69	144	20	48
94	192	1719S	92	18	115	2.3 + 3.9 (67.6)	161	(5.3)	11		72.9	9	169	17	54	66
95BL	12	94L	92	24	115	0.1 + 0.2 (4.2)	161	(0.2)	11		4.4	9	169	17	54	66
96	134	1644	44	4	23	0.5 + 0.4 (9.4)	77	(1.8)	3		11.2	9	69	146	20	50
98	1004	1908S	91	18	41	7.0 + 4.4 (125.9)	101	(17.3)	33		143.3	9	69	144	20	48
99BL	30	98L	91	24	41	0.2 + 0.1 (3.8)	101	(0.3)	33		4.1	9	69	144	20	48

0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX
			DELAY	DELAY	DELAY	STOPS	QUEUES	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)

0 442.0 37.4 11.8 15.4 10.9 (289.1) + (37.4) + (0.0) = 326.5 TOTALS
 0 8.4 1.0 8.3 0.4 0.4 (8.0) + (0.5) + (0.0) = 8.5 BUSES
 0 433.6 36.4 11.9 15.0 10.5 (281.1) + (37.0) + (0.0) = 318.0 OTHER

0*****

0	CRUISE	DELAY	STOPS	TOTALS
OFUEL CONSUMPTION PREDICTIONS	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
	24.3	+ 30.2	+ 22.2	= 76.7

0 NO. OF ENTRIES TO SUBPT = 4
 NO. OF LINKS RECALCULATED= 40

PROGRAM TRANSYT FINISHED

Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
 OImplementation for IBM-PC or compatible
 OProgram TRANSYT 11, Analysis Program Version 1.3
 ORun with file:- "TMPTRAN.DAT" at 11:40 on 24/02/03
 OBaseline, 1/5/02 counts AM Baseline CH11 JP 24/02/03 - AMBase.prt

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	6
NUMBER OF LINKS	=	38
NUMBER OF OPTIMISED NODES	=	6
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	40
MAXIMUM NUMBER OF SHARED STOPLINES	=	2
MAXIMUM NUMBER OF TIMING POINTS	=	7
MAXIMUM LINKS AT ANY NODE	=	8

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CORE REQUESTED = 7684 WORDS
CORE AVAILABLE = 72000 WORDS

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0 DATA INPUT :-

OCARD NO.	CARD TYPE
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(1)= TITLE:- Baseline, 1/5/02 counts AM Baseline CH11 JP 24/02/03 - AMBase.prt

OCARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME EFFECTIVE PERIOD 1-1200 MINS.	GREEN DISPLACEMENTS START (SEC)	END (SEC)	EQUISET SETTINGS 0=NO 1=YES	0=UNEQUAL CYCLE 1=EQUAL CYCLE	FLOW SCALE 10-200 %	CRUISE-SPEEDS SCALE 50-200 %	OPTIMISE 0=NONE 1=0/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	160	40	60	2	3	1	1	0	0	1	2	0	0	1100	200

LIST OF NODES TO BE OPTIMISED

3)=	2	3	52	49	9	1990	194	0	0	0	0	0	0	0	0
-----	---	---	----	----	---	------	-----	---	---	---	---	---	---	---	---

0

[illegible]

0

[illegible]

NO.	TYPE	NO.	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN
17)=	23	3	76	17	30	15	63	12	0	0	0	0	0	0	0	0
18)=	15	9	110	12	21	18	39	14	65	12	95	13	0	0	0	0
19)=	17	49	47	12	70	12	82	13	110	21	131	12	158	12	10	13
20)=	23	52	38	30	0	12	23	15	0	0	0	0	0	0	0	0
21)=	22	194	46	12	33	13	0	0	0	0	0	0	0	0	0	0
22)=	22	1990	40	12	26	13	0	0	0	0	0	0	0	0	0	0

0

LINK CARDS: GIVEWAY DATA

		PRIORITY LINKS		LINK1 GIVEWAY		COEFFS.											
CARD NO.	CARD TYPE	LINK NO.	LINK1 NO.	LINK2 NO.	% FLOW	A1 X100	A2 X100					LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100	
23)=	30	15	13	11	6	21	20	0	0	0	0	200	0	600	0	0	
24)=	30	35	0	32	80	0	25	0	0	0	0	200	0	1000	0	0	
25)=	30	91	0	94	70	0	26	0	0	0	0	200	0	730	0	0	
26)=	30	92	98	0	0	24	0	0	0	0	0	200	0	790	0	0	
27)=	30	94	0	91	68	0	23	0	0	0	0	200	0	640	0	0	
28)=	30	95	0	0	0	0	0	0	0	0	0	200	0	640	0	0	
29)=	30	96	93	0	0	21	0	0	0	0	0	40	0	750	0	0	
30)=	30	351	0	0	0	0	0	0	0	0	0	200	0	1000	0	0	
31)=	30	495	493	0	0	16	0	0	0	0	0	130	0	680	0	0	
32)=	30	521	0	527	18	0	19	0	0	0	0	130	0	800	0	0	
33)=	30	522	0	0	0	0	0	0	0	0	0	130	0	800	0	0	

0

LINK CARDS: FIXED DATA

CARD NO.	CARD TYPE	LINK NO.	EXIT NODE	FIRST GREEN		SECOND GREEN		LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
				START STAGE	LAG	END STAGE	LAG					
34)=	31	11	0	0	0	0	0	0	0	0	0	0
35)=	31	13	0	0	0	0	0	0	0	0	0	0
36)=	31	31	3	2	7	3	0	0	0	0	0	0
37)=	31	32	3	2	7	3	0	0	0	0	0	0
38)=	31	33	3	1	7	2	0	0	0	0	0	0
39)=	31	34	3	1	7	2	0	0	0	0	0	0
40)=	31	35	3	2	7	1	0	0	0	0	0	0
41)=	31	37	3	1	7	2	0	0	0	0	0	0
42)=	31	90	0	0	0	0	0	0	0	0	0	0
43)=	31	91	9	3	7	4	2	5	6	1	2	0
44)=	31	92	9	1	5	2	2	4	5	5	2	0
45)=	31	93	9	1	5	2	0	4	5	5	0	0
46)=	31	94	9	3	7	4	2	5	6	1	2	0
47)=	31	95	0	0	0	0	0	0	0	0	0	0
48)=	31	96	9	1	5	2	2	4	5	5	2	0
49)=	31	98	9	1	5	2	0	4	5	5	0	0
50)=	31	99	0	0	0	0	0	0	0	0	0	0
51)=	31	341	0	0	0	0	0	0	0	0	0	0
52)=	31	351	0	0	0	0	0	0	0	0	0	0
53)=	31	491	49	3	6	4	0	7	6	1	0	0
54)=	31	492	0	0	0	0	0	0	0	0	0	0
55)=	31	493	49	1	5	2	0	5	5	6	0	0
56)=	31	494	0	0	0	0	0	0	0	0	0	0
57)=	31	495	49	1	5	3	0	5	5	7	0	0
58)=	31	497	49	1	5	3	0	5	5	7	0	0
59)=	31	498	0	0	0	0	0	0	0	0	0	0
60)=	31	521	52	1	5	2	2	0	0	0	0	0
61)=	31	522	0	0	0	0	0	0	0	0	0	0
62)=	31	523	52	1	5	2	0	0	0	0	0	0
63)=	31	524	0	0	0	0	0	0	0	0	0	0
64)=	31	525	52	2	5	3	2	0	0	0	0	0
65)=	31	527	52	1	5	2	0	0	0	0	0	0
66)=	31	528	0	0	0	0	0	0	0	0	0	0
67)=	31	1941	194	1	5	2	0	0	0	0	0	0

68)=	31	1942	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0
69)=	31	1991	1990	1	5	2	0	0	0	0	0	0	14	0	3970	0	0
70)=	31	1992	0	0	0	0	0	0	0	0	0	0	14	0	0	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
71)=	32	11	858	0	491	724	40	493	58	40	495	203	40	0	0	0
72)=	32	13	1209	0	34	993	40	35	37	40	0	0	0	0	0	0
73)=	32	15	184	0	0	0	40	0	0	0	0	0	0	0	0	0
74)=	32	31	62	0	0	0	3000	0	0	0	0	0	0	0	0	0
75)=	32	32	650	0	0	0	40	0	0	0	0	0	0	0	0	0
76)=	32	33	596	0	0	0	40	0	0	0	0	0	0	0	0	0
77)=	32	34	552	0	0	0	40	0	0	0	0	0	0	0	0	0
78)=	32	35	620	0	0	0	40	0	0	0	0	0	0	0	0	0
79)=	32	37	1045	0	11	831	3000	15	165	3000	0	0	0	0	0	0
80)=	32	90	30	0	524	42	3000	0	0	0	0	0	0	0	0	0
81)=	32	91	79	0	0	0	40	0	0	0	0	0	0	0	0	0
82)=	32	92	10	0	523	292	40	525	64	40	0	0	0	0	0	0
83)=	32	93	826	0	523	292	40	525	64	40	0	0	0	0	0	0
84)=	32	94	192	0	0	0	40	0	0	0	0	0	0	0	0	0
85)=	32	95	12	0	0	0	3000	0	0	0	0	0	0	0	0	0
86)=	32	96	134	0	0	0	40	0	0	0	0	0	0	0	0	0
87)=	32	98	1004	0	0	0	40	0	0	0	0	0	0	0	0	0
88)=	32	99	30	0	0	0	3000	0	0	0	0	0	0	0	0	0
89)=	32	341	10	0	0	0	3000	0	0	0	0	0	0	0	0	0
90)=	32	351	72	0	0	0	3000	0	0	0	0	0	0	0	0	0
91)=	32	491	1180	0	0	0	40	0	0	0	0	0	0	0	0	0
92)=	32	492	32	0	0	0	3000	0	0	0	0	0	0	0	0	0
93)=	32	493	469	0	0	0	40	0	0	0	0	0	0	0	0	0
94)=	32	494	66	0	0	0	3000	0	0	0	0	0	0	0	0	0
95)=	32	495	203	0	527	203	40	0	0	0	0	0	0	0	0	0
96)=	32	497	859	0	525	144	40	527	751	40	0	0	0	0	0	0
97)=	32	498	30	0	528	30	3000	0	0	0	0	0	0	0	0	0
98)=	32	521	126	0	493	126	40	0	0	0	0	0	0	0	0	0
99)=	32	522	36	0	494	36	3000	0	0	0	0	0	0	0	0	0
100)=	32	523	526	0	0	0	40	0	0	0	0	0	0	0	0	0
101)=	32	524	42	0	494	30	3000	0	0	0	0	0	0	0	0	0
102)=	32	525	1246	0	13	1046	40	15	19	40	0	0	0	0	0	0
103)=	32	527	1147	0	91	47	40	94	66	40	98	1050	40	0	0	0
104)=	32	528	42	0	95	12	3000	99	30	3000	0	0	0	0	0	0
105)=	32	1941	1087	0	491	228	40	497	859	40	0	0	0	0	0	0
106)=	32	1942	50	0	492	20	3000	498	30	3000	0	0	0	0	0	0
107)=	32	1991	1233	0	521	68	40	525	974	40	527	192	40	0	0	0
108)=	32	1992	48	0	522	36	3000	528	12	3000	0	0	0	0	0	0

FOLLOWING CARD IGNORED:-

CARD

NO.

109)=	103	1	11	13	15	0	0	0	0	0	0	0	0	0	0	0
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OLINK 13 IS MULTIPLYING UPSTREAM FLOW ON ENTRY 1 BY 211 PER CENT

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

0 160 SECOND CYCLE 40 STEPS

INITIAL SETTINGS

- (SECONDS)

0	NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
---	---------	------------------	---------	---------	---------	---------	---------	---------	---------

0 3004.7 : 599.0 5.0 99.7 424.2 (5762.9) + (227.1) + (0.0) = 5990.0 OTHER
 0*****

0 CRUISE DELAY STOPS TOTALS
 LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR
 OFUEL CONSUMPTION PREDICTIONS 197.3 + 679.3 + 149.1 = 1025.8
 0

NO. OF ENTRIES TO SUBPT = 1
 NO. OF LINKS RECALCULATED= 51

0 160 SECOND CYCLE 40 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24
 - (SECONDS)

3	3	76	104	131	156	24	51				
9	5	62	92	110	0	30					
49	7	47	65	77	110	131	159	11			
52	3	38	80	103	118	160	23				
194	2	46	113	126	33						
1990	2	40	107	120	27						
0 TOTAL											
DISTANCE	TOTAL	MEAN									
TRAVELLED	TIME	JOURNEY	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL			
	SPENT	SPEED	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE			
			DELAY	OVERSAT	OF	OF	EXCESS	INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES				
					(\$/H)	(\$/H)	(\$/H)				
0 3515.7	675.3	5.2	105.9	477.3	(6415.1) + (	253.8)	+ (0.0)	=	6668.9	TOTALS	
0 511.0	83.1	6.2	13.0	53.1	(726.4) + (	24.5)	+ (0.0)	=	751.0	BUSES	
0 3004.7	592.3	5.1	93.0	424.2	(5688.7) + (	229.2)	+ (0.0)	=	5917.9	OTHER	

NO. OF ENTRIES TO SUBPT = 15
 NO. OF LINKS RECALCULATED= 277

0 160 SECOND CYCLE 40 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64
 - (SECONDS)

3	3	76	104	131	156	24	51				
9	5	62	92	110	0	30					
49	7	47	65	77	110	131	159	11			
52	3	38	80	103	118	160	23				
194	2	46	113	126	33						
1990	2	40	107	120	27						
0 TOTAL											
DISTANCE	TOTAL	MEAN									
TRAVELLED	TIME	JOURNEY	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL			
	SPENT	SPEED	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE			
			DELAY	OVERSAT	OF	OF	EXCESS	INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES				
					(\$/H)	(\$/H)	(\$/H)				
0 3515.7	675.4	5.2	105.9	477.3	(6415.4) + (	253.8)	+ (0.0)	=	6669.1	TOTALS	
0 511.0	83.1	6.1	13.0	53.1	(726.7) + (	24.5)	+ (0.0)	=	751.2	BUSES	
0 3004.7	592.3	5.1	93.0	424.2	(5688.7) + (	229.2)	+ (0.0)	=	5917.9	OTHER	

NO. OF ENTRIES TO SUBPT = 14
 NO. OF LINKS RECALCULATED= 282

0 160 SECOND CYCLE 40 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1
 - (SECONDS)

3	3	70	101	137	150	21	57				
9	5	44	115	133	157	27					
49	7	47	65	77	110	131	159	11			

NO. OF ENTRIES TO SUBPT = 103
NO. OF LINKS RECALCULATED= 1709

[illegible]

NO. OF ENTRIES TO SUBPT = 13
NO. OF LINKS RECALCULATED= 262

	3	6	37	73	86	117.	153								
	9	5	108	19	37	61	91								
	49	7	47	65	77	110	131	159	11						
	52	3	38	80	103	118	160	23							
	194	2	46	113	126	33									
	1990	2	40	106	120	26									
O 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)							
O 3515.7	233.5	15.1	70.0	71.4	(1555.3) + (	189.6)	+ (0.0)	= 1745.0							TOTALS
O 511.0	49.7	10.3	11.2	21.5	(359.9) + (	20.6)	+ (0.0)	= 380.5							BUSES
O 3004.7	183.8	16.3	58.7	50.0	(1195.5) + (	169.0)	+ (0.0)	= 1364.5							OTHER

NO. OF ENTRIES TO SUBPT = 14
NO. OF LINKS RECALCULATED= 281

0 160 SECOND CYCLE 40 STEPS

[illegible]

0 160 SECOND CYCLE 40 STEPS

INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64 1 -1
- (SECONDS)

3	3	6	20	73	86	120	153							
9	5	109	20	38	62	92								
49	7	47	73	85	110	131	157	9						
52	3	38	79	103	118	159	23							
194	2	46	113	126	33									
1990	2	40	106	120	26									
O 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)						
O 3515.7	210.3	16.7	67.0	51.1	(1299.9) + (	183.1)	+ (	0.0)	=	1483.0	TOTALS			
O 511.0	33.0	15.5	9.1	6.9	(175.2) + (	15.3)	+ (	0.0)	=	190.6	BUSES			
O 3004.7	177.4	16.9	58.0	44.3	(1124.6) + (	167.8)	+ (	0.0)	=	1292.4	OTHER			
O														
NO. OF ENTRIES TO SUBPT = 59														
NO. OF LINKS RECALCULATED= 1163														

0 160 SECOND CYCLE 40 STEPS

FINAL SETTINGS OBTAINED WITH INCREMENTS :- 24 64 -1 24 64 1 -1 1
- (SECONDS)

0	NUMBER NO	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
	3	3	6	40	73	86	120	153
	9	5	109	20	38	62	92	
	49	7	47	73	85	110	131	157
	52	3	38	79	103	118	159	23
	194	2	46	113	126	33		
	1990	2	40	106	120	26		

0 LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE DELAY	-----DELAY----- UNIFORM RANDOM+ COST OVERSAT OF (U+R+O=MEAN Q) DELAY (PCU-H/H) (\$/H)	----STOPS---- MEAN COST STOPS OF /PCU STOPS (%) (\$/H)	-----QUEUE----- MEAN AVERAGE MAX. EXCESS (PCU) (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES START START END END 1ST 2ND (SECONDS)
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)					

11	857	3957	22	24	1	0.0 + 0.1	(1.5)	0	(0.1)	0	1.6						
13	1209	3898	31	35	1	0.0 + 0.2	(2.5)	0	(0.1)	0	2.6						
15	184	600	75	18	37	0.5 + 1.4	(20.6)	92	(2.9)	4	23.5						
31BL	62	1700	11	24	22	0.3 + 0.1	(4.1)	67	(0.4)	1	4.5	3	47	73	127	153	
32	650	2100	92	18	52	4.6 + 4.8	(102.8)	119	(13.3)	18	116.1	3	47	73	127	153	
33	596	3600	47	35	23	3.4 + 0.4	(41.8)	76	(7.8)	11	49.7	3	13	40	93	120	
34	552	1700S	94	18	65	3.9 + 6.1	(109.5)	134	(12.6)	19	122.1	3	13	40	93	120	
35	620	1800S	99	18	86	3.8 + 11.0	(162.7)	157	(16.7)	28	179.5	3	47	86	127	6	
37BL	1044	3300	90	49	38	6.6 + 4.3	(120.8)	112	(11.2)	30	132.0	3	13	40	93	120	
90BL	30	93L	78	24	24	0.1 + 0.1	(2.2)	71	(0.2)	20	2.4	9	114	20	67	92	
91	79	1811	38	18	47	0.7 + 0.3	(11.3)	111	(1.5)	2	12.8	9	45	64	98	111	
92	11	1773	4	18	13	0.0 + 0.0	(0.4)	37	(0.1)	0	0.5	9	114	22	67	94	
93	827	1900S	78	18	20	3.0 + 1.6	(50.9)	68	(9.7)	20	60.6	9	114	20	67	92	
94	192	1719S	94	18	123	2.3 + 4.3	(72.4)	174	(5.7)	11	78.1	9	45	64	98	111	
95BL	12	94L	94	24	123	0.1 + 0.3	(4.5)	174	(0.2)	11	4.7	9	45	64	98	111	
96	134	1644	45	4	23	0.4 + 0.4	(9.2)	81	(1.9)	3	11.1	9	114	22	67	94	
98	1004	1908S	93	18	45	6.8 + 5.8	(138.2)	111	(19.0)	34	157.2	9	114	20	67	92	
99BL	30	98L	93	24	45	0.2 + 0.2	(4.1)	111	(0.3)	34	4.4	9	114	20	67	92	
341BL	10	34L	94	24	65	0.1 + 0.1	(2.0)	134	(0.1)	19	2.1	3	13	40	93	120	
351BL	72	35L	99	24	86	0.4 + 1.3	(18.9)	157	(1.1)	28	20.0	3	47	86	127	6	
491	1180	5707S	64	18	26	7.7 + 0.9	(94.6)	82	(16.6)	27	111.2	49	91	110	15	47	
492BL	32	491L	64	24	26	0.2 + 0.0	(2.6)	82	(0.3)	27	2.8	49	91	110	15	47	
493	469	3931S	49	18	28	3.2 + 0.4	(39.6)	82	(6.6)	11	46.2	49	52	73	136	157	
494BL	66	493L	49	24	28	0.4 + 0.1	(5.6)	82	(0.5)	11	6.1	49	52	73	136	157	
495	202	1860	53	12	19	0.5 + 0.6	(12.0)	100	(3.5)	5	15.4	49	52	85	136	9	
497	858	3990S	52	12	9	1.7 + 0.5	(24.7)	35	(5.2)	12	29.9	49	52	85	136	9	
498BL	30	497L	52	16	7	0.0 + 0.0	(0.6)	22	(0.1)	12	0.7	49	52	85	136	9	
521	126	1854S	76	12	39	0.2 + 1.2	(14.9)	126	(2.7)	4	17.6	52	43	81	123	1	
522BL	36	521L	76	16	42	0.1 + 0.3	(4.6)	132	(0.5)	4	5.0	52	43	81	123	1	
523	526	1825S	67	12	23	2.4 + 0.9	(36.9)	77	(7.0)	10	43.9	52	43	79	123	159	
524BL	42	523L	67	16	14	0.1 + 0.1	(1.8)	28	(0.1)	10	2.0	52	43	79	123	159	
525	1246	5977	76	31	21	5.8 + 1.6	(80.8)	75	(16.1)	25	96.8	52	84	105	4	25	
527	1148	3780S	68	18	25	6.9 + 1.0	(87.2)	78	(15.3)	22	102.5	52	43	79	123	159	
528BL	42	527L	68	24	24	0.2 + 0.0	(3.1)	77	(0.3)	22	3.4	52	43	79	123	159	
1941	1087	3970S	36	1	1	0.1 + 0.3	(3.7)	3	(0.5)	1	4.2	194	51	113	131	33	
1942BL	50	1941L	36	2	1	0.0 + 0.0	(0.2)	5	(0.0)	1	0.2	194	51	113	131	33	
1991	1235	3970S	42	1	2	0.2 + 0.3	(6.4)	13	(2.8)	16	9.2	1990	45	106	125	26	
1992BL	48	1991L	42	2	1	0.0 + 0.0	(0.1)	1	(0.0)	16	0.2	1990	45	106	125	26	

0 160 SECOND CYCLE 40 STEPS

0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)
0 3515.7	210.3	16.7	67.0	51.1	(1299.9) +	(183.1)	+ (0.0)	= 1483.0
0 511.0	33.0	15.5	9.1	6.9	(175.2) +	(15.3)	+ (0.0)	= 190.6
0 3004.7	177.4	16.9	58.0	44.3	(1124.6) +	(167.8)	+ (0.0)	= 1292.4

0*****

0	CRUISE	DELAY	STOPS	TOTALS
	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
0 FUEL CONSUMPTION PREDICTIONS	197.3	+ 135.9	+ 108.5	= 441.7

NO. OF ENTRIES TO SUBPT = 14
NO. OF LINKS RECALCULATED= 306

PROGRAM TRANSYT FINISHED

Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
OImplementation for IBM-PC or compatible
OProgram TRANSYT 11, Analysis Program Version 1.3
ORun with file:- "TMPTRAN.DAT" at 12:05 on 24/02/03
OBaseline based on 1/5/02 counts PM Baseline CH11 JP 30/5/02 - PMBas9.prt

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	1
NUMBER OF LINKS	=	9
NUMBER OF OPTIMISED NODES	=	1
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	44
MAXIMUM NUMBER OF SHARED STOPLINES	=	2
MAXIMUM NUMBER OF TIMING POINTS	=	5
MAXIMUM LINKS AT ANY NODE	=	6

CORE REQUESTED = 3921 WORDS
CORE AVAILABLE = 72000 WORDS

0 DATA INPUT :-

OCARD NO.	CARD TYPE	CYCLE TIME	NO. OF STEPS PER CYCLE	TIME EFFECTIVE-1-1200 PERIOD	GREEN DISPLACEMENTS START	EQUISAT SETTINGS END	0=UNEQUAL FLOW CYCLE	SCALE	CRUISE-SPEEDS SCALE	OPTIMISE 0=NONE	EXTRA COPIES	HILL-CLIMB OUTPUT	DELAY VALUE	STOP VALUE		
OCARD NO.	CARD TYPE	(SEC)		(SEC)	(SEC)		1=EQUAL	%	%	1=O/SET	FINAL OUTPUT	1=FULL	P PER	P PER		
(1)=		TITLE:- Baseline based on 1/5/02 counts PM Baseline CHII JP 30/5/02 - PMBas9.prt														
2)=	1	176	44	60	2	3	1	1	0	0	1	2	0	0	1100	200
OCARD NO.	CARD TYPE	LIST OF NODES TO BE OPTIMISED														
3)=	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	
0		LINKS HAVING SHARED STOPLINES														
CARD NO.	CARD TYPE	FIRST SET.....				SECOND SET.....				THIRD SET.....						
4)=	7	93	90	0	0	0	0	0	0	0	0	0	0	0	0	
5)=	7	94	95	0	0	0	0	0	0	0	0	0	0	0	0	
6)=	7	98	99	0	0	0	0	0	0	0	0	0	0	0	0	
0		NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES														
CARD NO.	CARD TYPE	NODE NO.	STAGE 1		STAGE 2		STAGE 3		STAGE 4		STAGE 5		STAGE 6		STAGE 7	
			CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN
7)=	15	9	171	12	73	18	91	14	121	12	154	13	0	0	0	0
0		LINK CARDS: GIVEWAY DATA														
CARD NO.	CARD TYPE	LINK NO.	PRIORITY LINKS		LINK1 GIVEWAY		COEFFS.				LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100	
			LINK1 NO.	LINK2 NO.	ONLY	A1	A2									
			% FLOW	X100	X100											
8)=	30	91	0	94	49	0	26	0	0	0	0	200	0	730	0	
9)=	30	92	98	0	0	24	0	0	0	0	0	200	0	790	0	
10)=	30	94	0	91	82	0	23	0	0	0	0	200	0	640	0	
11)=	30	95	0	0	0	0	0	0	0	0	0	200	0	640	0	

12)=	30	96	93	0	0	21	0	0	0	0	0	40	0	750	0	0
0																
LINK CARDS: FIXED DATA																
CARD NO.	CARD TYPE	LINK NO.	EXIT MODE	STAGE	LAG	STAGE	LAG	STAGE	LAG	STAGE	LAG	LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
13)=	31	90	0	0	0	0	0	0	0	0	0	200	0	0	0	0
14)=	31	91	9	3	7	4	2	5	6	1	2	200	0	1809	0	0
15)=	31	92	9	1	5	2	2	4	5	5	2	200	0	1773	0	0
16)=	31	93	9	1	5	2	0	4	5	5	0	200	0	1932	0	0
17)=	31	94	9	3	7	4	2	5	6	1	2	200	0	1722	0	0
18)=	31	95	0	0	0	0	0	0	0	0	0	200	0	0	0	0
19)=	31	96	9	1	5	2	2	4	5	5	2	40	0	1644	0	0
20)=	31	98	9	1	5	2	0	4	5	5	0	200	0	1904	0	0
21)=	31	99	0	0	0	0	0	0	0	0	0	200	0	0	0	0

0																
LINK CARDS: FLOW DATA																
CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	ENTRY 1 LINK NO.	CRUISE FLOW	CRUISE SPEED	ENTRY 2 LINK NO.	CRUISE FLOW	CRUISE SPEED	ENTRY 3 LINK NO.	CRUISE FLOW	CRUISE SPEED	ENTRY 4 LINK NO.	CRUISE FLOW	CRUISE SPEED
22)=	32	90	24	0	0	0	40	0	0	0	0	0	0	0	0	0
23)=	32	91	43	0	0	0	40	0	0	0	0	0	0	0	0	0
24)=	32	92	34	0	0	0	40	0	0	0	0	0	0	0	0	0
25)=	32	93	829	0	0	0	40	0	0	0	0	0	0	0	0	0
26)=	32	94	241	0	0	0	40	0	0	0	0	0	0	0	0	0
27)=	32	95	12	0	0	0	3000	0	0	0	0	0	0	0	0	0
28)=	32	96	94	0	0	0	40	0	0	0	0	0	0	0	0	0
29)=	32	98	869	0	0	0	40	0	0	0	0	0	0	0	0	0
30)=	32	99	24	0	0	0	3000	0	0	0	0	0	0	0	0	0

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

0 176 SECOND CYCLE 44 STEPS

0 INITIAL SETTINGS

- (SECONDS)

0	NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7								
0	9	5	171	28	46	102	135										
0	LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE DELAY	-----DELAY-----		-----STOPS-----		-----QUEUE-----		PERFORMANCE INDEX.	EXIT NODE	GREEN TIMES			
						UNIFORM	RANDOM+ COST	MEAN STOPS	COST OF STOPS	MEAN MAX.	AVERAGE EXCESS	WEIGHTED SUM OF () VALUES		START	START		
		(PCU/H)	(PCU/H)	(%)	(SEC)	(U+R+O=MEAN Q) DELAY	OF DELAY	/PCU	OF STOPS	(PCU)	(PCU)	(\$/H)		END	END		
					(SEC)	(PCU-H/H)	(\$/H)	(%)	(\$/H)					1ST	2ND		
														(SECONDS)			
	90	24	93L	134	18	553	0.6 + 3.1 (40.6)	260 (1.1)		155	+	41.7	9	0	28		
	91	43	1809	10	18	18	0.2 + 0.1 (2.3)	61 (0.5)		1		2.8	9	53	104		
	92	34	1773	23	18	38	0.2 + 0.1 (4.0)	100 (0.6)		1		4.6	9	0	30		
	93	829	1932S	134	18	553	20.4 +107.0 (999.9)	260 (37.0)		155	+	1438.7	9	0	28		
	94	241	1722S	40	18	20	1.0 + 0.3 (14.8)	69 (2.9)		5		17.7	9	53	104		
	95BL	12	94L	40	24	20	0.1 + 0.0 (0.7)	69 (0.1)		5		0.8	9	53	104		
	96	94	1644	62	4	59	0.7 + 0.8 (16.9)	142 (2.3)		3		19.2	9	0	30		
	98	869	1904S	142	18	639	23.5 +130.8 (999.9)	261 (38.9)		183	+	1736.3	9	0	28		
	99BL	24	98L	142	24	639	0.6 + 3.6 (46.9)	261 (0.6)		183	+	47.5	9	0	28		
0	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)			(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)					
0	419.0		303.7		1.4		47.3	245.9	(3225.3) + (83.9)	+	(0.0)	=	3309.2	TOTALS			
0	7.2		4.6		1.6		0.7	3.6	(47.6) + (0.7)	+	(0.0)	=	48.3	BUSES			
0	411.8		299.2		1.4		46.6	242.2	(3177.7) + (83.2)	+	(0.0)	=	3260.9	OTHER			

0*****

0
 CRUISE DELAY STOPS TOTALS
 LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR
 OFUEL CONSUMPTION PREDICTIONS 23.0 + 337.2 + 49.7 = 409.9

0
 NO. OF ENTRIES TO SUBPT = 1
 NO. OF LINKS RECALCULATED= 12

0 176 SECOND CYCLE 44 STEPS
 0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26
 - (SECONDS)

9	5	99	132	150	30	63	TOTAL	TOTAL	PENALTY	TOTAL	
TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	COST	COST	FOR	PERFORMANCE	
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	OF	OF	OF	OF	EXCESS	INDEX	
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	DELAY	STOPS	OF	STOPS	QUEUES		
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 419.0	293.5	1.4	37.1	245.9	(3112.6)	83.9	+	(0.0)	=	3196.4	TOTALS
0 7.2	4.4	1.6	0.6	3.6	(46.2)	0.7	+	(0.0)	=	46.9	BUSES
0 411.8	289.1	1.4	36.5	242.2	(3066.4)	83.2	+	(0.0)	=	3149.6	OTHER

0
 NO. OF ENTRIES TO SUBPT = 6
 NO. OF LINKS RECALCULATED= 56

0 176 SECOND CYCLE 44 STEPS
 0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70
 - (SECONDS)

9	5	99	132	150	30	63	TOTAL	TOTAL	PENALTY	TOTAL	
TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	COST	COST	FOR	PERFORMANCE	
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	OF	OF	OF	OF	EXCESS	INDEX	
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	DELAY	STOPS	OF	STOPS	QUEUES		
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 419.0	293.5	1.4	37.1	245.9	(3112.6)	83.9	+	(0.0)	=	3196.4	TOTALS
0 7.2	4.4	1.6	0.6	3.6	(46.2)	0.7	+	(0.0)	=	46.9	BUSES
0 411.8	289.1	1.4	36.5	242.2	(3066.4)	83.2	+	(0.0)	=	3149.6	OTHER

0
 NO. OF ENTRIES TO SUBPT = 3
 NO. OF LINKS RECALCULATED= 29

0 176 SECOND CYCLE 44 STEPS
 0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1
 - (SECONDS)

9	5	77	155	173	28	61	TOTAL	TOTAL	PENALTY	TOTAL	
TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	COST	COST	FOR	PERFORMANCE	
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	OF	OF	OF	OF	EXCESS	INDEX	
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	DELAY	STOPS	OF	STOPS	QUEUES		
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 419.0	31.0	13.5	13.6	6.8	(225.0)	33.1	+	(0.0)	=	258.1	TOTALS
0 7.2	0.7	10.2	0.3	0.2	(5.1)	0.4	+	(0.0)	=	5.5	BUSES
0 411.8	30.3	13.6	13.3	6.7	(219.9)	32.7	+	(0.0)	=	252.6	OTHER

0
 NO. OF ENTRIES TO SUBPT = 57
 NO. OF LINKS RECALCULATED= 515

0 176 SECOND CYCLE 44 STEPS
 0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26

- (SECONDS)

0	9	5	129	31	49	80	113						
	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		
	(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES			
								(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0	419.0		31.0	13.5		13.6	6.8	(225.0) + (	33.1)	+ (0.0)	=	258.1	TOTALS
0	7.2		0.7	10.2		0.3	0.2	(5.1) + (	0.4)	+ (0.0)	=	5.5	BUSES
0	411.8		30.3	13.6		13.3	6.7	(219.9) + (	32.7)	+ (0.0)	=	252.6	OTHER

NO. OF ENTRIES TO SUBPT = 4
NO. OF LINKS RECALCULATED= 38

0 176 SECOND CYCLE 44 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70
- (SECONDS)

0	9	5	23	101	119	150	7						
	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		
	(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES			
								(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0	419.0		31.0	13.5		13.6	6.8	(224.9) + (	33.1)	+ (0.0)	=	258.0	TOTALS
0	7.2		0.7	10.2		0.3	0.2	(5.1) + (	0.4)	+ (0.0)	=	5.5	BUSES
0	411.8		30.3	13.6		13.3	6.7	(219.8) + (	32.7)	+ (0.0)	=	252.5	OTHER

NO. OF ENTRIES TO SUBPT = 3
NO. OF LINKS RECALCULATED= 29

0 176 SECOND CYCLE 44 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1
- (SECONDS)

0	9	5	23	101	119	150	7						
	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		
	(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES			
								(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0	419.0		31.0	13.5		13.6	6.8	(224.9) + (	33.1)	+ (0.0)	=	258.0	TOTALS
0	7.2		0.7	10.2		0.3	0.2	(5.1) + (	0.4)	+ (0.0)	=	5.5	BUSES
0	411.8		30.3	13.6		13.3	6.7	(219.8) + (	32.7)	+ (0.0)	=	252.5	OTHER

NO. OF ENTRIES TO SUBPT = 4
NO. OF LINKS RECALCULATED= 40

0 176 SECOND CYCLE 44 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1 -1
- (SECONDS)

0	9	5	24	103	121	150	6						
	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		
	(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES			
								(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0	419.0		30.8	13.6		13.4	6.9	(223.1) + (	33.1)	+ (0.0)	=	256.3	TOTALS

0 7.2 0.7 10.2 0.3 0.2 (5.1) + (0.4) + (0.0) = 5.5 BUSES
 0 411.8 30.1 13.7 13.1 6.7 (218.0) + (32.8) + (0.0) = 250.8 OTHER
 0

NO. OF ENTRIES TO SUBPT = 16
 NO. OF LINKS RECALCULATED= 146

0 176 SECOND CYCLE 44 STEPS

FINAL SETTINGS OBTAINED WITH INCREMENTS :- 26 70 -1 26 70 1 -1 1

- (SECONDS)

0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
 NO OF STAGES 1 2 3 4 5 6 7

9	5	26	105	123	152	8	-----DELAY-----		-----STOPS-----		-----QUEUE-----		PERFORMANCE	EXIT	GREEN TIMES		
0 LINK	FLOW	SAT	DEGREE	MEAN TIMES	UNIFORM	RANDOM+	COST	MEAN	COST	MEAN	AVERAGE	INDEX.	NODE	START	START	END	
NUMBER	INTO	FLOW	OF	PER PCU	(U+R+O=MEAN Q)	OVERSAT	OF	STOPS	OF	MAX.	EXCESS	WEIGHTED SUM		1ST	2ND	END	
	LINK		SAT	CRUISE	(PCU-H/H)	OF	DELAY	/PCU	STOPS	(PCU)	(PCU)	OF () VALUES		(SECONDS)			
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)		(\$/H)	(%)	(\$/H)			(\$/H)					
90	24	93L	75	18	26	0.1 +	0.0 (1.9)	78	(0.3)	21		2.2	9	31	105	157	8
91	43	1809	27	18	51	0.4 +	0.2 (6.6)	110	(0.8)	1		7.5	9	130	154	14	28
92	34	1773	12	18	16	0.1 +	0.1 (1.7)	54	(0.3)	1		2.0	9	31	107	157	10
93	829	1932S	75	18	26	4.4 +	1.5 (64.8)	78	(11.0)	21		75.8	9	31	105	157	8
94	241	1722S	87	18	81	2.7 +	2.7 (59.9)	133	(5.5)	12		65.4	9	130	154	14	28
95BL	12	94L	87	24	81	0.1 +	0.1 (3.0)	133	(0.2)	12		3.1	9	130	154	14	28
96	94	1644	32	4	20	0.3 +	0.2 (5.7)	67	(1.1)	2		6.8	9	31	107	157	10
98	869	1904S	80	18	29	5.1 +	1.9 (77.1)	83	(12.3)	24		89.4	9	31	105	157	8
99BL	24	98L	80	24	29	0.1 +	0.1 (2.1)	83	(0.2)	24		2.3	9	31	105	157	8

0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL	
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE	
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX	
			DELAY	DELAY	DELAY	STOPS	QUEUES		
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 419.0	30.8	13.6	13.4	6.8	(222.8) + (31.7)	+ (0.0)	=	254.6	TOTALS
0 7.2	0.7	10.2	0.3	0.2	(5.1) + (0.3)	+ (0.0)	=	5.5	BUSES
0 411.8	30.1	13.7	13.1	6.7	(217.7) + (31.4)	+ (0.0)	=	249.1	OTHER

0*****

0	CRUISE	DELAY	STOPS	TOTALS
	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
0	23.0	23.3	18.8	65.1

0 FUEL CONSUMPTION PREDICTIONS

0
 NO. OF ENTRIES TO SUBPT = 4
 NO. OF LINKS RECALCULATED= 38

PROGRAM TRANSYT FINISHED

Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
Implementation for IBM-PC or compatible
Program TRANSYT 11, Analysis Program Version 1.3
ORun with file:- "TMPTRAN.DAT" at 12:02 on 24/02/03
OBaseline based on 1/5/02 counts PM Baseline CH11 JP 30/5/02 - PMBase.prt

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	6
NUMBER OF LINKS	=	38
NUMBER OF OPTIMISED NODES	=	6
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	40
MAXIMUM NUMBER OF SHARED STOPLINES	=	2
MAXIMUM NUMBER OF TIMING POINTS	=	7
MAXIMUM LINKS AT ANY NODE	=	8

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CORE REQUESTED = 7684 WORDS
CORE AVAILABLE = 72000 WORDS

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0 DATA INPUT :-

OCARD NO.	CARD TYPE
--------------	--------------

(1)= TITLE:- Baseline based on 1/5/02 counts PM Baseline CH11 JP 30/5/02 - PMBase.prt

QCARD NO.	CARD TYPE	CYCLE NO. OF TIME	OF STEPS PER CYCLE	TIME PERIOD 1-1200 MINS.	EFFECTIVE-START (SEC)	GREEN-END (SEC)	EQUISAT SETTINGS 0=NO 1=YES	0=UNEQUAL CYCLE 1=EQUAL CYCLE	FLOW SCALE 10-200 %	CRUISE-SPEEDS SCALE 50-200 %	0=NONE 1=TIMES 2=SPEEDS	OPTIMISE 1=O/SET 2=FULL	EXTRA COPIES FINAL OUTPUT	HILL-CLIMB OUTPUT 1=FULL	DELAY VALUE P PER PCU-H	STOP VALUE P PER
2)=	1	160	40	60	2	3	1	1	0	0	1	2	0	0	1100	200

OCARD	CARD	LIST OF NODES TO BE OPTIMISED
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
30	30	30
31	31	31
32	32	32
33	33	33
34	34	34
35	35	35
36	36	36
37	37	37
38	38	38
39	39	39
40	40	40
41	41	41
42	42	42
43	43	43
44	44	44
45	45	45
46	46	46
47	47	47
48	48	48
49	49	49
50	50	50
51	51	51
52	52	52
53	53	53
54	54	54
55	55	55
56	56	56
57	57	57
58	58	58
59	59	59
60	60	60
61	61	61
62	62	62
63	63	63
64	64	64
65	65	65
66	66	66
67	67	67
68	68	68
69	69	69
70	70	70
71	71	71
72	72	72
73	73	73
74	74	74
75	75	75
76	76	76
77	77	77
78	78	78
79	79	79
80	80	80
81	81	81
82	82	82
83	83	83
84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
93	93	93
94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

[illegible][illegible][illegible][illegible]

NO.	TYPE	NO.	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN
17)=	23	3	4	17	38	15	71	12	0	0	0	0	0	0	0	0
18)=	15	9	115	12	19	18	37	14	65	12	99	13	0	0	0	0
19)=	17	49	57	12	76	12	88	13	121	21	142	12	10	12	22	13
20)=	23	52	54	12	11	12	39	15	0	0	0	0	0	0	0	0
21)=	22	194	58	12	45	13	0	0	0	0	0	0	0	0	0	0
22)=	22	1990	56	12	43	13	0	0	0	0	0	0	0	0	0	0

0

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
23)=	30	15	13	11	12	21	20	0	0	0	0	200	0	600	0	0
24)=	30	35	0	32	80	0	25	0	0	0	0	200	0	1000	0	0
25)=	30	91	0	94	49	0	26	0	0	0	0	200	0	730	0	0
26)=	30	92	98	0	0	24	0	0	0	0	0	200	0	790	0	0
27)=	30	94	0	91	82	0	23	0	0	0	0	200	0	640	0	0
28)=	30	95	0	0	0	0	0	0	0	0	0	200	0	640	0	0
29)=	30	96	93	0	0	21	0	0	0	0	0	40	0	750	0	0
30)=	30	351	0	0	0	0	0	0	0	0	0	200	0	1000	0	0
31)=	30	495	493	0	0	16	0	0	0	0	0	130	0	680	0	0
32)=	30	521	527	0	0	19	0	0	0	0	0	130	0	800	0	0
33)=	30	522	0	0	0	0	0	0	0	0	0	130	0	800	0	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
34)=	31	11	0	0	0	0	0	0	0	0	0	270	0	2500	0	0
35)=	31	13	0	0	0	0	0	0	0	0	0	390	0	2500	0	0
36)=	31	31	3	2	7	3	0	0	0	0	0	200	0	1700	0	0
37)=	31	32	3	2	7	3	0	0	0	0	0	200	0	2100	0	0
38)=	31	33	3	1	7	2	0	0	0	0	0	390	0	3600	0	0
39)=	31	34	3	1	7	2	0	0	0	0	0	200	0	1700	0	0
40)=	31	35	3	2	7	1	0	0	0	0	0	200	0	1800	0	0
41)=	31	37	3	1	7	2	0	0	0	0	0	406	0	3300	0	0
42)=	31	90	0	0	0	0	0	0	0	0	0	200	0	0	0	0
43)=	31	91	9	3	7	4	2	5	6	1	2	200	0	1809	0	0
44)=	31	92	9	1	5	2	2	4	5	5	2	200	0	1773	0	0
45)=	31	93	9	1	5	2	0	4	5	5	0	200	0	1932	0	0
46)=	31	94	9	3	7	4	2	5	6	1	2	200	0	1722	0	0
47)=	31	95	0	0	0	0	0	0	0	0	0	200	0	0	0	0
48)=	31	96	9	1	5	2	2	4	5	5	2	40	0	1644	0	0
49)=	31	98	9	1	5	2	0	4	5	5	0	200	0	1904	0	0
50)=	31	99	0	0	0	0	0	0	0	0	0	200	0	0	0	0
51)=	31	341	0	0	0	0	0	0	0	0	0	200	0	0	0	0
52)=	31	351	0	0	0	0	0	0	0	0	0	200	0	0	0	0
53)=	31	491	49	3	6	4	0	7	6	1	0	200	0	5749	0	0
54)=	31	492	0	0	0	0	0	0	0	0	0	200	0	0	0	0
55)=	31	493	49	1	5	2	0	5	5	6	0	200	0	3938	0	0
56)=	31	494	0	0	0	0	0	0	0	0	0	200	0	0	0	0
57)=	31	495	49	1	5	3	0	5	5	7	0	130	0	1860	0	0
58)=	31	497	49	1	5	3	0	5	5	7	0	130	0	3990	0	0
59)=	31	498	0	0	0	0	0	0	0	0	0	130	0	0	0	0
60)=	31	521	52	1	5	2	2	0	0	0	0	130	0	1862	0	0
61)=	31	522	0	0	0	0	0	0	0	0	0	130	0	0	0	0
62)=	31	523	52	1	5	2	0	0	0	0	0	130	0	1825	0	0
63)=	31	524	0	0	0	0	0	0	0	0	0	130	0	0	0	0
64)=	31	525	52	2	5	3	0	0	0	0	0	340	0	5967	0	0
65)=	31	527	52	1	5	2	0	0	0	0	0	200	0	3735	0	0
66)=	31	528	0	0	0	0	0	0	0	0	0	200	0	0	0	0
67)=	31	1941	194	1	5	2	0	0	0	0	0	16	0	3970	0	0

68)=	31	1942	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0
69)=	31	1991	1990	1	5	2	0	0	0	0	0	0	14	0	3970	0	0
70)=	31	1992	0	0	0	0	0	0	0	0	0	0	14	0	0	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	
71)=	32	11	1008	0	495	176	40	493	60	40	491	867	40	0	0	0	
72)=	32	13	1328	0	35	118	40	34	891	40	0	0	0	0	0	0	
73)=	32	15	146	0	0	0	40	0	0	0	0	0	0	0	0	0	
74)=	32	31	58	0	0	0	3000	0	0	0	0	0	0	0	0	0	
75)=	32	32	795	0	0	0	40	0	0	0	0	0	0	0	0	0	
76)=	32	33	535	0	0	0	40	0	0	0	0	0	0	0	0	0	
77)=	32	34	625	0	0	0	40	0	0	0	0	0	0	0	0	0	
78)=	32	35	527	0	0	0	40	0	0	0	0	0	0	0	0	0	
79)=	32	37	1128	0	15	129	3000	11	984	3000	0	0	0	0	0	0	
80)=	32	90	24	0	524	36	3000	0	0	0	0	0	0	0	0	0	
81)=	32	91	43	0	0	0	40	0	0	0	0	0	0	0	0	0	
82)=	32	92	34	0	525	105	40	523	287	40	0	0	0	0	0	0	
83)=	32	93	829	0	525	105	40	523	287	40	0	0	0	0	0	0	
84)=	32	94	241	0	0	0	40	0	0	0	0	0	0	0	0	0	
85)=	32	95	12	0	0	0	3000	0	0	0	0	0	0	0	0	0	
86)=	32	96	94	0	0	0	40	0	0	0	0	0	0	0	0	0	
87)=	32	98	869	0	0	0	40	0	0	0	0	0	0	0	0	0	
88)=	32	99	24	0	0	0	3000	0	0	0	0	0	0	0	0	0	
89)=	32	341	10	0	0	0	3000	0	0	0	0	0	0	0	0	0	
90)=	32	351	68	0	0	0	3000	0	0	0	0	0	0	0	0	0	
91)=	32	491	1251	0	0	0	40	0	0	0	0	0	0	0	0	0	
92)=	32	492	32	0	0	0	3000	0	0	0	0	0	0	0	0	0	
93)=	32	493	523	0	0	0	40	0	0	0	0	0	0	0	0	0	
94)=	32	494	54	0	0	0	3000	0	0	0	0	0	0	0	0	0	
95)=	32	495	176	0	527	176	40	0	0	0	0	0	0	0	0	0	
96)=	32	497	594	0	527	483	40	525	116	40	0	0	0	0	0	0	
97)=	32	498	24	0	528	24	3000	0	0	0	0	0	0	0	0	0	
98)=	32	521	111	0	493	111	40	0	0	0	0	0	0	0	0	0	
99)=	32	522	30	0	494	30	3000	0	0	0	0	0	0	0	0	0	
100)=	32	523	517	0	0	0	0	0	0	0	0	0	0	0	0	0	
*** DISTANCE > 0 BUT CRUISE TIME/SPEED=0 FOR THIS LINK. THUS CRUISE TIME BASED ON DISTANCE GIVEN AND DEFAULT SPEED OF 43 KM/H																	
101)=	32	524	36	0	494	24	3000	0	0	0	0	0	0	0	0	0	
102)=	32	525	1324	0	15	17	40	13	1108	40	0	0	0	0	0	0	
103)=	32	527	892	0	94	58	40	91	17	40	98	842	40	0	0	0	
104)=	32	528	36	0	95	12	3000	99	24	3000	0	0	0	0	0	0	
105)=	32	1941	820	0	491	226	40	497	594	40	0	0	0	0	0	0	
106)=	32	1942	44	0	492	20	3000	498	24	3000	0	0	0	0	0	0	
107)=	32	1991	1285	0	527	234	40	525	998	40	521	54	40	0	0	0	
108)=	32	1992	42	0	522	30	3000	528	12	3000	0	0	0	0	0	0	

FOLLOWING CARD IGNORED:-

CARD

NO.

109)=	103	1	15	13	11	0	0	0	0	0	0	0	0	0	0	0	0
-------	-----	---	----	----	----	---	---	---	---	---	---	---	---	---	---	---	---

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

0 160 SECOND CYCLE 40 STEPS

0 INITIAL SETTINGS

- (SECONDS)

0	NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
---	---------	------------------	---------	---------	---------	---------	---------	---------	---------

0*****

0	CRUISE	DELAY	STOPS	TOTALS
	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
FUEL CONSUMPTION PREDICTIONS	199.6	+ 677.4	+ 151.7	= 1028.8

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 51

```

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24
- (SECONDS)

```

3	3	4	33	63	84	113	143	
9	5	67	97	115	5	35		
49	7	57	76	88	121	142	10	22
52	3	54	91	119	134	11	39	
194	2	58	125	138	45			
1990	2	56	123	136	43			

0	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)		
0	3555.1	672.1	5.3	105.6	473.3	(6368.0) + (	258.6)	+ (0.0)	=	6626.6	TOTALS
0	534.6	113.5	4.7	15.7	80.0	(1052.1) + (	29.1)	+ (0.0)	=	1081.1	BUSES
0	3020.5	558.7	5.4	90.0	393.3	(5315.9) + (	229.5)	+ (0.0)	=	5545.4	OTHER

NO. OF ENTRIES TO SUBPT = 15
NO. OF LINKS RECALCULATED= 276

```

0 160 SECOND CYCLE 40 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64
- (SECONDS)

```

3	3	4	33	63	84	113	143	
9	5	67	97	115	5	35		
49	7	57	76	88	121	142	10	22
52	3	54	91	119	134	11	39	
194	2	58	125	138	45			
1990	2	56	123	136	43			

0	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)		
0	3555.1	672.1	5.3	105.6	473.3	(6368.0) + (	258.6) + (	0.0)	=	6626.6	TOTALS
0	534.6	113.5	4.7	15.7	80.0	(1052.1) + (	29.1) + (	0.0)	=	1081.1	BUSES
0	3020.5	558.7	5.4	90.0	393.3	(5315.9) + (	229.5) + (	0.0)	=	5545.4	OTHER

NO. OF ENTRIES TO SUBPT = 13
NO. OF LINKS RECALCULATED= 238

0 160 SECOND CYCLE 40 STEPS
QINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1
- (SECONDS)

3	3	156	30	63	76	110	143	
9	5	67	97	115	5	35		
49	7	57	76	88	121	142	10	22

0 . 160 SECOND CYCLE 40 STEPS

11	1009	2500	40	24	1	0.1 + 0.3	(4.3)	4	(0.7)	9	5.0						
13	1214<	2500	49	35	2	0.1 + 0.5	(5.8)	4	(0.8)	9	6.6						
15	146	600	61	18	28	0.4 + 0.8	(12.5)	77	(1.9)	3	14.4						
31BL	58	1700	10	24	20	0.3 + 0.1	(3.6)	64	(0.4)	1	3.9	3	124	151	44	71	
32	795	2100	108	18	198	8.1 + 35.6	(480.7)	219	(29.9)	57	510.6	3	124	151	44	71	
33	535	3600	44	35	23	3.1 + 0.4	(38.1)	76	(7.0)	9	45.0	3	91	117	11	37	
34	625	1700S	111	18	243	7.5 + 34.6	(463.3)	233	(25.0)	53	488.3	3	91	117	11	37	
35	527	1800S	85	18	36	2.8 + 2.5	(57.6)	121	(11.0)	14	68.5	3	124	4	44	84	
37BL	1130	3300	101	49	90	7.1 + 21.2	(311.8)	160	(17.4)	47	329.3	3	91	117	11	37	
90BL	24	93L	76	24	20	0.1 + 0.0	(1.4)	51	(0.1)	21	1.6	9	58	123	14	38	
91	43	1809	28	18	47	0.4 + 0.2	(6.2)	114	(0.8)	1	7.0	9	148	11	44	55	
92	32	1773	12	18	14	0.1 + 0.1	(1.3)	43	(0.3)	0	1.6	9	58	125	14	40	
93	811<	1932S	76	18	21	3.2 + 1.5	(52.2)	64	(9.0)	21	61.3	9	58	123	14	38	
94	241	1722S	88	18	81	2.5 + 2.9	(59.3)	139	(5.7)	11	65.1	9	148	11	44	55	
95BL	12	94L	88	24	81	0.1 + 0.1	(3.0)	139	(0.2)	11	3.1	9	148	11	44	55	
96	94	1644	35	4	21	0.3 + 0.3	(6.1)	73	(1.2)	2	7.3	9	58	125	14	40	
98	869	1904S	82	18	31	5.2 + 2.2	(82.3)	88	(13.1)	24	95.3	9	58	123	14	38	
99BL	24	98L	82	24	31	0.1 + 0.1	(2.3)	88	(0.2)	24	2.5	9	58	123	14	38	
341BL	10	34L	111	24	243	0.1 + 0.6	(7.4)	233	(0.2)	53	7.6	3	91	117	11	37	
351BL	68	35L	85	24	36	0.4 + 0.3	(7.4)	121	(0.8)	14	8.2	3	124	4	44	84	
491	1251	5749S	57	18	22	7.0 + 0.6	(84.0)	73	(15.8)	27	99.8	49	95	122	24	58	
492BL	32	491L	57	24	22	0.2 + 0.0	(2.1)	73	(0.2)	27	2.4	49	95	122	24	58	
493	523	3938S	69	18	36	4.3 + 1.0	(58.0)	95	(8.5)	14	66.5	49	63	77	148	6	
494BL	54	493L	69	24	36	0.4 + 0.1	(6.0)	95	(0.5)	14	6.5	49	63	77	148	6	
495	177	1860	53	12	27	0.7 + 0.6	(14.4)	97	(2.9)	5	17.3	49	63	89	148	18	
497	582<	3990S	42	12	15	2.0 + 0.3	(25.9)	38	(3.9)	8	29.7	49	63	89	148	18	
498BL	24	497L	42	16	10	0.1 + 0.0	(0.8)	21	(0.0)	8	0.8	49	63	89	148	18	
521	111	1862S	70	12	33	0.1 + 0.9	(11.2)	61	(1.2)	4	12.4	52	59	93	139	13	
522BL	30	521L	70	16	36	0.1 + 0.2	(3.3)	66	(0.2)	4	3.5	52	59	93	139	13	
523	517	1825S	73	11	28	2.8 + 1.3	(44.8)	86	(8.8)	11	53.6	52	59	91	139	11	
524BL	36	523L	73	16	17	0.1 + 0.1	(1.9)	31	(0.1)	11	2.0	52	59	91	139	11	
525	1212<	5967	68	31	21	6.2 + 1.0	(79.3)	81	(18.4)	25	97.7	52	96	119	16	39	
527	892	3735S	60	18	26	5.6 + 0.7	(69.9)	83	(12.7)	19	82.6	52	59	91	139	11	
528BL	36	527L	60	24	26	0.2 + 0.0	(2.9)	84	(0.3)	19	3.2	52	59	91	139	11	
1941	807<	3970S	27	1	1	0.1 + 0.2	(2.6)	3	(0.5)	4	3.1	194	63	125	143	45	
1942BL	44	1941L	27	2	1	0.0 + 0.0	(0.2)	5	(0.0)	4	0.2	194	63	125	143	45	
1991	1202<	3970S	40	1	1	0.2 + 0.3	(5.5)	10	(2.2)	15	7.6	1990	61	123	141	43	
1992BL	42	1991L	40	2	1	0.0 + 0.0	(0.1)	1	(0.0)	15	0.1	1990	61	123	141	43	

0 160 SECOND CYCLE 40 STEPS

0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	QUEUES	(\$/H)
0 3555.1	276.8	12.8	71.9	111.7	(2019.6) +	(201.9)	+ (0.0)	= 2221.5
0 534.6	50.0	10.7	9.3	22.9	(354.2) +	(20.7)	+ (0.0)	= 374.9
0 3020.5	226.8	13.3	62.6	88.8	(1665.4) +	(181.3)	+ (0.0)	= 1846.6

0	CRUISE	DELAY	STOPS	TOTALS
0	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
0	199.6	+ 211.1	+ 119.6	= 530.4

0 FUEL CONSUMPTION PREDICTIONS

NO. OF ENTRIES TO SUBPT = 20
NO. OF LINKS RECALCULATED = 395

PROGRAM TRANSYT FINISHED

3	3	83	117	150	3	37	70	
9	5	67	97	115	5	35		
49	7	54	73	85	118	139	7	19
52	3	54	91	119	134	11	39	
194	2	58	125	138	45			
1990	2	54	121	134	41			

0 160 SECOND CYCLE 40 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64 1 -1
- (SECONDS)

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0      160 SECOND CYCLE  40 STEPS
FINAL SETTINGS OBTAINED WITH INCREMENTS :-  24  64  -1  24  64   1  -1  1
- (SECONDS) .

```

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE	-----DELAY----- UNIFORM RANDOM+ COST OVERSAT OF (U+R+O=MEAN Q) DELAY (PCU-H/H) (\$/H)	----STOPS---- MEAN COST STOPS OF /PCU STOPS (%) (\$/H)	----QUEUE---- MEAN MAX. AVERAGE (PCU) (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES START START END END 1ST 2ND (SECONDS)
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T R A N S Y T

Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
 Implementation for IBM-PC or compatible
 OProgram TRANSYT 11, Analysis Program Version 1.3
 ORun with file:- "TMPTRAN.DAT" at 11:42 on 24/02/03
 OFuture based on 1/5/02 counts AM dev + Buses JP 24/02/03 - AMFut9.prt

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES = 1
 NUMBER OF LINKS = 8
 NUMBER OF OPTIMISED NODES = 1
 MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
 NUMBER OF STEPS IN CYCLE = 44
 MAXIMUM NUMBER OF SHARED STOPLINES = 2
 MAXIMUM NUMBER OF TIMING POINTS = 5
 MAXIMUM LINKS AT ANY NODE = 6

CORE REQUESTED = 3803 WORDS
 CORE AVAILABLE = 72000 WORDS

0 DATA INPUT :-

OCARD CARD
 NO. TYPE

(1)= TITLE:- Future based on 1/5/02 counts AM dev + Buses JP 24/02/03 - AMFut9.prt

OCARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME EFFECTIVE-GREEN PERIOD 1-1200 MINS.	EQUISAT DISPLACEMENTS START (SEC) END (SEC)	0=UNEQUAL FLOW 1=EQUAL CYCLE	CRUISE-SPEEDS SCALE 10-200 %	OPTIMISE 0=NONE 1=O/SET 2=FULL	EXTRA COPIES FINAL OUTPUT	HILL-CLIMB OUTPUT 1=FULL	DELAY VALUE P PER	STOP VALUE P PER
2)=	1	176	44	60	2 3	1 1	0 0	1 2	0	0	1100	200

LIST OF NODES TO BE OPTIMISED

OCARD NO.	CARD TYPE	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3)=	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LINKS HAVING SHARED STOPLINES

CARD NO.	CARD TYPE	FIRST SET.....	SECOND SET.....	THIRD SET.....
4)=	7	93	90	0
5)=	7	98	99	0

CARD NO.	CARD TYPE	NODE NO.	STAGE 1 CHANGE MIN	STAGE 2 CHANGE MIN	STAGE 3 CHANGE MIN	STAGE 4 CHANGE MIN	STAGE 5 CHANGE MIN	STAGE 6 CHANGE MIN	STAGE 7 CHANGE MIN
6)=	15	9	135 12	37 18	55 14	83 12	116 13	0 0	0 0

LINK CARDS: GIVEWAY DATA

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
7)=	30	91	0	94	0	0	26	0	0	730	0	0
8)=	30	92	98	0	0	24	0	0	0	790	0	0
9)=	30	94	0	91	61	0	23	0	0	640	0	0
10)=	30	96	93	0	0	21	0	0	0	750	0	0

LINK CARDS: FIXED DATA

CARD NO.	CARD TYPE	LINK NO.	EXIT NODE	FIRST GREEN		SECOND GREEN		LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
				START STAGE	END LAG	START STAGE	END LAG					
11)=	31	90	0	0	0	0	0	200	0	0	0	0
12)=	31	91	9	3	7	4	2	200	0	1809	0	0
13)=	31	92	9	1	5	2	2	200	0	1773	0	0
14)=	31	93	9	1	5	2	0	200	0	1936	0	0
15)=	31	94	9	3	7	4	2	200	0	1722	0	0
16)=	31	96	9	1	5	2	2	40	0	1644	0	0
17)=	31	98	9	1	5	2	0	200	0	1904	0	0
18)=	31	99	0	0	0	0	0	200	0	0	0	0

0

LINK CARDS: FLOW DATA

CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	ENTRY 1		ENTRY 2		ENTRY 3		ENTRY 4	
					LINK NO.	CRUISE SPEED	LINK NO.	CRUISE SPEED	LINK NO.	CRUISE SPEED	LINK NO.	CRUISE SPEED
19)=	32	90	30	0	0	0	40	0	0	0	0	0
20)=	32	91	79	0	0	0	40	0	0	0	0	0
21)=	32	92	10	0	0	0	40	0	0	0	0	0
22)=	32	93	838	0	0	0	40	0	0	0	0	0
23)=	32	94	206	0	0	0	40	0	0	0	0	0
24)=	32	96	144	0	0	0	40	0	0	0	0	0
25)=	32	98	1004	0	0	0	40	0	0	0	0	0
26)=	32	99	30	0	0	0	3000	0	0	0	0	0

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

0 176 SECOND CYCLE 44 STEPS

0 INITIAL SETTINGS

- (SECONDS)

0	NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
0	9	5	135	168	10	66	99		

0 LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER PCU CRUISE DELAY (SEC)	TIMES PER PCU DELAY (SEC)	-----DELAY-----		-----STOPS-----		-----QUEUE-----		PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES		
						UNIFORM (U+R+O=MEAN Q) (PCU-H/H)	RANDOM+ OVERSAT OF DELAY (\$/H)	MEAN STOPS /PCU (%)	COST OF STOPS (\$/H)	MAX. AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)			START 1ST	START 2ND	END
90	30	93L	136	18	580	0.8 + 4.0	(53.2)	261	(1.3)	171	+	54.5	9	140	168	71 99
91	79	1809	26	18	23	0.3 + 0.2	(5.5)	75	(1.0)	2		6.5	9	17	68	105 137
92	10	1773	7	18	34	0.1 + 0.0	(1.0)	75	(0.1)	0		1.2	9	140	170	71 101
93	838	1936S	136	18	580	22.2 +112.8	(999.9)	261	(37.5)	171	+	1522.9	9	140	168	71 99
94	206	1722	43	18	22	0.9 + 0.4	(14.0)	75	(2.7)	4		16.7	9	17	68	105 137
96	144	1644	96	4	153	1.5 + 4.6	(67.4)	193	(4.8)	9	+	72.1	9	140	170	71 101
98	1004	1904S	165	18	837	34.9 +198.6	(999.9)	257	(44.3)	275	+	2613.1	9	140	168	71 99
99BL	30	98L	165	24	837	1.0 + 5.9	(76.8)	257	(0.7)	275	+	77.5	9	140	168	71 99

0	TOTAL DISTANCE TRAVELLED (PCU-KM/H)	TOTAL TIME SPENT (PCU-H/H)	MEAN JOURNEY SPEED (KM/H)	TOTAL UNIFORM DELAY (PCU-H/H)	TOTAL RANDOM+ OVERSAT DELAY (PCU-H/H)	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX (\$/H)	TOTALS
0	445.2	399.6	1.1	61.8	326.6	(4272.1) + (92.4)	+ (0.0)	=	4364.5	BUSES
0	6.0	7.2	0.8	1.0	5.9	(76.8) + (0.7)	+ (0.0)	=	77.5	OTHER
0	439.2	392.4	1.1	60.8	320.6	(4195.3) + (91.7)	+ (0.0)	=	4287.0	

0*****

0	CRUISE LITRES PER HOUR	DELAY LITRES PER HOUR	STOPS LITRES PER HOUR	TOTALS LITRES PER HOUR
0	24.4	446.6	54.7	525.8

0 FUEL CONSUMPTION PREDICTIONS

0 NO. OF ENTRIES TO SUBPT = 1

NO. OF LINKS RECALCULATED= 10

0 176 SECOND CYCLE 44 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26
- (SECONDS)

9	5	83	116	134	14	47					
0 TOTAL		TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL	
DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE	
TRAVELLED		SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX	
						DELAY	DELAY	STOPS	QUEUES		
(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 445.2		385.8	1.2		48.1	326.6	(4120.8) + (	92.4)	+ (	0.0)	= 4213.2 TOTALS
0 6.0		6.9	0.9		0.8	5.9	(74.2) + (	0.7)	+ (	0.0)	= 74.9 BUSES
0 439.2		378.9	1.2		47.2	320.6	(4046.6) + (	91.7)	+ (	0.0)	= 4138.3 OTHER

0 NO. OF ENTRIES TO SUBPT = 5

NO. OF LINKS RECALCULATED= 41

0 176 SECOND CYCLE 44 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70
- (SECONDS)

9	5	83	116	134	14	47					
0 TOTAL		TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL	
DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE	
TRAVELLED		SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX	
						DELAY	DELAY	STOPS	QUEUES		
(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 445.2		385.8	1.2		48.0	326.6	(4120.7) + (	92.4)	+ (	0.0)	= 4213.2 TOTALS
0 6.0		6.9	0.9		0.8	5.9	(74.2) + (	0.7)	+ (	0.0)	= 74.9 BUSES
0 439.2		378.8	1.2		47.2	320.6	(4046.6) + (	91.7)	+ (	0.0)	= 4138.2 OTHER

0 NO. OF ENTRIES TO SUBPT = 4

NO. OF LINKS RECALCULATED= 34

0 176 SECOND CYCLE 44 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1
- (SECONDS)

9	5	61	139	157	10	43					
0 TOTAL		TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL	
DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE	
TRAVELLED		SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX	
						DELAY	DELAY	STOPS	QUEUES		
(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 445.2		41.3	10.8		16.2	14.0	(331.9) + (	41.2)	+ (	0.0)	= 373.0 TOTALS
0 6.0		0.6	10.3		0.2	0.2	(4.2) + (	0.3)	+ (	0.0)	= 4.5 BUSES
0 439.2		40.8	10.8		16.0	13.8	(327.6) + (	40.9)	+ (	0.0)	= 368.5 OTHER

0 NO. OF ENTRIES TO SUBPT = 59

NO. OF LINKS RECALCULATED= 473

0 176 SECOND CYCLE 44 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26
- (SECONDS)

9	5	61	139	157	10	43				
0 TOTAL		TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE

TRAVELLED	SPENT	SPEED	DELAY	OVERSAT DELAY	OF DELAY	OF STOPS	EXCESS QUEUES	INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 445.2	41.4	10.7	16.2	14.0	(332.9) + (	41.2)	+ (0.0)	=	374.1
0 6.0	0.6	10.3	0.2	0.2	(4.2) + (	0.3)	+ (0.0)	=	4.5
0 439.2	40.9	10.7	16.0	13.9	(328.7) + (	40.9)	+ (0.0)	=	369.6
0									

NO. OF ENTRIES TO SUBPT = 4
NO. OF LINKS RECALCULATED= 34

0 176 SECOND CYCLE 44 STEPS
OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70
- (SECONDS)

9	5	131	33	51	80	113					
0 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)	
0 445.2		41.4	10.7		16.2	14.0	(332.7) + (	41.2)	+ (0.0)	=	373.9
0 6.0		0.6	10.3		0.2	0.2	(4.2) + (	0.3)	+ (0.0)	=	4.5
0 439.2		40.8	10.8		16.0	13.9	(328.5) + (	40.9)	+ (0.0)	=	369.4
0											

NO. OF ENTRIES TO SUBPT = 3
NO. OF LINKS RECALCULATED= 25

0 176 SECOND CYCLE 44 STEPS
OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1
- (SECONDS)

9	5	130	32	50	79	112					
0 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)	
0 445.2		41.3	10.8		16.2	14.0	(331.6) + (	41.2)	+ (0.0)	=	372.8
0 6.0		0.6	10.3		0.2	0.2	(4.2) + (	0.3)	+ (0.0)	=	4.5
0 439.2		40.7	10.8		16.0	13.8	(327.4) + (	40.8)	+ (0.0)	=	368.3
0											

NO. OF ENTRIES TO SUBPT = 4
NO. OF LINKS RECALCULATED= 33

0 176 SECOND CYCLE 44 STEPS
OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1 -1
- (SECONDS)

9	5	131	33	51	79	112					
0 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)	
0 445.2		41.2	10.8		16.1	14.0	(330.3) + (	41.1)	+ (0.0)	=	371.4
0 6.0		0.6	10.3		0.2	0.2	(4.2) + (	0.3)	+ (0.0)	=	4.5
0 439.2		40.6	10.8		15.8	13.8	(326.1) + (	40.8)	+ (0.0)	=	366.9
0											

NO. OF ENTRIES TO SUBPT = 15
NO. OF LINKS RECALCULATED= 121

0 176 SECOND CYCLE 44 STEPS

OFINAL SETTINGS OBTAINED WITH INCREMENTS :- 26 70 -1 26 70 1 -1 1
- (SECONDS)

0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7

9	5	131	33	51	79	112	-----DELAY-----		-----STOPS-----		-----QUEUE-----		PERFORMANCE	EXIT	GREEN TIMES			
0 LINK	FLOW	SAT	DEGREE	MEAN	UNIFORM	RANDOM+	COST	MEAN	COST	MEAN	AVERAGE	INDEX.	NODE	START	START	END	END	
NUMBER	INTO	FLOW	OF	PER PCU	(U+R+O=MEAN Q)	OVERSAT	OF	STOPS	OF	MAX.	EXCESS	WEIGHTED SUM		1ST	2ND	1ST	2ND	
	LINK		SAT	CRUISE	(PCU-H/H)	(\$/H)	(\$/H)	(%)	(\$/H)	(PCU)	(PCU)	OF () VALUES		(SECONDS)	(SECONDS)	(SECONDS)	(SECONDS)	
90	30	93L	77	18	26	0.2 + 0.1 (2.4)	79 (0.4)	22				2.8	9	136	33	84	112	
91	79	1809	70	18	89	0.8 + 1.1 (21.5)	174 (2.4)	4				23.8	9	58	81	118	133	
92	10	1773	4	18	15	0.0 + 0.0 (0.5)	43 (0.1)	0				0.5	9	136	35	84	114	
93	838	1936S	77	18	26	4.4 + 1.6 (65.7)	79 (11.3)	22				77.0	9	136	33	84	112	
94	206	1722	95	18	134	2.6 + 5.1 (84.5)	176 (6.2)	12				90.7	9	58	81	118	133	
96	144	1644	49	4	25	0.5 + 0.5 (11.1)	83 (2.0)	3				13.1	9	136	35	84	114	
98	1004	1904S	93	18	46	7.3 + 5.5 (140.5)	107 (18.4)	35				158.9	9	136	33	84	112	
99BL	30	98L	93	24	46	0.2 + 0.2 (4.2)	107 (0.3)	35				4.5	9	136	33	84	112	

0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	COST	FOR	PERFORMANCE
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	OF	EXCESS	INDEX
			DELAY	DELAY	DELAY	STOPS	STOPS	QUEUES	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)
0 445.2	41.2	10.8	16.1	14.0	(330.2) + (41.1)	+ (0.0)	=	371.3	TOTALS
0 6.0	0.6	10.3	0.2	0.2	(4.2) + (0.3)	+ (0.0)	=	4.5	BUSES
0 439.2	40.6	10.8	15.8	13.8	(326.0) + (40.8)	+ (0.0)	=	366.8	OTHER

0*****

0	CRUISE	DELAY	STOPS	TOTALS
	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS	24.4	+ 34.5	+ 24.4	= 83.3

0
NO. OF ENTRIES TO SUBPT = 5
NO. OF LINKS RECALCULATED= 42

PROGRAM TRANSYT FINISHED

TRANSYT

Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
 Implementation for IBM-PC or compatible
 OProgram TRANSYT 11, Analysis Program Version 1.3
 ORun with file:- "TMPTRAN.DAT" at 11:29 on 24/02/03
 OFuture based on 1/5/02 counts AM dev + Buses JP 24/02/03 - AMFut.prt

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES = 7
 NUMBER OF LINKS = 45
 NUMBER OF OPTIMISED NODES = 6
 MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
 NUMBER OF STEPS IN CYCLE = 40
 MAXIMUM NUMBER OF SHARED STOPLINES = 2
 MAXIMUM NUMBER OF TIMING POINTS = 7
 MAXIMUM LINKS AT ANY NODE = 6

CORE REQUESTED = 8546 WORDS
 CORE AVAILABLE = 72000 WORDS

DATA INPUT :-

OCARD CARD
 NO. TYPE
 (1)= TITLE:- Future based on 1/5/02 counts AM dev + Buses JP 24/02/03 - AMFut.prt
 OCARD CARD CYCLE NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP
 NO. TYPE TIME STEPS PERIOD DISPLACEMENTS SETTINGS CYCLE SCALE SCALE CARD32 0=NONE COPIES CLIMB VALUE VALUE
 (SEC) CYCLE MINS. (SEC) 0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=O/SET FINAL OUTPUT 1=FULL PCU-H P PER
 2)= 1 160 40 60 2 3 1 1 0 0 1 2 0 0 1100 200
 OCARD CARD
 NO. TYPE
 3)= 2 52 49 1990 194 1 3 0 0 0 0 0 0 0 0
 0 LINKS HAVING SHARED STOPLINES
 CARD CARD FIRST SET..... SECOND SET..... THIRD SET.....
 NO. TYPE
 4)= 7 11 12 0 0 0 0 0 0 0 0 0 0 0 0 0
 5)= 7 13 14 0 0 0 0 0 0 0 0 0 0 0 0 0
 6)= 7 15 16 0 0 0 0 0 0 0 0 0 0 0 0 0
 7)= 7 17 18 0 0 0 0 0 0 0 0 0 0 0 0 0
 8)= 7 33 331 0 0 0 0 0 0 0 0 0 0 0 0 0
 9)= 7 34 341 0 0 0 0 0 0 0 0 0 0 0 0 0
 10)= 7 35 351 0 0 0 0 0 0 0 0 0 0 0 0 0
 11)= 7 37 371 0 0 0 0 0 0 0 0 0 0 0 0 0
 12)= 7 93 90 0 0 0 0 0 0 0 0 0 0 0 0 0
 13)= 7 98 99 0 0 0 0 0 0 0 0 0 0 0 0 0
 14)= 7 491 492 0 0 0 0 0 0 0 0 0 0 0 0 0
 15)= 7 493 494 0 0 0 0 0 0 0 0 0 0 0 0 0
 16)= 7 497 498 0 0 0 0 0 0 0 0 0 0 0 0 0
 17)= 7 521 522 0 0 0 0 0 0 0 0 0 0 0 0 0
 18)= 7 523 524 0 0 0 0 0 0 0 0 0 0 0 0 0

19)=	7	525	526	0	0	0	0	0	0	0	0	0	0	0	0	0
20)=	7	527	528	0	0	0	0	0	0	0	0	0	0	0	0	0
21)=	7	1941	1942	0	0	0	0	0	0	0	0	0	0	0	0	0
22)=	7	1991	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
0																
NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES																
CARD	CARD	NODE	STAGE 1		STAGE 2		STAGE 3		STAGE 4		STAGE 5		STAGE 6		STAGE 7	
NO.	TYPE	NO.	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN
23)=	15	1	79	14	99	12	149	21	10	12	29	14	0	0	0	0
24)=	23	3	76	17	30	15	63	12	0	0	0	0	0	0	0	0
25)=	15	9	0	12	56	18	74	14	89	12	145	13	0	0	0	0
26)=	17	49	51	12	78	12	90	13	115	21	136	12	2	12	14	13
27)=	23	52	39	12	79	12	24	15	0	0	0	0	0	0	0	0
28)=	22	194	50	12	37	13	0	0	0	0	0	0	0	0	0	0
29)=	22	1990	42	12	29	13	0	0	0	0	0	0	0	0	0	0

0																
LINK CARDS: GIVEWAY DATA																
PRIORITY LINKS LINK1 GIVEWAY COEFFS.																
CARD	CARD	LINK	LINK1	LINK2	ONLY	A1	A2									
NO.	TYPE	NO.	NO.	NO.	% FLOW	X100	X100	LINK	STOP	MAX	DELAY	DISPSN				
30)=	30	17	13	0	0	20	0	25	0	700	0	0				
31)=	30	18	0	0	0	0	0	25	0	700	0	0				
32)=	30	35	0	32	80	0	25	200	0	1000	0	0				
33)=	30	91	0	94	0	0	26	200	0	730	0	0				
34)=	30	92	98	0	0	24	0	200	0	790	0	0				
35)=	30	94	0	91	61	0	23	200	0	640	0	0				
36)=	30	96	93	0	0	21	0	40	0	750	0	0				
37)=	30	351	0	0	0	0	0	200	0	1000	0	0				
38)=	30	495	493	0	0	16	0	130	0	680	0	0				
39)=	30	521	0	527	38	0	19	130	0	800	0	0				
40)=	30	522	0	0	0	0	0	130	0	800	0	0				

0																
LINK CARDS: FIXED DATA																
FIRST GREEN SECOND GREEN																
CARD	CARD	LINK	EXIT	START	END	START	END	START	END	START	END	LINK	STOP	SAT	DELAY	DISPSN
NO.	TYPE	NO.	NO.	STAGE	LAG	STAGE	LAG	STAGE	LAG	STAGE	LAG	LENGTH	WT.X100	FLOW	WT.X100	X100
41)=	31	11	1	2	5	3	0	5	5	1	0	270	0	1915	0	0
42)=	31	12	0	0	0	0	0	0	0	0	0	270	0	0	0	0
43)=	31	13	1	2	5	3	0	5	5	1	0	390	0	3872	0	0
44)=	31	14	0	0	0	0	0	0	0	0	0	390	0	0	0	0
45)=	31	15	1	1	7	2	0	4	7	5	0	200	0	1791	0	0
46)=	31	16	0	0	0	0	0	0	0	0	0	200	0	0	0	0
47)=	31	17	1	2	5	3	0	5	5	1	0	25	0	1856	0	0
48)=	31	18	0	0	0	0	0	0	0	0	0	25	0	0	0	0
49)=	31	31	3	2	7	3	0	0	0	0	0	200	0	1700	0	0
50)=	31	32	3	2	7	3	0	0	0	0	0	200	0	2100	0	0
51)=	31	33	3	1	7	2	0	0	0	0	0	390	0	3600	0	0
52)=	31	34	3	1	7	2	0	0	0	0	0	200	0	1700	0	0
53)=	31	35	3	2	7	1	0	0	0	0	0	200	0	1800	0	0
54)=	31	37	3	1	7	2	0	0	0	0	0	406	0	3300	0	0
55)=	31	90	0	0	0	0	0	0	0	0	0	200	0	0	0	0
56)=	31	91	9	3	7	4	2	5	6	1	2	200	0	1809	0	0
57)=	31	92	9	1	5	2	2	4	5	5	2	200	0	1773	0	0
58)=	31	93	9	1	5	2	0	4	5	5	0	200	0	1936	0	0
59)=	31	94	9	3	7	4	2	5	6	1	2	200	0	1722	0	0
60)=	31	96	9	1	5	2	2	4	5	5	2	40	0	1644	0	0
61)=	31	98	9	1	5	2	0	4	5	5	0	200	0	1904	0	0
62)=	31	99	0	0	0	0	0	0	0	0	0	200	0	0	0	0
63)=	31	331	0	0	0	0	0	0	0	0	0	390	0	0	0	0
64)=	31	341	0	0	0	0	0	0	0	0	0	200	0	0	0	0
65)=	31	351	0	0	0	0	0	0	0	0	0	200	0	0	0	0
66)=	31	371	0	0	0	0	0	0	0	0	0	406	0	0	0	0
67)=	31	491	49	3	6	4	0	7	6	1	0	200	0	5714	0	0

68)=	31	492	0	0	0	0	0	0	0	0	0	200	0	0	0	0
69)=	31	493	49	1	5	2	0	5	5	6	0	200	0	3969	0	0
70)=	31	494	0	0	0	0	0	0	0	0	0	200	0	0	0	0
71)=	31	495	49	1	5	3	0	5	5	7	0	130	0	1860	0	0
72)=	31	497	49	1	5	3	0	5	5	7	0	130	0	3990	0	0
73)=	31	498	0	0	0	0	0	0	0	0	0	130	0	0	0	0
74)=	31	521	52	1	5	2	2	0	0	0	0	130	0	1854	0	0
75)=	31	522	0	0	0	0	0	0	0	0	0	130	0	0	0	0
76)=	31	523	52	1	5	2	0	0	0	0	0	130	0	1825	0	0
77)=	31	524	0	0	0	0	0	0	0	0	0	130	0	0	0	0
78)=	31	525	52	2	5	3	2	0	0	0	0	340	0	5982	0	0
79)=	31	526	0	0	0	0	0	0	0	0	0	340	0	0	0	0
80)=	31	527	52	1	5	2	0	0	0	0	0	200	0	3785	0	0
81)=	31	528	0	0	0	0	0	0	0	0	0	200	0	0	0	0
82)=	31	1941	194	1	5	2	0	0	0	0	0	16	0	3970	0	0
83)=	31	1942	0	0	0	0	0	0	0	0	0	16	0	0	0	0
84)=	31	1991	1990	1	5	2	0	0	0	0	0	14	0	3970	0	0
85)=	31	1992	0	0	0	0	0	0	0	0	0	14	0	0	0	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
86)=	32	11	799	0	491	730	40	493	58	40	495	203	40	0	0	0
87)=	32	12	32	0	492	32	3000	0	0	0	0	0	0	0	0	0
88)=	32	13	1221	0	34	1002	40	35	40	40	0	0	0	0	0	0
89)=	32	14	12	0	331	12	3000	0	0	0	0	0	0	0	0	0
90)=	32	15	199	0	0	0	40	0	0	0	0	0	0	0	0	0
91)=	32	16	44	0	0	0	3000	0	0	0	0	0	0	0	0	0
92)=	32	17	50	0	0	0	40	0	0	0	0	0	0	0	0	0
93)=	32	18	10	0	0	0	3000	0	0	0	0	0	0	0	0	0
94)=	32	31	62	0	0	0	3000	0	0	0	0	0	0	0	0	0
95)=	32	32	650	0	0	0	40	0	0	0	0	0	0	0	0	0
96)=	32	33	601	0	0	0	40	0	0	0	0	0	0	0	0	0
97)=	32	34	556	0	0	0	40	0	0	0	0	0	0	0	0	0
98)=	32	35	623	0	0	0	40	0	0	0	0	0	0	0	0	0
99)=	32	37	1058	0	11	799	3000	15	178	3000	0	0	0	0	0	0
100)=	32	90	30	0	524	30	3000	0	0	0	0	0	0	0	0	0
101)=	32	91	79	0	0	0	40	0	0	0	0	0	0	0	0	0
102)=	32	92	10	0	523	297	40	525	65	40	0	0	0	0	0	0
103)=	32	93	838	0	523	297	40	525	65	40	0	0	0	0	0	0
104)=	32	94	206	0	0	0	40	0	0	0	0	0	0	0	0	0
105)=	32	96	144	0	0	0	40	0	0	0	0	0	0	0	0	0
106)=	32	98	1004	0	0	0	40	0	0	0	0	0	0	0	0	0
107)=	32	99	30	0	0	0	3000	0	0	0	0	0	0	0	0	0
108)=	32	331	12	0	0	0	3000	0	0	0	0	0	0	0	0	0
109)=	32	341	10	0	0	0	3000	0	0	0	0	0	0	0	0	0
110)=	32	351	72	0	0	0	3000	0	0	0	0	0	0	0	0	0
111)=	32	371	12	0	16	12	3000	0	0	0	0	0	0	0	0	0
112)=	32	491	1190	0	0	0	40	0	0	0	0	0	0	0	0	0
113)=	32	492	52	0	0	0	3000	0	0	0	0	0	0	0	0	0
114)=	32	493	475	0	0	0	40	0	0	0	0	0	0	0	0	0
115)=	32	494	66	0	0	0	3000	0	0	0	0	0	0	0	0	0
116)=	32	495	203	0	527	203	40	0	0	0	0	0	0	0	0	0
117)=	32	497	865	0	525	145	40	527	755	40	0	0	0	0	0	0
118)=	32	498	30	0	528	30	3000	0	0	0	0	0	0	0	0	0
119)=	32	521	127	0	493	127	40	0	0	0	0	0	0	0	0	0
120)=	32	522	36	0	494	36	3000	0	0	0	0	0	0	0	0	0
121)=	32	523	535	0	0	0	0	0	0	0	0	0	0	0	0	0
*** DISTANCE > 0 BUT CRUISE TIME/SPEED=0 FOR THIS LINK.THUS CRUISE TIME BASED ON DISTANCE GIVEN AND DEFAULT SPEED OF 43 KM/H																
122)=	32	524	30	0	494	30	3000	0	0	0	0	0	0	0	0	0

123)=	32	525	1271	0	13	1046	40	15	20	40	0	0	0	0	0	0
124)=	32	526	32	0	16	32	3000	0	0	0	0	0	0	0	0	0
125)=	32	527	1152	0	91	47	40	94	71	40	98	1050	40	0	0	0
126)=	32	528	30	0	99	30	3000	0	0	0	0	0	0	0	0	0
127)=	32	1941	1093	0	491	228	40	497	865	40	0	0	0	0	0	0
128)=	32	1942	50	0	492	20	3000	498	30	3000	0	0	0	0	0	0
129)=	32	1991	1256	0	521	68	40	525	995	40	527	193	40	0	0	0
130)=	32	1992	68	0	522	36	3000	526	32	3000	528	10	3000	0	0	0

OLINK 13 IS MULTIPLYING UPSTREAM FLOW ON ENTRY 1 BY 211 PER CENT
 *****END OF SUBROUTINE TINPUT*****

0 160 SECOND CYCLE 40 STEPS

0 INITIAL SETTINGS
 - (SECONDS)

0	NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
	1	5	79	95	140	1	26		
	3	3	76	104	131	156	24	51	
	9	5	0	56	74	89	145		
	49	7	51	69	81	115	136	3	15
	52	3	39	79	104	119	159	24	
	194	2	50	117	130	37			
	1990	2	42	109	122	29			

0 LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE	MEAN TIMES PER PCU DELAY	-----DELAY----- UNIFORM RANDOM+ COST (U+R+O=MEAN Q) DELAY (PCU-H/H) (\$/H)	-----STOPS----- MEAN COST STOPS OF /PCU STOPS (%) (\$/H)	-----QUEUE----- MEAN AVERAGE MAX. EXCESS (PCU) (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES START END 1ST 2ND (SECONDS)
11	794	1915S	77	24	11	1.0 + 1.6 (27.8)	39 (5.3)	11	33.1	1	100 140 31 79
12BL	32	11L	77	32	9	0.0 + 0.1 (0.9)	24 (0.1)	11	1.0	1	100 140 31 79
13	1017<	3872S	47	35	6	1.4 + 0.4 (19.7)	14 (3.0)	8	22.8	1	100 140 31 79
14BL	12	13L	47	47	6	0.0 + 0.0 (0.2)	12 (0.0)	8	0.2	1	100 140 31 79
15	199	1791S	75	18	53	1.7 + 1.2 (32.0)	115 (3.9)	7	36.0	1	86 95 8 26
16BL	44	15L	75	24	53	0.4 + 0.3 (7.1)	115 (0.5)	7	7.6	1	86 95 8 26
17	50	1856S	31	2	30	0.2 + 0.2 (4.6)	91 (0.8)	2	5.4	1	100 140 31 79
18BL	10	17L	31	3	30	0.0 + 0.0 (0.9)	91 (0.1)	2	1.0	1	100 140 31 79
31BL	62	1700	14	24	27	0.4 + 0.1 (5.1)	76 (0.5)	1	5.6	3	111 131 31 51
32	650	2100	118	18	344	9.7 + 52.5 (683.6)	252 (28.1)	73	711.8	3	111 131 31 51
33	601	3600S	62	35	30	4.2 + 0.8 (55.3)	88 (9.1)	13	64.4	3	83 104 3 24
34	556	1700S	121	18	392	9.5 + 51.1 (665.9)	257 (24.5)	71	690.4	3	83 104 3 24
35	623	1800S	80	18	26	2.8 + 1.8 (49.9)	101 (10.8)	15	60.7	3	111 156 31 76
37BL	1051	3300S	117	49	320	13.3 + 80.3 (999.9)	248 (25.3)	113	1054.0	3	83 104 3 24
90BL	30	93L	67	24	26	0.2 + 0.0 (2.4)	98 (0.3)	20	2.7	9	5 56 94 145
91	79	1809	112	18	383	1.4 + 7.1 (92.5)	262 (3.6)	9	96.1	9	81 91 151 2
92	11	1773	3	18	14	0.0 + 0.0 (0.5)	64 (0.1)	0	0.6	9	5 58 94 147
93	814<	1936S	67	18	24	4.5 + 1.0 (60.8)	91 (13.0)	20	73.8	9	5 56 94 145
94	206	1722	155	18	776	6.3 + 38.1 (488.2)	261 (9.2)	47	497.5	9	81 91 151 2
96	144	1644	41	4	17	0.3 + 0.3 (7.4)	68 (1.7)	3	9.1	9	5 58 94 147
98	1004	1904S	84	18	20	3.3 + 2.4 (62.8)	76 (13.2)	25	76.0	9	5 56 94 145
99BL	30	98L	84	24	20	0.1 + 0.1 (1.9)	76 (0.2)	25	2.1	9	5 56 94 145
331BL	12	33L	62	47	30	0.1 + 0.0 (1.1)	88 (0.1)	13	1.2	3	83 104 3 24
341BL	10	34L	121	24	392	0.2 + 0.9 (12.0)	257 (0.2)	71	12.2	3	83 104 3 24
351BL	72	35L	80	24	26	0.3 + 0.2 (5.8)	101 (0.7)	15	6.5	3	111 156 31 76
371BL	12	37L	117	49	310	0.1 + 0.9 (11.4)	262 (0.3)	113	11.7	3	83 104 3 24
491	1190	5714S	58	18	24	7.2 + 0.7 (86.4)	77 (15.6)	29	102.1	49	87 115 21 51
492BL	52	491L	58	24	24	0.3 + 0.0 (3.8)	77 (0.4)	29	4.2	49	87 115 21 51
493	475	3969S	59	18	33	3.7 + 0.6 (47.6)	90 (7.3)	13	54.9	49	56 69 141 3
494BL	66	493L	59	24	33	0.5 + 0.1 (6.6)	90 (0.6)	13	7.2	49	56 69 141 3

495	198	1860	56	12	24	0.7 + 0.6	(14.6)	102	(3.6)	5	18.2	49	56	81	141	15
497	824<	3990S	56	12	12	2.1 + 0.6	(29.7)	46	(6.8)	16	36.6	49	56	81	141	15
498BL	30	497L	56	16	9	0.0 + 0.0	(0.8)	33	(0.1)	16	0.9	49	56	81	141	15
521	127	1854S	67	12	32	0.3 + 0.8	(12.3)	84	(1.8)	4	14.2	52	44	81	124	1
522BL	36	521L	67	16	38	0.2 + 0.2	(4.2)	90	(0.3)	4	4.5	52	44	81	124	1
523	535	1825S	69	11	24	2.6 + 1.0	(40.0)	81	(8.6)	11	48.5	52	44	79	124	159
524BL	30	523L	69	16	24	0.1 + 0.1	(2.2)	50	(0.1)	11	2.3	52	44	79	124	159
525	1063<	5982S	64	31	20	5.1 + 0.8	(65.6)	77	(16.9)	26	82.5	52	84	106	4	26
526BL	32	525L	64	41	37	0.3 + 0.0	(3.6)	103	(0.3)	26	3.9	52	84	106	4	26
527	1123<	3785S	68	18	14	3.3 + 1.0	(47.7)	63	(12.4)	22	60.1	52	44	79	124	159
528BL	30	527L	68	24	13	0.1 + 0.0	(1.1)	59	(0.2)	22	1.3	52	44	79	124	159

0 160 SECOND CYCLE 40 STEPS

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE DELAY	UNIFORM (U+R+O=MEAN Q) (PCU-H/H)	RANDOM+ OVERSAT OF DELAY	COST OF STOPS	MEAN COST OF STOPS	QUEUE MAX. AVERAGE EXCESS	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES	EXIT NODE	GREEN TIMES START END 1ST 2ND
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)		(\$/H)	(%)	(\$/H)	(PCU)	(PCU)	(SECONDS)

1941	1053<	3970S	35	1	1	0.1 + 0.3	(3.9)	4	(0.7)	8	+	4.6	194	55	117	135	37
1942BL	50	1941L	35	2	1	0.0 + 0.0	(0.2)	6	(0.0)	8	+	0.3	194	55	117	135	37
1991	1088<	3970S	37	1	2	0.2 + 0.3	(5.4)	12	(2.6)	18	+	8.0	1990	47	109	127	29
1992BL	68	1991L	37	2	1	0.0 + 0.0	(0.2)	4	(0.0)	18	+	0.3	1990	47	109	127	29

0 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	TOTALS
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 3578.8	430.8	8.3	88.3	248.5	(3704.6) + (233.1)	+	(0.0)	=	3937.7
0 557.0	118.6	4.7	16.6	83.4	(1100.3) + (30.3)	+	(0.0)	=	1130.6
0 3021.8	312.2	9.7	71.7	165.1	(2604.4) + (202.8)	+	(0.0)	=	2807.1

0*****

0	CRUISE LITRES PER HOUR	DELAY LITRES PER HOUR	STOPS LITRES PER HOUR	TOTALS LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS	201.1	+ 387.3	+ 138.1	= 726.5

0
NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 62

0 160 SECOND CYCLE 40 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24
- (SECONDS)

1	5	79	95	140	1	26											
3	3	76	104	131	156	24	51										
9	5	0	56	74	89	145											
49	7	51	69	81	115	136	3	15									
52	3	39	79	104	119	159	24										
194	2	50	117	130	37												
1990	2	42	109	122	29												

0 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	TOTALS
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 3578.8	431.3	8.3	88.4	248.9	(3710.3) + (233.0)	+	(0.0)	=	3943.3
0 557.0	118.6	4.7	16.6	83.4	(1100.1) + (30.3)	+	(0.0)	=	1130.4
0 3021.8	312.7	9.7	71.7	165.6	(2610.2) + (202.7)	+	(0.0)	=	2812.9

0
NO. OF ENTRIES TO SUBPT = 14

0 160 SECOND CYCLE 40 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64
- (SECONDS)

NO. OF ENTRIES TO SUBPT = 13
NO. OF LINKS RECALCULATED= 236

NO. OF ENTRIES TO SUBPT = 75
NO. OF LINKS RECALCULATED= 1221

	1	5	77	96	144	5	27			
	3	3	69	102	136	149	22	56		
	9	5	0	56	74	89	145			
	49	7	51	70	82	110	131	1	13	
	52	3	39	81	104	119	1	24		
	194	2	50	117	130	37				
	1990	2	42	109	122	29				
O	TOTAL		TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY TOTAL

DISTANCE TRAVELLED	TIME SPENT	JOURNEY SPEED	UNIFORM DELAY	RANDOM+ OVERSAT DELAY	COST OF DELAY	COST OF STOPS	FOR EXCESS QUEUES	PERFORMANCE INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 3578.8	260.1	13.8	73.2	92.9	(1827.4) + (	211.4)	+ (	0.0)	= 2038.8
0 557.0	38.9	14.3	10.2	10.1	(223.3) + (	16.8)	+ (	0.0)	= 240.1
0 3021.8	221.3	13.7	63.0	82.8	(1604.1) + (	194.6)	+ (	0.0)	= 1798.7

NO. OF ENTRIES TO SUBPT = 13
NO. OF LINKS RECALCULATED= 260

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64
- (SECONDS)

1	5	77	96	144	5	27			
3	3	69	102	136	149	22	56		
9	5	0	56	74	89	145			
49	7	51	70	82	110	131	1	13	
52	3	39	81	104	119	1	24		
194	2	50	117	130	37				
1990	2	42	109	122	29				
0 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)	
0 3578.8	260.1	13.8	73.2	92.9	(1827.4) + (	211.4)	+ (	0.0)	= 2038.8
0 557.0	38.9	14.3	10.2	10.1	(223.3) + (	16.8)	+ (	0.0)	= 240.1
0 3021.8	221.3	13.7	63.0	82.8	(1604.1) + (	194.6)	+ (	0.0)	= 1798.7

NO. OF ENTRIES TO SUBPT = 13
NO. OF LINKS RECALCULATED= 269

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64 1
- (SECONDS)

1	5	76	95	143	4	26			
3	3	72	105	139	152	25	59		
9	5	0	56	74	89	145			
49	7	51	70	82	110	131	1	13	
52	3	37	79	102	117	159	22		
194	2	50	117	130	37				
1990	2	43	110	123	30				
0 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)	
0 3578.8	258.9	13.8	71.9	92.9	(1813.7) + (	203.5)	+ (	0.0)	= 2017.2
0 557.0	38.1	14.6	9.4	10.1	(214.5) + (	16.5)	+ (	0.0)	= 231.0
0 3021.8	220.8	13.7	62.6	82.8	(1599.2) + (	187.0)	+ (	0.0)	= 1786.2

NO. OF ENTRIES TO SUBPT = 18
NO. OF LINKS RECALCULATED= 349

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64 1 -1
- (SECONDS)

1	5	75	96	146	7	26												
3	3	72	106	139	152	26	59											
9	5	0	56	74	89	145												
49	7	50	73	85	114	135	0	12										
52	3	37	79	102	117	159	22											
194	2	50	117	130	37													
1990	2	43	110	123	30													
0	TOTAL	TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL		PENALTY	TOTAL							
	DISTANCE	TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST		FOR	PERFORMANCE							
	TRAVELLED	SPENT	SPEED		DELAY	OVERSAT	OF	OF		EXCESS	INDEX							
	(PCU-KM/H)	(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)		(\$/H)	(\$/H)							
0	3578.8	256.3	14.0		70.3	92.0	(1785.9) + (	203.2)	+	(0.0)	=	1989.1					TOTALS	
0	557.0	34.5	16.2		8.2	7.7	(174.8) + (	15.0)	+	(0.0)	=	189.8					BUSES	
0	3021.8	221.9	13.6		62.2	84.3	(1611.0) + (	188.2)	+	(0.0)	=	1799.2					OTHER	
0																		

NO. OF ENTRIES TO SUBPT = 58
NO. OF LINKS RECALCULATED= 1237

0 160 SECOND CYCLE 40 STEPS
OFINAL SETTINGS OBTAINED WITH INCREMENTS :- 24 64 -1 24 64 1 -1 1
(SECONDS)

0	NODE	NUMBER	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE									
	NO	OF STAGES	1	2	3	4	5	6	7									
1	5	75	96	146	7	26												
3	3	72	106	139	152	26	59											
9	5	0	56	74	89	145												
49	7	50	73	85	114	135	0	12										
52	3	37	79	102	117	159	22											
194	2	48	115	128	35													
1990	2	43	110	123	30													
0	LINK	FLOW	SAT	DEGREE	MEAN	TIME	-----DELAY-----	-----STOPS-----	-----QUEUE-----	PERFORMANCE	EXIT	GREEN	TIME					
	NUMBER	INTO	FLOW	OF	PER	PCU	UNIFORM RANDOM+ COST	MEAN COST	MEAN AVERAGE	INDEX.	NODE	START	START					
		LINK		SAT	CRUISE		(U+R+O=MEAN Q) DELAY	/PCU OF	EXCESS	WEIGHTED SUM		1ST	2ND					
			(PCU/H)	(PCU/H)	(%)	(SEC)	(PCU-H/H)	(\$/H)	(%)	(\$/H)	(PCU)	(PCU)	VALUES					
	11	794	1915S	76	24	11	1.0 + 1.5 (27.1)	39 (5.4)	11	32.5	1	101	146	31	75			
	12BL	32	11L	76	32	9	0.0 + 0.1 (0.8)	23 (0.1)	11	0.9	1	101	146	31	75			
	13	1222	3872S	56	35	5	1.0 + 0.6 (18.1)	17 (3.6)	9	21.8	1	101	146	31	75			
	14BL	12	13L	56	47	4	0.0 + 0.0 (0.1)	9 (0.0)	9	0.1	1	101	146	31	75			
	15	199	1791S	78	18	57	1.8 + 1.3 (34.6)	118 (4.0)	7	38.6	1	82	96	14	26			
	16BL	44	15L	78	24	57	0.4 + 0.3 (7.6)	118 (0.5)	7	8.1	1	82	96	14	26			
	17	50	1856S	38	2	36	0.2 + 0.3 (5.5)	102 (0.9)	2	6.4	1	101	146	31	75			
	18BL	10	17L	38	3	36	0.0 + 0.1 (1.1)	102 (0.1)	2	1.2	1	101	146	31	75			
	31BL	62	1700	11	24	22	0.3 + 0.1 (4.1)	70 (0.4)	1	4.5	3	113	139	33	59			
	32	650	2100	92	18	52	4.6 + 4.8 (102.9)	119 (13.3)	18	116.2	3	113	139	33	59			
	33	601	3600S	49	35	23	3.4 + 0.5 (42.4)	75 (7.7)	11	50.1	3	79	106	159	26			
	34	556	1700S	95	18	68	3.9 + 6.6 (115.2)	137 (13.1)	18	128.3	3	79	106	159	26			
	35	623	1800S	100	18	89	3.8 + 11.6 (169.4)	161 (17.2)	29	186.6	3	113	152	33	72			
	37BL	1051	3300S	92	49	35	5.0 + 5.1 (111.9)	98 (10.0)	29	121.9	3	79	106	159	26			
	90BL	30	93L	69	24	25	0.2 + 0.0 (2.3)	95 (0.3)	20	2.6	9	5	56	94	145			
	91	79	1809	112	18	377	1.3 + 6.9 (91.1)	262 (3.5)	9	94.7	9	81	91	151	2			
	92	11	1773	4	18	15	0.0 + 0.0 (0.5)	63 (0.1)	0	0.6	9	5	58	94	147			
	93	838	1936S	69	18	24	4.6 + 1.1 (62.3)	89 (12.8)	20	75.1	9	5	56	94	145			
	94	206	1722	157	18	787	6.4 + 38.7 (495.5)	261 (9.2)	48	504.7	9	81	91	151	2			
	96	144	1644	42	4	17	0.3 + 0.4 (7.5)	69 (1.7)	3	9.2	9	5	58	94	147			
	98	1004	1904S	84	18	20	3.3 + 2.4 (62.8)	76 (13.2)	25	76.0	9	5	56	94	145			

99BL	30	98L	84	24	20	0.1 + 0.1	(1.9)	76	(0.2)	25	2.1	9	5	56	94	145
331BL	12	33L	49	47	23	0.1 + 0.0	(0.8)	75	(0.1)	11	0.9	3	79	106	159	26
341BL	10	34L	95	24	68	0.1 + 0.1	(2.1)	137	(0.1)	18	2.2	3	79	106	159	26
351BL	72	35L	100	24	89	0.4 + 1.3	(19.6)	161	(1.1)	29	20.7	3	113	152	33	72
371BL	12	37L	92	49	41	0.1 + 0.1	(1.5)	118	(0.1)	29	1.7	3	79	106	159	26
491	1190	5714S	61	18	25	7.4 + 0.7	(89.2)	79	(16.1)	28	105.2	49	91	114	18	50
492BL	52	491L	61	24	25	0.3 + 0.0	(3.9)	79	(0.4)	28	4.3	49	91	114	18	50
493	475	3969S	55	18	30	3.5 + 0.5	(43.9)	87	(7.1)	12	51.0	49	55	73	140	0
494BL	66	493L	55	24	30	0.5 + 0.1	(6.1)	87	(0.6)	12	6.7	49	55	73	140	0
495	198	1860	54	12	23	0.6 + 0.6	(13.6)	102	(3.6)	4	17.2	49	55	85	140	12
497	847<	3990S	55	12	12	2.2 + 0.6	(30.6)	52	(7.7)	14	38.4	49	55	85	140	12
498BL	30	497L	55	16	7	0.0 + 0.0	(0.7)	32	(0.1)	14	0.8	49	55	85	140	12
521	127	1854S	60	12	23	0.2 + 0.6	(9.0)	59	(1.3)	3	10.3	52	42	81	122	1
522BL	36	521L	60	16	28	0.1 + 0.2	(3.1)	67	(0.2)	3	3.3	52	42	81	122	1
523	535	1825S	65	11	22	2.4 + 0.9	(35.8)	76	(8.1)	10	43.9	52	42	79	122	159
524BL	30	523L	65	16	20	0.1 + 0.0	(1.8)	42	(0.1)	10	1.9	52	42	79	122	159
525	1272	5982S	83	31	26	6.8 + 2.4	(100.2)	101	(21.9)	31	122.1	52	84	104	4	24
526BL	32	525L	83	41	40	0.3 + 0.1	(3.9)	108	(0.3)	31	4.2	52	84	104	4	24
527	1122<	3785S	64	18	12	2.9 + 0.9	(41.5)	56	(11.1)	21	52.6	52	42	79	122	159
528BL	30	527L	64	24	11	0.1 + 0.0	(1.0)	51	(0.1)	21	1.1	52	42	79	122	159

0 160 SECOND CYCLE 40 STEPS		0 LINK		FLOW INTO LINK	SAT FLOW	DEGREE OF SAT.	MEAN TIMES PER PCU CRUISE DELAY	-----DELAY-----		----STOPS----		-----QUEUE-----		PERFORMANCE INDEX.	EXIT NODE	GREEN TIMES	
NUMBER	LINK	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT.	MEAN TIMES PER PCU CRUISE DELAY	UNIFORM DELAY (U+R+O=MEAN Q)	RANDOM+ OVERSAT OF DELAY (\$/H)	COST OF STOPS /PCU (%)	COST OF STOPS (\$/H)	MEAN MAX. (PCU)	AVERAGE EXCESS (PCU)	WEIGHTED SUM OF () VALUES (\$/H)			START 1ST	START 2ND	
		(PCU/H)	(PCU/H)	(%)	(SEC)	(PCU-H/H)	(\$/H)	(%)	(\$/H)							(SECONDS)	
1941	1076<	3970S	36	1	1	0.1 + 0.3	(3.8)	3	(0.6)	2		4.4	194	53	115	133	35
1942BL	50	1941L	36	2	1	0.0 + 0.0	(0.2)	5	(0.0)	2		0.2	194	53	115	133	35
1991	1252	3970S	42	1	2	0.4 + 0.3	(8.0)	21	(4.4)	21	+	12.5	1990	48	110	128	30
1992BL	68	1991L	42	2	1	0.0 + 0.0	(0.3)	6	(0.0)	21	+	0.3	1990	48	110	128	30
0 TOTAL		TOTAL		MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY		TOTAL					
DISTANCE TRAVELLED		TIME SPENT		JOURNEY SPEED		UNIFORM DELAY	RANDOM+ OVERSAT DELAY	COST OF DELAY	COST OF STOPS	FOR EXCESS QUEUES		PERFORMANCE INDEX					
(PCU-KM/H)		(PCU-H/H)		(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)		(\$/H)					
0	3578.8	256.3		14.0		70.3	92.0	(1785.3) + (202.6)		(0.0)		1988.0	TOTALS				
0	557.0	34.5		16.2		8.2	7.7	(174.8) + (15.0)		(0.0)		189.9	BUSES				
0	3021.8	221.8		13.6		62.1	84.3	(1610.5) + (187.6)		(0.0)		1798.1	OTHER				

0	CRUISE LITRES PER HOUR	DELAY LITRES PER HOUR	STOPS LITRES PER HOUR	TOTALS LITRES PER HOUR
0 FUEL CONSUMPTION PREDICTIONS	201.1	+ 186.6	+ 120.0	= 507.8

0
 NO. OF ENTRIES TO SUBPT = 15
 NO. OF LINKS RECALCULATED= 272

PROGRAM TRANSYT FINISHED

T R A N S Y T

Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
 OImplementation for IBM-PC or compatible
 OProgram TRANSYT 11, Analysis Program Version 1.3.
 ORun with file:- "TMPTRAN.DAT" at 11:58 on 24/02/03
 OFuture based on 1/5/02 counts PM dev + Buses JP 30/5/02 - PMFut9.prt

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES = 1
 NUMBER OF LINKS = 8
 NUMBER OF OPTIMISED NODES = 1
 MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
 NUMBER OF STEPS IN CYCLE = 44
 MAXIMUM NUMBER OF SHARED STOPLINES = 2
 MAXIMUM NUMBER OF TIMING POINTS = 5
 MAXIMUM LINKS AT ANY NODE = 6

CORE REQUESTED = 3803 WORDS
 CORE AVAILABLE = 72000 WORDS

0 DATA INPUT :-

OCARD CARD
 NO. TYPE
 (1)= TITLE:- Future based on 1/5/02 counts PM dev + Buses JP 30/5/02 - PMFut9.prt

OCARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME EFFECTIVE-GREEN PERIOD 1-1200 MINS.	EQUISAT DISPLACEMENTS START (SEC) END (SEC)	0=NO 1=YES	0=UNEQUAL FLOW 1=EQUAL CYCLE	CRUISE-SPEEDS SCALE 10-200 %	CRUISE-SPEEDS SCALE 50-200 %	0=TIMES 1=SPEEDS	OPTIMISE 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	176	44	60	2	3	1	1	0	0	1	2	0	0	1100	200

OCARD CARD
 NO. TYPE
 3)= 2

LIST OF NODES TO BE OPTIMISED

OCARD NO.	CARD TYPE	9	0	0	0	0	0	0	0	0	0	0	0	0	0
4)=	7	93	90	0	0	0	0	0	0	0	0	0	0	0	0
5)=	7	98	99	0	0	0	0	0	0	0	0	0	0	0	0

LINKS HAVING SHARED STOPLINES

CARD NO.	CARD TYPE	FIRST SET	SECOND SET	THIRD SET
4)=	7	93	90	0
5)=	7	98	99	0

0 NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES

CARD NO.	CARD TYPE	NODE NO.	STAGE 1 CHANGE MIN	STAGE 2 CHANGE MIN	STAGE 3 CHANGE MIN	STAGE 4 CHANGE MIN	STAGE 5 CHANGE MIN	STAGE 6 CHANGE MIN	STAGE 7 CHANGE MIN
6)=	15	9	139	12	38	18	56	14	82
							12	120	13

0 LINK CARDS: GIVEWAY DATA

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	DISPSH X100
7)=	30	91	0	94	49	0	26	0	0	0	0	0
8)=	30	92	98	0	0	24	0	0	0	0	0	0
9)=	30	94	0	91	84	0	23	0	0	0	0	0
10)=	30	96	93	0	0	21	0	0	0	0	0	0

0 LINK CARDS: FIXED DATA

CARD NO.	CARD TYPE	LINK NO.	EXIT NODE	FIRST GREEN		SECOND GREEN		LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
				START STAGE	END LAG	START STAGE	END LAG					
11)=	31	90	0	0	0	0	0	200	0	0	0	0
12)=	31	91	9	3	7	4	2	200	0	1809	0	0
13)=	31	92	9	1	5	2	2	200	0	1773	0	0
14)=	31	93	9	1	5	2	0	200	0	1936	0	0
15)=	31	94	9	3	7	4	2	200	0	1722	0	0
16)=	31	96	9	1	5	2	2	40	0	1644	0	0
17)=	31	98	9	1	5	2	0	200	0	1904	0	0
18)=	31	99	0	0	0	0	0	200	0	0	0	0

0

LINK CARDS: FLOW DATA

CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	ENTRY 1		ENTRY 2		ENTRY 3		ENTRY 4	
					LINK NO.	CRUISE SPEED	LINK NO.	CRUISE SPEED	LINK NO.	CRUISE SPEED	LINK NO.	CRUISE SPEED
19)=	32	90	24	0	0	0	40	0	0	0	0	0
20)=	32	91	43	0	0	0	40	0	0	0	0	0
21)=	32	92	34	0	0	0	40	0	0	0	0	0
22)=	32	93	837	0	0	0	40	0	0	0	0	0
23)=	32	94	250	0	0	0	40	0	0	0	0	0
24)=	32	96	99	0	0	0	40	0	0	0	0	0
25)=	32	98	869	0	0	0	40	0	0	0	0	0
26)=	32	99	24	0	0	0	3000	0	0	0	0	0

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

0 176 SECOND CYCLE 44 STEPS

0 INITIAL SETTINGS

- (SECONDS)

0	NO	NUMBER	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE
		OF STAGES	1	2	3	4	5	6	7

0	LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER PCU CRUISE DELAY (SEC)	TIMES PER PCU CRUISE DELAY (SEC)	-----DELAY-----		-----STOPS-----		-----QUEUE-----		PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES		
							UNIFORM (PCU-H/H)	RANDOM+ OVERSAT OF DELAY (\$/H)	MEAN STOPS /PCU (%)	COST OF STOPS (\$/H)	MEAN MAX. (PCU)	AVERAGE EXCESS (PCU)			START 1ST	END 2ND	END
	90	24	93L	135	18	571	0.6 + 3.2	(41.9)	261	(1.1)	166	+	43.0	9.	144	172	75 103
	91	43	1809	10	18	18	0.2 + 0.1	(2.3)	61	(0.5)	1		2.8	9	21	72	109 141
	92	34	1773	23	18	38	0.2 + 0.1	(4.0)	100	(0.6)	1		4.6	9	144	174	75 105
	93	837	1936S	135	18	571	22.6 +110.2	(999.9)	261	(37.4)	166	+	1498.2	9	144	172	75 103
	94	250	1722	39	18	20	1.1 + 0.3	(15.0)	68	(2.9)	5		17.9	9	21	72	109 141
	96	99	1644	66	4	62	0.8 + 0.9	(18.9)	148	(2.5)	4		21.4	9	144	174	75 105
	98	869	1904S	142	18	648	25.5 +130.8	(999.9)	261	(38.9)	191	+	1758.9	9	144	172	75 103
	998L	24	98L	142	24	648	0.7 + 3.6	(47.5)	261	(0.6)	191	+	48.1	9	144	172	75 103

0	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	TOTALS BUSES OTHER	
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0	420.2	311.5	1.3	51.7	249.3	(3310.4)	+	(84.4)	+	(0.0)	= 3394.9
0	4.8	4.5	1.1	0.7	3.6	(47.5)	+	(0.6)	+	(0.0)	= 48.1
0	415.4	307.0	1.4	51.0	245.7	(3262.9)	+	(83.8)	+	(0.0)	= 3346.8

0*****

0	CRUISE LITRES PER HOUR	DELAY LITRES PER HOUR	STOPS LITRES PER HOUR	TOTALS LITRES PER HOUR			
0	23.1	+	346.1	+	50.0	=	419.2

0 FUEL CONSUMPTION PREDICTIONS

0

NO. OF ENTRIES TO SUBPT = 1

0 176 SECOND CYCLE 44 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26
- (SECONDS)

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0 176 SECOND CYCLE 44 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70
- (SECONDS)

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0      176 SECOND CYCLE  44 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :-    26  70  -1
- (SECONDS)

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0 176 SECOND CYCLE 44 STEPS
OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26
- (SECONDS)

9	5	71	151	169	23	55				
0 TOTAL DISTANCE		TOTAL TIME	MEAN JOURNEY		TOTAL UNIFORM	TOTAL RANDOM+	TOTAL COST	TOTAL COST	PENALTY FOR	TOTAL PERFORMANCE

TRAVELLED	SPENT	SPEED	DELAY	OVERSAT DELAY	OF DELAY	OF STOPS	EXCESS QUEUES	INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 420.2	30.6	13.7	13.5	6.5	(220.4) + (	32.8)	+ (0.0)	=	253.2
0 4.8	0.4	13.7	0.1	0.1	(2.1) + (	0.2)	+ (0.0)	=	2.3
0 415.4	30.2	13.7	13.3	6.5	(218.3) + (	32.7)	+ (0.0)	=	251.0
0									

NO. OF ENTRIES TO SUBPT = 5
NO. OF LINKS RECALCULATED= 42

0 176 SECOND CYCLE 44 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70
- (SECONDS)

9	5	71	151	169	23	55					
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)			
0 420.2	30.6	13.7	13.5	6.6	(220.5) + (	32.9)	+ (0.0)	=	253.4	TOTALS	
0 4.8	0.4	13.7	0.1	0.1	(2.1) + (	0.2)	+ (0.0)	=	2.3	BUSES	
0 415.4	30.2	13.7	13.3	6.5	(218.4) + (	32.7)	+ (0.0)	=	251.1	OTHER	
0											

NO. OF ENTRIES TO SUBPT = 5
NO. OF LINKS RECALCULATED= 42

0 176 SECOND CYCLE 44 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1
- (SECONDS)

9	5	73	153	171	25	57					
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)			
0 420.2	30.6	13.7	13.5	6.5	(220.5) + (	32.8)	+ (0.0)	=	253.3	TOTALS	
0 4.8	0.4	13.7	0.1	0.1	(2.1) + (	0.2)	+ (0.0)	=	2.3	BUSES	
0 415.4	30.2	13.7	13.4	6.5	(218.4) + (	32.6)	+ (0.0)	=	251.0	OTHER	
0											

NO. OF ENTRIES TO SUBPT = 4
NO. OF LINKS RECALCULATED= 33

0 176 SECOND CYCLE 44 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1 -1
- (SECONDS)

9	5	74	155	173	25	56					
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)			
0 420.2	30.4	13.8	13.3	6.5	(218.6) + (	31.5)	+ (0.0)	=	250.1	TOTALS	
0 4.8	0.3	13.8	0.1	0.1	(2.1) + (	0.2)	+ (0.0)	=	2.3	BUSES	
0 415.4	30.1	13.8	13.2	6.5	(216.5) + (	31.3)	+ (0.0)	=	247.8	OTHER	
0											

NO. OF ENTRIES TO SUBPT = 16
NO. OF LINKS RECALCULATED= 129

0 176 SECOND CYCLE 44 STEPS

OFINAL SETTINGS OBTAINED WITH INCREMENTS :- 26 70 -1 26 70 1 -1 1

- (SECONDS)

0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7

9	5	74	155	173	25	56	-----DELAY-----		-----STOPS-----		-----QUEUE-----		PERFORMANCE	EXIT	GREEN TIMES	
0 LINK	FLOW	SAT	DEGREE	MEAN TIMES	UNIFORM RANDOM+ COST		MEAN	COST	MEAN	AVERAGE	INDEX.	WEIGHTED SUM	OF () VALUES	NODE	START	END
NUMBER	INTO	FLOW	OF	PER PCU	(U+R+Q=MEAN Q) DELAY		STOPS	OF	MAX.	EXCESS					1ST	2ND
	LINK	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)	(\$/H)	(%)	(\$/H)	(PCU)	(PCU)	(\$/H)		(SECONDS)	
90	24	93L	75	18	25	0.1 + 0.0	(1.9)	77	(0.3)	21		2.2	9	79	155	30 56
91	43	1809	28	18	52	0.4 + 0.2	(6.9)	113	(0.8)	1		7.7	9	4	27	62 76
92	34	1773	12	18	16	0.1 + 0.1	(1.6)	53	(0.3)	1		1.9	9	79	157	30 58
93	837	1936S	75	18	25	4.4 + 1.5	(64.6)	77	(11.0)	21		75.6	9	79	155	30 56
94	250	1722	85	18	79	2.9 + 2.6	(60.7)	130	(5.6)	12		66.3	9	4	27	62 76
96	99	1644	33	4	20	0.3 + 0.2	(6.0)	67	(1.1)	2		7.1	9	79	157	30 58
98	869	1904S	79	18	28	5.0 + 1.8	(74.9)	81	(12.1)	23		87.0	9	79	155	30 56
99BL	24	98L	79	24	28	0.1 + 0.1	(2.1)	81	(0.2)	23		2.3	9	79	155	30 56

0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	COST	FOR	PERFORMANCE
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	OF	EXCESS	INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)
0 420.2	30.4	13.8	13.3	6.5	(218.5) + (31.5)	+ (0.0)	=	250.0	TOTALS
0 4.8	0.3	13.8	0.1	0.1	(2.1) + (0.2)	+ (0.0)	=	2.3	BUSES
0 415.4	30.1	13.8	13.2	6.5	(216.4) + (31.3)	+ (0.0)	=	247.8	OTHER

0*****

0	CRUISE	DELAY	STOPS	TOTALS
	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
0 FUEL CONSUMPTION PREDICTIONS	23.1	+ 22.8	+ 18.7	= 64.6

0 NO. OF ENTRIES TO SUBPT = 3
NO. OF LINKS RECALCULATED= 25

PROGRAM TRANSYT FINISHED

TRANSYT

Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
 Implementation for IBM-PC or compatible
 OProgram TRANSYT 11, Analysis Program Version 1.3
 ORun with file:- "TMPTRAN.DAT" at 11:56 on 24/02/03
 OFuture based on 1/5/02 counts PM dev + Buses JP 30/5/02 - PMFut.prt

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES = 7
 NUMBER OF LINKS = 45
 NUMBER OF OPTIMISED NODES = 7
 MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
 NUMBER OF STEPS IN CYCLE = 40
 MAXIMUM NUMBER OF SHARED STOPLINES = 2
 MAXIMUM NUMBER OF TIMING POINTS = 7
 MAXIMUM LINKS AT ANY NODE = 6

CORE REQUESTED = 8547 WORDS
 CORE AVAILABLE = 72000 WORDS

DATA INPUT :-

OCARD CARD
 NO. TYPE
 (1)= TITLE:- Future based on 1/5/02 counts PM dev + Buses JP 30/5/02 - PMFut.prt
 OCARD CARD CYCLE NO. OF TIME EFFECTIVE-GREEN EQUISAT 0=UNEQUAL FLOW CRUISE-SPEEDS OPTIMISE EXTRA HILL- DELAY STOP
 NO. TYPE TIME STEPS PERIOD DISPLACEMENTS SETTINGS CYCLE SCALE SCALE CARD32 0=NONE COPIES CLIMB VALUE VALUE
 NO. TYPE TIME STEPS PER 1-1200 START END 0=NO 1=EQUAL 10-200 50-200 0=TIMES 1=0/SET FINAL OUTPUT 1=FULL PCU-H P PER
 (SEC) CYCLE MINS. (SEC) (SEC) 1=YES CYCLE % % 1=SPEEDS 2=FULL OUTPUT 1=FULL PCU-H 100
 2)= 1 160 40 60 2 3 1 1 0 0 1 2 0 0 1100 200
 OCARD CARD
 NO. TYPE
 3)= 2 1 3 52 49 9 1990 194 0 0 0 0 0 0 0
 LIST OF NODES TO BE OPTIMISED
 LINKS HAVING SHARED STOPLINES
 FIRST SET..... SECOND SET..... THIRD SET.....
 CARD CARD
 NO. TYPE
 4)= 7 11 12 0 0 0 0 0 0 0 0 0 0 0 0 0
 5)= 7 13 14 0 0 0 0 0 0 0 0 0 0 0 0 0
 6)= 7 15 16 0 0 0 0 0 0 0 0 0 0 0 0 0
 7)= 7 17 18 0 0 0 0 0 0 0 0 0 0 0 0 0
 8)= 7 33 331 0 0 0 0 0 0 0 0 0 0 0 0 0
 9)= 7 34 341 0 0 0 0 0 0 0 0 0 0 0 0 0
 10)= 7 35 351 0 0 0 0 0 0 0 0 0 0 0 0 0
 11)= 7 37 371 0 0 0 0 0 0 0 0 0 0 0 0 0
 12)= 7 93 90 0 0 0 0 0 0 0 0 0 0 0 0 0
 13)= 7 98 99 0 0 0 0 0 0 0 0 0 0 0 0 0
 14)= 7 491 492 0 0 0 0 0 0 0 0 0 0 0 0 0
 15)= 7 493 494 0 0 0 0 0 0 0 0 0 0 0 0 0
 16)= 7 497 498 0 0 0 0 0 0 0 0 0 0 0 0 0
 17)= 7 521 522 0 0 0 0 0 0 0 0 0 0 0 0 0
 18)= 7 523 524 0 0 0 0 0 0 0 0 0 0 0 0 0

19)=	7	525	526	0	0	0	0	0	0	0	0	0	0	0	0	0
20)=	7	527	528	0	0	0	0	0	0	0	0	0	0	0	0	0
21)=	7	1941	1942	0	0	0	0	0	0	0	0	0	0	0	0	0
22)=	7	1991	1992	0	0	0	0	0	0	0	0	0	0	0	0	0

0

CARD		CARD	NODE	STAGE 1		STAGE 2		STAGE 3		STAGE 4		STAGE 5		STAGE 6		STAGE 7	
NO.	TYPE	NO.	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	
23)=	15	1	79	14	98	12	147	21	8	12	24	14	0	0	0	0	
24)=	23	3	78	17	31	15	65	12	0	0	0	0	0	0	0	0	
25)=	15	9	65	12	135	18	153	14	19	12	49	13	0	0	0	0	
26)=	17	49	49	12	73	12	86	13	116	21	137	12	0	12	12	13	
27)=	23	52	43	12	79	12	28	15	0	0	0	0	0	0	0	0	
28)=	22	194	14	12	1	13	0	0	0	0	0	0	0	0	0	0	
29)=	22	1990	44	12	31	13	0	0	0	0	0	0	0	0	0	0	

0

CARD		CARD	LINK	PRIORITY LINKS		LINK1 GIVEWAY COEFFS.		LINK		STOP	MAX	DELAY	DISPSN
NO.	TYPE	NO.	LINK1	LINK2	ONLY	A1	A2	LENGTH	WT.X100	FLOW	WT.X100	X100	
30)=	30	17	13	0	0	20	0	25	0	700	0	0	
31)=	30	18	0	0	0	0	0	25	0	700	0	0	
32)=	30	35	0	32	80	0	25	200	0	1000	0	0	
33)=	30	91	0	94	49	0	26	200	0	730	0	0	
34)=	30	92	98	0	0	24	0	200	0	790	0	0	
35)=	30	94	0	91	84	0	23	200	0	640	0	0	
36)=	30	96	93	0	0	21	0	40	0	750	0	0	
37)=	30	351	0	0	0	0	0	200	0	1000	0	0	
38)=	30	495	493	0	0	16	0	130	0	680	0	0	
39)=	30	521	527	0	0	19	0	130	0	800	0	0	
40)=	30	522	0	0	0	0	0	130	0	800	0	0	

0

CARD		CARD	LINK	EXIT	FIRST	GREEN	SECOND	GREEN	LINK	STOP	SAT	DELAY	DISPSN
NO.	TYPE	NO.	NO.	STAGE	LAG	STAGE	LAG	STAGE	LAG	WT.X100	FLOW	WT.X100	X100
41)=	31	11	1	2	5	3	0	5	5	270	0	2029	0
42)=	31	12	0	0	0	0	0	0	0	270	0	0	0
43)=	31	13	1	2	5	3	0	5	5	390	0	3872	0
44)=	31	14	0	0	0	0	0	0	0	390	0	0	0
45)=	31	15	1	1	7	2	0	4	7	200	0	1791	0
46)=	31	16	0	0	0	0	0	0	0	200	0	0	0
47)=	31	17	1	2	5	3	0	5	5	25	0	1856	0
48)=	31	18	0	0	0	0	0	0	0	25	0	0	0
49)=	31	31	3	2	7	3	0	0	0	200	0	1700	0
50)=	31	32	3	2	7	3	0	0	0	200	0	2100	0
51)=	31	33	3	1	7	2	0	0	0	390	0	3600	0
52)=	31	34	3	1	7	2	0	0	0	200	0	1700	0
53)=	31	35	3	2	7	1	0	0	0	200	0	1800	0
54)=	31	37	3	1	7	2	0	0	0	406	0	3300	0
55)=	31	90	0	0	0	0	0	0	0	200	0	0	0
56)=	31	91	9	3	7	4	2	5	6	200	0	1809	0
57)=	31	92	9	1	5	2	2	4	5	200	0	1773	0
58)=	31	93	9	1	5	2	0	4	5	200	0	1936	0
59)=	31	94	9	3	7	4	2	5	6	200	0	1722	0
60)=	31	96	9	1	5	2	2	4	5	40	0	1644	0
61)=	31	98	9	1	5	2	0	4	5	200	0	1904	0
62)=	31	99	0	0	0	0	0	0	0	200	0	0	0
63)=	31	331	0	0	0	0	0	0	0	390	0	0	0
64)=	31	341	0	0	0	0	0	0	0	200	0	0	0
65)=	31	351	0	0	0	0	0	0	0	200	0	0	0
66)=	31	371	0	0	0	0	0	0	0	406	0	0	0
67)=	31	491	49	3	6	4	0	7	6	200	0	5758	0

68)=	31	492	0	0	0	0	0	0	0	0	200	0	0	0	0
69)=	31	493	49	1	5	2	0	5	5	6	0	200	0	3938	0
70)=	31	494	0	0	0	0	0	0	0	0	0	200	0	0	0
71)=	31	495	49	1	5	3	0	5	5	7	0	130	0	1860	0
72)=	31	497	49	1	5	3	0	5	5	7	0	130	0	3990	0
73)=	31	498	0	0	0	0	0	0	0	0	0	130	0	0	0
74)=	31	521	52	1	5	2	2	0	0	0	0	130	0	1862	0
75)=	31	522	0	0	0	0	0	0	0	0	0	130	0	0	0
76)=	31	523	52	1	5	2	0	0	0	0	0	130	0	1825	0
77)=	31	524	0	0	0	0	0	0	0	0	0	130	0	0	0
78)=	31	525	52	2	5	3	0	0	0	0	0	340	0	5973	0
79)=	31	526	0	0	0	0	0	0	0	0	0	340	0	0	0
80)=	31	527	52	1	5	2	0	0	0	0	0	200	0	3740	0
81)=	31	528	0	0	0	0	0	0	0	0	0	200	0	0	0
82)=	31	1941	194	1	5	2	0	0	0	0	0	16	0	3970	0
83)=	31	1942	0	0	0	0	0	0	0	0	0	16	0	0	0
84)=	31	1991	1990	1	5	2	0	0	0	0	0	14	0	3970	0
85)=	31	1992	0	0	0	0	0	0	0	0	0	14	0	0	0

0

LINK CARDS: FLOW DATA

CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	ENTRY 1 LINK NO.	ENTRY 1 FLOW	ENTRY 1 CRUISE SPEED	ENTRY 2 LINK NO.	ENTRY 2 FLOW	ENTRY 2 CRUISE SPEED	ENTRY 3 LINK NO.	ENTRY 3 FLOW	ENTRY 3 CRUISE SPEED	ENTRY 4 LINK NO.	ENTRY 4 FLOW	ENTRY 4 CRUISE SPEED
86)=	32	11	952	0	495	176	40	493	61	40	491	875	40	0	0	0
87)=	32	12	32	0	492	32	3000	0	0	0	0	0	0	0	0	0
88)=	32	13	1342	0	35	120	40	34	902	40	0	0	0	0	0	0
89)=	32	14	12	0	331	12	3000	0	0	0	0	0	0	0	0	0
90)=	32	15	153	0	0	0	40	0	0	0	0	0	0	0	0	0
91)=	32	16	44	0	0	0	3000	0	0	0	0	0	0	0	0	0
92)=	32	17	47	0	0	0	40	0	0	0	0	0	0	0	0	0
93)=	32	18	10	0	0	0	3000	0	0	0	0	0	0	0	0	0
94)=	32	31	58	0	0	0	3000	0	0	0	0	0	0	0	0	0
95)=	32	32	795	0	0	0	40	0	0	0	0	0	0	0	0	0
96)=	32	33	541	0	0	0	40	0	0	0	0	0	0	0	0	0
97)=	32	34	629	0	0	0	40	0	0	0	0	0	0	0	0	0
98)=	32	35	529	0	0	0	40	0	0	0	0	0	0	0	0	0
99)=	32	37	1135	0	15	135	3000	11	984	3000	0	0	0	0	0	0
100)=	32	90	24	0	524	24	3000	0	0	0	0	0	0	0	0	0
101)=	32	91	43	0	0	0	40	0	0	0	0	0	0	0	0	0
102)=	32	92	34	0	525	106	40	523	290	40	0	0	0	0	0	0
103)=	32	93	837	0	525	106	40	523	290	40	0	0	0	0	0	0
104)=	32	94	250	0	0	0	40	0	0	0	0	0	0	0	0	0
105)=	32	96	99	0	0	0	40	0	0	0	0	0	0	0	0	0
106)=	32	98	869	0	0	0	40	0	0	0	0	0	0	0	0	0
107)=	32	99	24	0	0	0	3000	0	0	0	0	0	0	0	0	0
108)=	32	331	12	0	0	0	3000	0	0	0	0	0	0	0	0	0
109)=	32	341	10	0	0	0	3000	0	0	0	0	0	0	0	0	0
110)=	32	351	68	0	0	0	3000	0	0	0	0	0	0	0	0	0
111)=	32	371	12	0	16	12	3000	0	0	0	0	0	0	0	0	0
112)=	32	491	1260	0	0	0	40	0	0	0	0	0	0	0	0	0
113)=	32	492	52	0	0	0	3000	0	0	0	0	0	0	0	0	0
114)=	32	493	527	0	0	0	40	0	0	0	0	0	0	0	0	0
115)=	32	494	54	0	0	0	3000	0	0	0	0	0	0	0	0	0
116)=	32	495	176	0	527	176	40	0	0	0	0	0	0	0	0	0
117)=	32	497	595	0	527	484	40	525	116	40	0	0	0	0	0	0
118)=	32	498	24	0	528	24	3000	0	0	0	0	0	0	0	0	0
119)=	32	521	112	0	493	112	40	0	0	0	0	0	0	0	0	0
120)=	32	522	30	0	494	30	3000	0	0	0	0	0	0	0	0	0
121)=	32	523	522	0	0	0	0	0	0	0	0	0	0	0	0	0
122)=	32	524	24	0	494	24	3000	0	0	0	0	0	0	0	0	0

*** DISTANCE > 0 BUT CRUISE TIME/SPEED=0 FOR THIS LINK. THUS CRUISE TIME BASED ON DISTANCE GIVEN AND DEFAULT SPEED OF 43 KM/H

123)=	32	525	1335	0	15	18	40	13	1108	40	0	0	0	0	0	0
124)=	32	526	32	0	16	32	3000	0	0	0	0	0	0	0	0	0
125)=	32	527	894	0	94	60	40	91	17	40	98	842	40	0	0	0
126)=	32	528	24	0	99	24	3000	0	0	0	0	0	0	0	0	0
127)=	32	1941	821	0	491	226	40	497	595	40	0	0	0	0	0	0
128)=	32	1942	44	0	492	20	3000	498	24	3000	0	0	0	0	0	0
129)=	32	1991	1295	0	527	234	40	525	1007	40	521	54	40	0	0	0
130)=	32	1992	62	0	526	32	3000	522	30	3000	528	10	3000	0	0	0

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

0. 160 SECOND CYCLE 40 STEPS

0 INITIAL SETTINGS

- (SECONDS)

0	NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
---	---------	------------------	---------	---------	---------	---------	---------	---------	---------

1	5	79	93	139	0	20			
3	3	78	108	137	158	28	57		
9	5	65	95	113	3	33			
49	7	49	65	77	110	131	1	13	
52	3	43	79	108	123	159	28		
194	2	14	81	94	1				
1990	2	44	111	124	31				

0 LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE	TIME DELAY (SEC)	-----DELAY----- UNIFORM RANDOM+ COST (U+R+O=MEAN Q) DELAY (PCU-H/H) (\$/H)		-----STOPS----- MEAN COST STOPS OF /PCU (\$/H)		-----QUEUE----- MEAN AVERAGE MAX. EXCESS (PCU) (PCU)		PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES START END 1ST 2ND (SECONDS)			
11	909<	2029S	76	24	10	1.0 + 1.6	(28.3)	43	(7.0)	18		35.3	1	98	139	25	79
12BL	32	11L	76	32	9	0.0 + 0.1	(0.9)	40	(0.1)	18		1.0	1	98	139	25	79
13	1103<	3872S	48	35	8	2.0 + 0.4	(26.8)	20	(4.6)	9		31.3	1	98	139	25	79
14BL	12	13L	48	47	7	0.0 + 0.0	(0.3)	16	(0.0)	9		0.3	1	98	139	25	79
15	153	1791S	80	18	68	1.4 + 1.4	(31.6)	129	(3.4)	6		35.0	1	86	93	7	20
16BL	44	15L	80	24	68	0.4 + 0.4	(9.1)	129	(0.5)	6		9.6	1	86	93	7	20
17	47	1856S	28	2	24	0.2 + 0.2	(3.5)	77	(0.6)	1		4.1	1	98	139	25	79
18BL	10	17L	28	3	24	0.0 + 0.0	(0.7)	77	(0.1)	1		0.8	1	98	139	25	79
31BL	58	1700	12	24	25	0.3 + 0.1	(4.5)	73	(0.4)	1		4.9	3	115	137	35	57
32	795	2100	132	18	508	14.4 + 97.7	(999.9)	263	(35.9)	128	+	1269.0	3	115	137	35	57
33	541	3600S	51	35	27	3.5 + 0.5	(43.9)	82	(7.6)	11		51.6	3	85	108	5	28
34	629	1700S	125	18	442	11.3 + 65.8	(849.1)	261	(28.1)	90	+	877.2	3	85	108	5	28
35	529	1800S	74	18	25	2.4 + 1.3	(39.7)	96	(8.7)	12		48.4	3	115	158	35	78
37BL	1089<	3300S	111	49	237	12.1 + 59.6	(788.5)	221	(24.2)	90		812.7	3	85	108	5	28
90BL	24	93L	131	24	488	0.4 + 2.9	(35.8)	259	(0.6)	125	+	36.4	9	70	95	8	33
91	43	1809	10	18	17	0.2 + 0.1	(2.3)	63	(0.5)	1		2.8	9	120	5	39	67
92	32	1773	21	18	29	0.1 + 0.1	(2.8)	67	(0.4)	1		3.2	9	70	97	8	35
93	798<	1936S	131	18	485	12.1 + 95.4	(999.9)	251	(36.0)	125	+	1218.5	9	70	95	8	33
94	250	1722	40	18	19	1.0 + 0.3	(14.9)	72	(3.1)	5		17.9	9	120	5	39	67
96	99	1644	65	4	59	0.7 + 0.9	(17.9)	152	(2.6)	4		20.4	9	70	97	8	35
98	869	1904S	144	18	635	18.3 + 135.0	(999.9)	263	(39.2)	173	+	1725.1	9	70	95	8	33
99BL	24	98L	144	24	635	0.5 + 3.7	(46.6)	263	(0.6)	173	+	47.2	9	70	95	8	33
331BL	12	33L	51	47	27	0.1 + 0.0	(1.0)	82	(0.1)	11		1.1	3	85	108	5	28
341BL	10	34L	125	24	442	0.2 + 1.0	(13.5)	261	(0.3)	90	+	13.8	3	85	108	5	28
351BL	68	35L	74	24	25	0.3 + 0.2	(5.1)	96	(0.6)	12		5.7	3	115	158	35	78
371BL	12	37L	111	49	234	0.1 + 0.7	(8.6)	241	(0.3)	90		8.9	3	85	108	5	28
491	1260	5758S	62	18	25	8.1 + 0.8	(97.5)	79	(17.0)	33		114.5	49	83	110	19	49
492BL	52	491L	62	24	25	0.3 + 0.0	(4.0)	79	(0.4)	33		4.4	49	83	110	19	49
493	527	3938S	62	18	33	4.1 + 0.7	(53.1)	91	(8.2)	14		61.3	49	54	65	136	1
494BL	54	493L	62	24	33	0.4 + 0.1	(5.4)	91	(0.5)	14		5.9	49	54	65	136	1
495	126<	1860	36	12	17	0.3 + 0.3	(6.4)	62	(1.9)	3		8.3	49	54	77	136	13

0	160	SECOND	CYCLE	40	STEPS	-----DELAY-----				----STOPS----		----QUEUE----		PERFORMANCE	EXIT	GREEN TIMES				
0	LINK	FLOW	SAT	DEGREE	MEAN	TIMES								INDEX.	NODE	START	START			
	NUMBER	INTO	FLOW	OF	PER	PCU	UNIFORM	RANDOM+	COST	MEAN	COST	MEAN	AVERAGE	WEIGHTED SUM		END	END			
		LINK		SAT	CRUISE	DELAY	(U+R+O=MEAN	Q)	DELAY	STOPS	OF	MAX.	EXCESS	OF ()	VALUES	1ST	2ND			
		(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)	(\$/H)		(%)	(\$/H)	(PCU)	(PCU)	(\$/H)		(SECONDS)				
	1941	666<	3970S	22	1	2	0.2 +	0.1 (	4.3)	10	(	1.4)	4		5.7	194	19	81	99	1
	1942BL	37	1941L	22	2	3	0.0 +	0.0 (	0.3)	14	(	0.1)	4		0.4	194	19	81	99	1
	1991	1052<	3970S	36	1	1	0.2 +	0.3 (	4.7)	9	(	2.0)	19	+	6.8	1990	49	111	129	31
	1992BL	59	1991L	36	2	1	0.0 +	0.0 (	0.2)	3	(	0.0)	19	+	0.2	1990	49	111	129	31
0	TOTAL		TOTAL		MEAN		TOTAL	TOTAL	TOTAL	TOTAL		PENALTY		TOTAL						
	DISTANCE		TIME		JOURNEY		UNIFORM	RANDOM+	COST		COST		FOR		PERFORMANCE					
	TRAVELLED		SPENT		SPEED		DELAY	OVERSAT	OF		OF		EXCESS		INDEX					
								DELAY	DELAY		STOPS		QUEUES							
	(PCU-KM/H)		(PCU-H/H)		(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)		(\$/H)		(\$/H)		(\$/H)					
0	3606.5		680.8		5.3		110.8	475.2	(6445.3) +	(	276.7)	+	(	0.0)	=	6722.0	TOTALS			
0	578.1		104.1		5.6		15.9	69.0	(933.3) +	(	29.5)	+	(	0.0)	=	962.8	BUSES			
0	3028.4		576.7		5.3		94.9	406.2	(5511.9) +	(	247.2)	+	(	0.0)	=	5759.2	OTHER			

1	5	79	93	139	0	20		
3	3	78	108	137	158	28	57	
9	5	65	95	113	3	33		
49	7	49	65	77	110	131	1	13
52	3	43	79	108	123	159	28	
194	2	46	113	126	33			
1990	2	44	111	124	31			

0 160 SECOND CYCLE 40 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1
- (SECONDS)

0 160 SECOND CYCLE 40 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24
- (SECONDS)

	1	5	77	94	141	2	24				
	3	3	70	104	137	150	24	57			
	9	5	65	95	113	3	33				
	49	7	49	65	77	110	131	1	13		
	52	3	43	79	108	123	159	28			
	194	2	46	113	126	33					
	1990	2	44	111	124	31					
O TOTAL DISTANCE		TOTAL TIME	MEAN JOURNEY	TOTAL UNIFORM	TOTAL RANDOM+	TOTAL COST	TOTAL COST	PENALTY FOR	TOTAL PERFORMANCE		

TRAVELLED	SPENT	SPEED	DELAY	OVERSAT DELAY	OF DELAY	OF STOPS	EXCESS QUEUES	INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 3606.5	543.2	6.6	100.3	348.1	(4931.8) + (	266.4)	(0.0)	=	5198.2
0 578.1	47.6	12.1	12.0	16.4	(312.0) + (	17.3)	(0.0)	=	329.3
0 3028.4	495.6	6.1	88.3	331.7	(4619.8) + (	249.1)	(0.0)	=	4869.0
0									
NO. OF ENTRIES TO SUBPT = 15									
NO. OF LINKS RECALCULATED= 345									

0 160 SECOND CYCLE 40 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64
 - (SECONDS)

1	5	77	94	141	2	24				
3	3	70	104	137	150	24	57			
9	5	65	95	113	3	33				
49	7	49	65	77	110	131	1	13		
52	3	43	79	108	123	159	28			
194	2	46	113	126	33					
1990	2	44	111	124	31					
0 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)
0 3606.5		543.2	6.6		100.3	348.1	(4931.8) + (	266.4)	(0.0)	= 5198.2
0 578.1		47.6	12.1		12.0	16.4	(311.9) + (	17.3)	(0.0)	= 329.2
0 3028.4		495.6	6.1		88.3	331.7	(4619.8) + (	249.1)	(0.0)	= 4869.0
0										
NO. OF ENTRIES TO SUBPT = 15										
NO. OF LINKS RECALCULATED= 347										

0 160 SECOND CYCLE 40 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64 1
 - (SECONDS)

1	5	81	98	145	6	28				
3	3	79	113	146	159	33	66			
9	5	65	95	113	3	33				
49	7	49	65	77	110	131	1	13		
52	3	43	79	108	123	159	28			
194	2	50	117	130	37					
1990	2	44	111	124	31					
0 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)
0 3606.5		539.4	6.7		96.5	348.1	(4890.4) + (	265.1)	(0.0)	= 5155.5
0 578.1		45.1	12.8		9.5	16.4	(284.3) + (	16.9)	(0.0)	= 301.3
0 3028.4		494.3	6.1		87.0	331.7	(4606.0) + (	248.1)	(0.0)	= 4854.2
0										
NO. OF ENTRIES TO SUBPT = 29										
NO. OF LINKS RECALCULATED= 556										

0 160 SECOND CYCLE 40 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64 1 -1
 - (SECONDS)

0 160 SECOND CYCLE 40 STEPS
 FINAL SETTINGS OBTAINED WITH INCREMENTS :- 24 64 -1 24 64 1 -1 1
 - (SECONDS) STAGE STAGE STAGE STAGE STAGE STAGE

FINAL SETTINGS OBTAINED WITH															
(SECONDS)															
0	NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7						
	1	5	80	95	145	6	25								
	3	3	79	112	146	159	32	66							
	9	5	47	117	135	1	32								
	49	7	48	69	83	114	135	0	12						
	52	3	43	79	108	123	159	28							
	194	2	50	117	130	37									
	1990	2	44	111	124	31									
0 LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER CRUISE	UNIFORM DELAY	RANDOM+ OVERSAT	COST OF DELAY	-----STOPS-----	MEAN STOPS /PCU (%)	COST OF STOPS (\$/H)	----QUEUE----	PERFORMANCE INDEX.	EXIT NODE	GREEN TIMES	
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(U+R+O=MEAN Q)	(PCU-H/H)	(PCU)	(%)	(\$/H)	MEAN MAX. (PCU)	AVERAGE EXCESS (PCU)	WEIGHTED SUM OF () VALUES (\$/H)		START END 1ST 2ND (SECONDS)
11	951	2029S	80	24	11	1.1 + 1.9	(32.6)	46	(7.6)	17			40.2	1	100 145 30 80
12BL	32	11L	80	32	10	0.0 + 0.1	(0.9)	39	(0.1)	17			1.1	1	100 145 30 80
13	1221<	3872S	53	35	7	1.8 + 0.5	(25.6)	20	(4.7)	10			30.3	1	100 145 30 80
14BL	12	13L	53	47	5	0.0 + 0.0	(0.2)	13	(0.0)	10			0.2	1	100 145 30 80
15	153	1791S	80	18	68	1.4 + 1.4	(31.7)	131	(3.4)	7			35.1	1	87 95 13 25
16BL	44	15L	80	24	68	0.4 + 0.4	(9.1)	131	(0.6)	7			9.7	1	87 95 13 25
17	47	1856S	31	2	27	0.2 + 0.2	(3.9)	85	(0.7)	1			4.6	1	100 145 30 80
18BL	10	17L	31	3	27	0.0 + 0.0	(0.8)	85	(0.1)	1			0.9	1	100 145 30 80
31BL	58	1700	10	24	21	0.3 + 0.1	(3.7)	66	(0.4)	1			4.1	3	119 146 39 66
32	795	2100	108	18	198	8.2 + 35.6	(481.5)	219	(29.9)	57	+		511.4	3	119 146 39 66
33	541	3600S	46	35	24	3.1 + 0.4	(39.0)	77	(7.1)	10			46.2	3	86 112 6 32
34	629	1700S	111	18	253	7.9 + 36.4	(486.5)	235	(25.4)	56	+		511.9	3	86 112 6 32
35	529	1800S	86	18	36	2.8 + 2.5	(58.4)	123	(11.1)	14			69.5	3	119 159 39 79
37BL	1134	3300S	103	49	107	7.4 + 26.4	(371.5)	174	(19.0)	53			390.5	3	86 112 6 32
90BL	24	93L	75	24	14	0.0 + 0.0	(1.0)	38	(0.1)	20			1.1	9	52 117 6 32
91	43	1809	30	18	50	0.4 + 0.2	(6.6)	119	(0.9)	1			7.5	9	142 3 38 49
92	32	1773	11	18	12	0.0 + 0.1	(1.2)	41	(0.2)	1			1.5	9	52 119 6 34
93	817<	1936S	75	18	19	2.9 + 1.4	(47.5)	59	(8.5)	20			56.0	9	52 117 6 32
94	250	1722	89	18	86	2.6 + 3.4	(65.9)	144	(6.2)	11			72.0	9	142 3 38 49
96	99	1644	33	4	20	0.3 + 0.2	(5.9)	70	(1.2)	2			7.1	9	52 119 6 34
98	869	1904S	81	18	28	4.7 + 2.0	(74.0)	84	(12.6)	23			86.5	9	52 117 6 32
99BL	24	98L	81	24	28	0.1 + 0.1	(2.0)	84	(0.2)	23			2.2	9	52 117 6 32

331BL	12	33L	46	47	24	0.1 + 0.0	(0.9)	77	(0.1)	10	1.0	3	86	112	6	32
341BL	10	34L	111	24	253	0.1 + 0.6	(7.7)	235	(0.2)	56	8.0	3	86	112	6	32
351BL	68	35L	86	24	36	0.4 + 0.3	(7.5)	123	(0.8)	14	8.3	3	119	159	39	79
371BL	12	37L	103	49	114	0.1 + 0.3	(4.2)	181	(0.2)	53	4.4	3	86	112	6	32
491	1260	5758S	64	18	25	7.9 + 0.9	(96.3)	80	(17.3)	30	113.7	49	89	114	18	48
492BL	52	491L	64	24	25	0.3 + 0.0	(4.0)	80	(0.4)	30	4.4	49	89	114	18	48
493	527	3938S	62	18	33	4.1 + 0.7	(52.9)	89	(8.1)	14	61.0	49	53	69	140	0
494BL	54	493L	62	24	33	0.4 + 0.1	(5.4)	89	(0.5)	14	5.9	49	53	69	140	0
495	175	1860	47	12	21	0.6 + 0.4	(11.2)	95	(2.9)	5	14.1	49	53	83	140	12
497	584	3990S	38	12	11	1.5 + 0.3	(20.2)	35	(3.6)	9	23.8	49	53	83	140	12
498BL	24	497L	38	16	6	0.0 + 0.0	(0.5)	17	(0.0)	9	0.5	49	53	83	140	12
521	112	1862S	74	12	43	0.3 + 1.1	(14.8)	82	(1.6)	5	16.3	52	48	81	128	1
522BL	30	521L	74	16	49	0.1 + 0.3	(4.5)	91	(0.3)	5	4.8	52	48	81	128	1
523	522	1825S	75	11	30	3.0 + 1.4	(48.0)	90	(9.3)	11	57.3	52	48	79	128	159
524BL	24	523L	75	16	26	0.1 + 0.1	(1.9)	49	(0.1)	11	2.0	52	48	79	128	159
525	1216	5973S	67	31	19	5.6 + 1.0	(72.3)	80	(18.3)	28	90.6	52	84	108	4	28
526BL	32	525L	67	41	36	0.3 + 0.0	(3.5)	103	(0.3)	28	3.8	52	84	108	4	28
527	894	3740S	61	18	26	5.8 + 0.8	(72.3)	90	(13.8)	21	86.1	52	48	79	128	159
528BL	24	527L	61	24	27	0.2 + 0.0	(1.9)	93	(0.2)	21	2.2	52	48	79	128	159

0 160 SECOND CYCLE 40 STEPS

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER PCU CRUISE	TIME PER PCU CRUISE	-----DELAY----- UNIFORM RANDOM+ COST (U+R+O=MEAN Q) DELAY (PCU-H/H) (\$/H)	-----STOPS----- MEAN COST STOPS OF /PCU STOPS (%) (\$/H)	-----QUEUE----- MEAN MAX. AVERAGE (PCU) (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES START START END END 1ST 2ND (SECONDS)
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1941	810	3970S	27	1	1	0.1 + 0.2	(2.9)	5	(0.7)	2	3.6	194	55	117	135	37
1942BL	44	1941L	27	2	1	0.0 + 0.0	(0.2)	4	(0.0)	2	0.2	194	55	117	135	37
1991	1205	3970S	41	1	2	0.2 + 0.3	(6.0)	12	(2.7)	20	8.7	1990	49	111	129	31
1992BL	62	1991L	41	2	1	0.0 + 0.0	(0.2)	3	(0.0)	20	0.2	1990	49	111	129	31

0 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)
0 3606.5	293.9	12.3	76.9	122.1	(2189.1) + (221.3)	+ (0.0)	= 2410.4	
0 578.1	58.5	9.9	10.5	28.8	(431.6) + (23.6)	+ (0.0)	= 455.3	
0 3028.4	235.4	12.9	66.5	93.3	(1757.4) + (197.7)	+ (0.0)	= 1955.2	

0*****

0	CRUISE LITRES PER HOUR	DELAY LITRES PER HOUR	STOPS LITRES PER HOUR	TOTALS LITRES PER HOUR
0	202.8	+ 228.9	+ 131.1	= 562.8

0 FUEL CONSUMPTION PREDICTIONS

0
NO. OF ENTRIES TO SUBPT = 18
NO. OF LINKS RECALCULATED= 404

PROGRAM TRANSYT FINISHED.

RBKC Worst case

TRANSYT

Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
 Implementation for IBM-PC or compatible
 Program TRANSYT 11, Analysis Program Version 1.3
 Run with file:- "TMPTRAN.DAT" at 12:28 on 24/02/03
 Baseline 1/5/02 counts AM Baseline CH11 JP 24/02/03 - AMBas9wc.prt

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES = 1
 NUMBER OF LINKS = 9
 NUMBER OF OPTIMISED NODES = 1
 MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
 NUMBER OF STEPS IN CYCLE = 44
 MAXIMUM NUMBER OF SHARED STOPLINES = 2
 MAXIMUM NUMBER OF TIMING POINTS = 5
 MAXIMUM LINKS AT ANY NODE = 6

CORE REQUESTED = 3921 WORDS
 CORE AVAILABLE = 72000 WORDS

DATA INPUT :-

OCARD CARD
 NO. TYPE
 (1)= TITLE:- Baseline 1/5/02 counts AM Baseline CH11 JP 24/02/03 - AMBas9wc.prt

OCARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME EFFECTIVE-GREEN PERIOD 1-1200 MINS.	EQUISAT 0=UNEQUAL FLOW 1=EQUAL 10-200 %	CRUISE-SPEEDS 50-200 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	176	44	60	2	3	1	1	0	0	1100	200

LIST OF NODES TO BE OPTIMISED

OCARD NO.	CARD TYPE	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3)=	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LINKS HAVING SHARED STOPLINES

CARD NO.	CARD TYPE	FIRST SET	SECOND SET	THIRD SET
4)=	7	93	90	0
5)=	7	94	95	0
6)=	7	98	99	0

NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES

CARD NO.	CARD TYPE	NODE NO.	STAGE 1 CHANGE	STAGE 1 MIN	STAGE 2 CHANGE	STAGE 2 MIN	STAGE 3 CHANGE	STAGE 3 MIN	STAGE 4 CHANGE	STAGE 4 MIN	STAGE 5 CHANGE	STAGE 5 MIN	STAGE 6 CHANGE	STAGE 6 MIN	STAGE 7 CHANGE	STAGE 7 MIN
7)=	15	9	63	12	143	18	161	14	0	12	33	13	0	0	0	0

LINK CARDS: GIVEWAY DATA

CARD NO.	CARD TYPE	LINK NO.	PRIORITY LINKS LINK1 NO.	LINK2 NO.	LINK1 GIVEWAY ONLY % FLOW	LINK1 GIVEWAY A1 X100	LINK1 GIVEWAY A2 X100	LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100
8)=	30	91	0	94	70	0	26	0	0	730	0	0
9)=	30	92	98	0	0	24	0	0	0	790	0	0
10)=	30	94	0	91	68	0	23	0	0	640	0	0
11)=	30	95	0	0	0	0	0	0	0	640	0	0

0	12)=	30	96	93	0	0	21	0	0	0	0	0	40	0	750	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.	MODE		STAGE	LAG	STAGE	LAG	STAGE	LAG	STAGE	LAG	LENGTH	WT.X100	FLOW	WT.X100	X100
13)=	31	90	0		0	0	0	0	0	0	0	0	200	0	0	0	0
14)=	31	91	9		3	7	4	2	5	6	1	2	200	0	1811	0	0
15)=	31	92	9		1	5	2	2	4	5	5	2	200	0	1773	0	0
16)=	31	93	9		1	5	2	0	4	5	5	0	200	0	1900	0	0
17)=	31	94	9		3	7	4	2	5	6	1	2	200	0	1719	0	0
18)=	31	95	0		0	0	0	0	0	0	0	0	200	0	0	0	0
19)=	31	96	9		1	5	2	2	4	5	5	2	40	0	1644	0	0
20)=	31	98	9		1	5	2	0	4	5	5	0	200	0	1908	0	0
21)=	31	99	0		0	0	0	0	0	0	0	0	200	0	0	0	0
0	LINK CARDS: FLOW DATA																

LINK CARDS: FLOW DATA																
CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	ENTRY 1 LINK NO.	ENTRY 1 FLOW	ENTRY 1 CRUISE SPEED	ENTRY 2 LINK NO.	ENTRY 2 FLOW	ENTRY 2 CRUISE SPEED	ENTRY 3 LINK NO.	ENTRY 3 FLOW	ENTRY 3 CRUISE SPEED	ENTRY 4 LINK NO.	ENTRY 4 FLOW	ENTRY 4 CRUISE SPEED
22)=	32	90	30	0	0	0	3000	0	0	0	0	0	0	0	0	0
23)=	32	91	79	0	0	0	40	0	0	0	0	0	0	0	0	0
24)=	32	92	10	0	0	0	40	0	0	0	0	0	0	0	0	0
25)=	32	93	827	0	0	0	40	0	0	0	0	0	0	0	0	0
26)=	32	94	193	0	0	0	40	0	0	0	0	0	0	0	0	0
27)=	32	95	12	0	0	0	3000	0	0	0	0	0	0	0	0	0
28)=	32	96	135	0	0	0	40	0	0	0	0	0	0	0	0	0
29)=	32	98	1004	0	0	0	40	0	0	0	0	0	0	0	0	0
30)=	32	99	30	0	0	0	3000	0	0	0	0	0	0	0	0	0

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

0 176 SECOND CYCLE 44 STEPS

0 INITIAL SETTINGS

- (SECONDS)

0	NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
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9	5	63	96	114	170	27													
0 LINK	FLOW	SAT	DEGREE	MEAN	-----DELAY-----			----STOPS----		----QUEUE----		PERFORMANCE	EXIT	GREEN TIMES					
NUMBER	INTO	FLOW	OF	PER	UNIFORM RANDOM+ COST			MEAN	COST	MEAN	AVERAGE	INDEX.	NODE	START	START	END	END		
	LINK		SAT	PCU	OVERSAT OF			STOPS	OF	MAX.	EXCESS	WEIGHTED SUM							
	(PCU/H)	(PCU/H)	(%)	(SEC)	DELAY	(U+R+O=MEAN Q)	DELAY	/PCU	STOPS	(PCU)	(PCU)	OF () VALUES			1ST	2ND	(SECONDS)		
					(SEC)	(PCU-H/H)	(\$/H)	(%)	(\$/H)										
90BL	30	93L	137	24	571	0.7 + 4.1	(52.3)	261	(0.8)	150	+	53.1	9	68	96	175	27		
91	79	1811	14	18	17	0.3 + 0.1	(4.1)	59	(0.8)	1		4.9	9	121	172	33	65		
92	10	1773	7	18	34	0.1 + 0.0	(1.0)	75	(0.1)	0		1.2	9	68	98	175	29		
93	827	1900S	137	18	571	18.0 +113.2	(999.9)	261	(37.0)	150	+	1479.3	9	68	96	175	27		
94	193	1719S	39	18	21	0.8 + 0.3	(12.5)	72	(2.4)	4		14.9	9	121	172	33	65		
95BL	12	94L	39	24	21	0.1 + 0.0	(0.8)	72	(0.1)	4		0.9	9	121	172	33	65		
96	135	1644	88	4	110	1.3 + 2.8	(45.5)	165	(3.8)	7	+	49.3	9	68	98	175	29		
98	1004	1908S	164	18	814	29.2 +198.0	(999.9)	257	(44.3)	272	+	2543.0	9	68	96	175	27		
99BL	30	98L	164	24	814	0.9 + 5.9	(74.7)	257	(0.7)	272	+	75.4	9	68	96	175	27		

0	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	TOTALS BUSES OTHER
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	442.4	386.8	1.1	51.2	324.4	(4131.9) + (90.0)	+ (0.0)	=	4221.9	
0	14.4	12.1	1.2	1.6	10.0	(127.8) + (1.6)	+ (0.0)	=	129.3	
0	428.0	374.7	1.1	49.6	314.4	(4004.2) + (88.4)	+ (0.0)	=	4092.6	

0*****

0 CRUISE DELAY STOPS TOTALS
 OFUEL CONSUMPTION PREDICTIONS LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR
 24.4 + 432.0 + 53.3 = 509.7

0 NO. OF ENTRIES TO SUBPT = 1
 NO. OF LINKS RECALCULATED= 12

0 176 SECOND CYCLE 44 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26
 - (SECONDS)

9	5	89	122	140	20	53	TOTAL	TOTAL	PENALTY	TOTAL	
TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	COST	COST	FOR	PERFORMANCE	
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	OF	OF	EXCESS	INDEX	
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	DELAY	STOPS	QUEUES		
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)			(\$/H)	(\$/H)	
0 442.4	386.1	1.1	47.4	327.6	(4124.2) + (	91.2)	+	(0.0)	=	4215.4	TOTALS
0 14.4	12.0	1.2	1.5	10.0	(126.4) + (	1.6)	+	(0.0)	=	128.0	BUSES
0 428.0	374.1	1.1	45.9	317.5	(3997.8) + (	89.6)	+	(0.0)	=	4087.4	OTHER

0 NO. OF ENTRIES TO SUBPT = 3
 NO. OF LINKS RECALCULATED= 29

0 176 SECOND CYCLE 44 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70
 - (SECONDS)

9	5	89	122	140	20	53	TOTAL	TOTAL	PENALTY	TOTAL	
TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	COST	COST	FOR	PERFORMANCE	
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	OF	OF	EXCESS	INDEX	
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	DELAY	STOPS	QUEUES		
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)			(\$/H)	(\$/H)	
0 442.4	386.1	1.1	47.4	327.6	(4124.2) + (	91.2)	+	(0.0)	=	4215.4	TOTALS
0 14.4	12.0	1.2	1.5	10.0	(126.4) + (	1.6)	+	(0.0)	=	128.0	BUSES
0 428.0	374.1	1.1	45.9	317.5	(3997.8) + (	89.6)	+	(0.0)	=	4087.4	OTHER

0 NO. OF ENTRIES TO SUBPT = 3
 NO. OF LINKS RECALCULATED= 29

0 176 SECOND CYCLE 44 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1
 - (SECONDS)

9	5	67	147	165	19	52	TOTAL	TOTAL	PENALTY	TOTAL	
TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	COST	COST	FOR	PERFORMANCE	
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	OF	OF	EXCESS	INDEX	
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	DELAY	STOPS	QUEUES		
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)			(\$/H)	(\$/H)	
0 442.4	37.8	11.7	15.6	11.0	(292.5) + (	39.1)	+	(0.0)	=	331.6	TOTALS
0 14.4	1.4	10.1	0.5	0.4	(10.4) + (	0.8)	+	(0.0)	=	11.2	BUSES
0 428.0	36.3	11.8	15.1	10.6	(282.1) + (	38.4)	+	(0.0)	=	320.5	OTHER

0 NO. OF ENTRIES TO SUBPT = 57
 NO. OF LINKS RECALCULATED= 515

0 176 SECOND CYCLE 44 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26

9	5	119	23	41	71	104						
TOTAL DISTANCE RAVELLED		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)		
442.4		37.8	11.7		15.6	11.0	(292.4) + (	39.1)	+ (	0.0)	= 331.5	
14.4		1.4	10.1		0.5	0.4	(10.4) + (	0.8)	+ (	0.0)	= 11.1	
428.0		36.3	11.8		15.1	10.6	(282.0) + (	38.3)	+ (	0.0)	= 320.4	
											TOTALS BUSES OTHER	

0	9	5	119	23	41	71	104	TOTAL	TOTAL	PENALTY	TOTAL	
TOTAL	DISTANCE		TOTAL	MEAN		TOTAL	TOTAL	COST	COST	FOR	PERFORMANCE	
TRAVELLED			TIME	JOURNEY		UNIFORM	RANDOM+	OF	OF	EXCESS	INDEX	
			SPENT	SPEED		DELAY	OVERSAT	DELAY	STOPS	QUEUES		
(PCU-KM/H)			(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	442.4		37.8	11.7		15.6	11.0	(292.4) + (	39.1) + (	0.0) =	331.5	TOTALS
0	14.4		1.4	10.1		0.5	0.4	(10.4) + (	0.8) + (	0.0) =	11.1	BUSES
0	428.0		36.3	11.8		15.1	10.6	(282.0) + (	38.3) + (	0.0) =	320.4	OTHER
0												
	NO. OF ENTRIES TO SUBPT =			5								
	NO. OF LINKS RECALCULATED=			49								

[illegible]

9	5	120	24	42	72	105					
0 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)	
0 442.4		37.8	11.7		15.6	11.0	(292.8) + (	37.6) + (	0.0) =	330.4	TOTALS

0 14.4 1.4 10.1 0.5 0.4 (10.4) + (0.7) + (0.0) = 11.1 BUSES
 0 428.0 36.4 11.8 15.1 10.6 (282.4) + (36.9) + (0.0) = 319.3 OTHER
 0

NO. OF ENTRIES TO SUBPT = 13
 NO. OF LINKS RECALCULATED= 119

0 176 SECOND CYCLE 44 STEPS

OFINAL SETTINGS OBTAINED WITH INCREMENTS :- 26 70 -1 26 70 1 -1 1
 - (SECONDS)

0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
 NO OF STAGES 1 2 3 4 5 6 7

9	5	120	24	42	72	105	-----DELAY-----		----STOPS----		-----QUEUE-----		PERFORMANCE	EXIT	GREEN TIMES		
0 LINK	FLOW	SAT	DEGREE	MEAN TIMES	UNIFORM RANDOM+ COST		MEAN	COST	MEAN	AVERAGE	INDEX.	WEIGHTED SUM	OF () VALUES	EXIT	START	START	END
NUMBER	INTO	FLOW	OF	PER PCU	CRUISE	OVERSAT	STOPS	OF	MAX.	EXCESS	OF () VALUES	OF () VALUES	OF () VALUES	OF () VALUES	1ST	2ND	END
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)	(\$/H)	(\$/H)	(%)	(\$/H)	(PCU)	(PCU)	(PCU)	(PCU)	(SECONDS)	(SECONDS)	(SECONDS)
90BL	30	93L	76	24	26	0.2 + 0.1	(2.3)	77	(0.2)	22		2.6	9	125	24	77	105
91	79	1811	37	18	49	0.8 + 0.3	(11.9)	107	(1.4)	3		13.3	9	49	74	111	122
92	10	1773	4	18	15	0.0 + 0.0	(0.5)	43	(0.1)	0		0.5	9	125	26	77	107
93	827	1900S	76	18	26	4.4 + 1.5	(64.6)	77	(10.9)	22		75.4	9	125	24	77	105
94	193	1719S	93	18	117	2.3 + 4.0	(69.1)	163	(5.4)	12		74.4	9	49	74	111	122
95BL	12	94L	93	24	117	0.1 + 0.2	(4.3)	163	(0.2)	12		4.5	9	49	74	111	122
96	135	1644	44	4	23	0.5 + 0.4	(9.7)	78	(1.8)	3		11.5	9	125	26	77	107
98	1004	1908S	91	18	41	7.1 + 4.4	(126.8)	101	(17.3)	33		144.2	9	125	24	77	105
99BL	30	98L	91	24	41	0.2 + 0.1	(3.8)	101	(0.3)	33		4.1	9	125	24	77	105

0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL	
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	COST	FOR	PERFORMANCE	
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	OF	EXCESS	INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 442.4	37.8	11.7	15.6	11.1	(292.9) + (37.6)	+ (0.0)	=	330.5	TOTALS	
0 14.4	1.4	10.1	0.5	0.4	(10.4) + (0.7)	+ (0.0)	=	11.1	BUSES	
0 428.0	36.4	11.8	15.1	10.6	(282.5) + (36.9)	+ (0.0)	=	319.4	OTHER	

0*****

0	CRUISE	DELAY	STOPS	TOTALS
	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS	24.4	+ 30.6	+ 22.3	= 77.3

0
 NO. OF ENTRIES TO SUBPT = 4
 NO. OF LINKS RECALCULATED= 40

PROGRAM TRANSYT FINISHED

TRANSYT

Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
 Implementation for IBM-PC or compatible
 Program TRANSYT 11, Analysis Program Version 1.3
 Run with file:- "TMPTRAN.DAT" at 12:32 on 24/02/03
 Baseline 1/5/02 counts AM Baseline CH11 JP 24/02/03 - AMBas_wc.prt

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES = 6
 NUMBER OF LINKS = 38
 NUMBER OF OPTIMISED NODES = 6
 MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
 NUMBER OF STEPS IN CYCLE = 40
 MAXIMUM NUMBER OF SHARED STOPLINES = 2
 MAXIMUM NUMBER OF TIMING POINTS = 7
 MAXIMUM LINKS AT ANY NODE = 8

CORE REQUESTED = 7684 WORDS
 CORE AVAILABLE = 72000 WORDS

DATA INPUT :-

OCARD CARD
 NO. TYPE
 (1)= TITLE:- Baseline 1/5/02 counts AM Baseline CH11 JP 24/02/03 - AMBas_wc.prt

OCARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME EFFECTIVE-1-1200 MINS.	GREEN DISPLACEMENTS START (SEC)	EQUISAT SETTINGS END (SEC)	0=UNEQUAL FLOW 1=EQUAL CYCLE	CRUISE-SPEEDS SCALE 10-200 %	OPTIMISE 0=NONE 1=O/SET 2=FULL	EXTRA COPIES FINAL OUTPUT	HILL-CLIMB 1=FULL	DELAY VALUE P PER PCU-H	STOP VALUE P PER 100
2)=	1	160	40	60	2	3	1	1	0	0	0	1100	200

LIST OF NODES TO BE OPTIMISED

OCARD NO.	CARD TYPE	3	52	49	9	1990	194	0	0	0	0	0	0	0	0
3)=	2														

LINKS HAVING SHARED STOPLINES

CARD NO.	CARD TYPE	FIRST SET	SECOND SET	THIRD SET
4)=	7	34	341	0
5)=	7	35	351	0
6)=	7	93	90	0
7)=	7	94	95	0
8)=	7	98	99	0
9)=	7	491	492	0
10)=	7	493	494	0
11)=	7	497	498	0
12)=	7	521	522	0
13)=	7	523	524	0
14)=	7	527	528	0
15)=	7	1941	1942	0
16)=	7	1991	1992	0

CARD	CARD	NODE	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
4)=	7	34	341	0	0	0	0	0	0
5)=	7	35	351	0	0	0	0	0	0
6)=	7	93	90	0	0	0	0	0	0
7)=	7	94	95	0	0	0	0	0	0
8)=	7	98	99	0	0	0	0	0	0
9)=	7	491	492	0	0	0	0	0	0
10)=	7	493	494	0	0	0	0	0	0
11)=	7	497	498	0	0	0	0	0	0
12)=	7	521	522	0	0	0	0	0	0
13)=	7	523	524	0	0	0	0	0	0
14)=	7	527	528	0	0	0	0	0	0
15)=	7	1941	1942	0	0	0	0	0	0
16)=	7	1991	1992	0	0	0	0	0	0

NO.	TYPE	NO.	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN
17)=	23	3	75	17	29	15	62	12	0	0	0	0	0	0	0	0
18)=	15	9	90	12	1	18	19	14	34	12	64	13	0	0	0	0
19)=	17	49	40	12	73	12	86	13	110	21	131	12	155	12	7	13
20)=	23	52	37	30	79	12	22	15	0	0	0	0	0	0	0	0
21)=	22	194	46	12	33	13	0	0	0	0	0	0	0	0	0	0
22)=	22	1990	39	12	26	13	0	0	0	0	0	0	0	0	0	0

0

LINK CARDS: GIVEWAY DATA

CARD NO.	CARD TYPE	LINK NO.	PRIORITY LINKS LINK1 NO.	LINK2 NO.	LINK1 ONLY % FLOW	GIVEWAY COEFFS. A1 X100	A2 X100	LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100
23)=	30	15	13	11	6	21	20	0	0	0	0	0
24)=	30	35	0	32	80	0	25	0	0	0	0	0
25)=	30	91	0	94	70	0	26	0	0	0	0	0
26)=	30	92	98	0	0	24	0	0	0	0	0	0
27)=	30	94	0	91	68	0	23	0	0	0	0	0
28)=	30	95	0	0	0	0	0	0	0	0	0	0
29)=	30	96	93	0	0	21	0	0	0	0	0	0
30)=	30	351	0	0	0	0	0	0	0	0	0	0
31)=	30	495	493	0	0	16	0	0	0	0	0	0
32)=	30	521	0	527	18	0	19	0	0	0	0	0
33)=	30	522	0	0	0	0	0	0	0	0	0	0

0

LINK CARDS: FIXED DATA

CARD NO.	CARD TYPE	LINK NO.	EXIT NODE	FIRST START STAGE	LAG	GREEN END STAGE	LAG	SECOND START STAGE	LAG	GREEN END STAGE	LAG	LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
34)=	31	11	0	0	0	0	0	0	0	0	0	270	0	3957	0	0
35)=	31	13	0	0	0	0	0	0	0	0	0	390	0	3898	0	0
36)=	31	31	3	2	7	3	0	0	0	0	0	200	0	1700	0	0
37)=	31	32	3	2	7	3	0	0	0	0	0	200	0	2100	0	0
38)=	31	33	3	1	7	2	0	0	0	0	0	390	0	3600	0	0
39)=	31	34	3	1	7	2	0	0	0	0	0	200	0	1700	0	0
40)=	31	35	3	2	7	1	0	0	0	0	0	200	0	1800	0	0
41)=	31	37	3	1	7	2	0	0	0	0	0	406	0	3300	0	0
42)=	31	90	0	0	0	0	0	0	0	0	0	200	0	0	0	0
43)=	31	91	9	3	7	4	2	5	6	1	2	200	0	1811	0	0
44)=	31	92	9	1	5	2	2	4	5	5	2	200	0	1773	0	0
45)=	31	93	9	1	5	2	0	4	5	5	0	200	0	1900	0	0
46)=	31	94	9	3	7	4	2	5	6	1	2	200	0	1719	0	0
47)=	31	95	0	0	0	0	0	0	0	0	0	200	0	0	0	0
48)=	31	96	9	1	5	2	2	4	5	5	2	40	0	1644	0	0
49)=	31	98	9	1	5	2	0	4	5	5	0	200	0	1908	0	0
50)=	31	99	0	0	0	0	0	0	0	0	0	200	0	0	0	0
51)=	31	341	0	0	0	0	0	0	0	0	0	200	0	0	0	0
52)=	31	351	0	0	0	0	0	0	0	0	0	200	0	0	0	0
53)=	31	491	49	3	6	4	0	7	6	1	0	200	0	5707	0	0
54)=	31	492	0	0	0	0	0	0	0	0	0	200	0	0	0	0
55)=	31	493	49	1	5	2	0	5	5	6	0	200	0	3931	0	0
56)=	31	494	0	0	0	0	0	0	0	0	0	200	0	0	0	0
57)=	31	495	49	1	5	3	0	5	5	7	0	130	0	1860	0	0
58)=	31	497	49	1	5	3	0	5	5	7	0	130	0	3990	0	0
59)=	31	498	0	0	0	0	0	0	0	0	0	130	0	0	0	0
60)=	31	521	52	1	5	2	2	0	0	0	0	130	0	1854	0	0
61)=	31	522	0	0	0	0	0	0	0	0	0	130	0	0	0	0
62)=	31	523	52	1	5	2	0	0	0	0	0	130	0	1825	0	0
63)=	31	524	0	0	0	0	0	0	0	0	0	130	0	0	0	0
64)=	31	525	52	2	5	3	2	0	0	0	0	340	0	5977	0	0
65)=	31	527	52	1	5	2	0	0	0	0	0	200	0	3780	0	0
66)=	31	528	0	0	0	0	0	0	0	0	0	200	0	0	0	0
67)=	31	1941	194	1	5	2	0	0	0	0	0	16	0	3970	0	0

C

LINK CARDS: FLOW DATA																
CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	ENTRY 1 LINK NO.	ENTRY 1 FLOW	ENTRY 1 CRUISE SPEED	ENTRY 2 LINK NO.	ENTRY 2 FLOW	ENTRY 2 CRUISE SPEED	ENTRY 3 LINK NO.	ENTRY 3 FLOW	ENTRY 3 CRUISE SPEED	ENTRY 4 LINK NO.	ENTRY 4 FLOW	ENTRY 4 CRUISE SPEED
71)=	32	11	858	0	491	725	40	493	58	40	495	203	40	0	0	0
72)=	32	13	1210	0	34	1021	40	35	42	40	0	0	0	0	0	0
73)=	32	15	186	0	0	0	40	0	0	0	0	0	0	0	0	0
74)=	32	31	62	0	0	0	3000	0	0	0	0	0	0	0	0	0
75)=	32	32	650	0	0	0	40	0	0	0	0	0	0	0	0	0
76)=	32	33	612	0	0	0	40	0	0	0	0	0	0	0	0	0
77)=	32	34	563	0	0	0	40	0	0	0	0	0	0	0	0	0
78)=	32	35	625	0	0	0	40	0	0	0	0	0	0	0	0	0
79)=	32	37	1092	0	11	831	3000	15	167	3000	0	0	0	0	0	0
80)=	32	90	30	0	524	42	3000	0	0	0	0	0	0	0	0	0
81)=	32	91	79	0	0	0	40	0	0	0	0	0	0	0	0	0
82)=	32	92	10	0	523	293	40	525	64	40	0	0	0	0	0	0
83)=	32	93	827	0	523	293	40	525	64	40	0	0	0	0	0	0
84)=	32	94	193	0	0	0	40	0	0	0	0	0	0	0	0	0
85)=	32	95	12	0	0	0	3000	0	0	0	0	0	0	0	0	0
86)=	32	96	135	0	0	0	40	0	0	0	0	0	0	0	0	0
87)=	32	98	1004	0	0	0	40	0	0	0	0	0	0	0	0	0
88)=	32	99	30	0	0	0	3000	0	0	0	0	0	0	0	0	0
89)=	32	341	10	0	0	0	3000	0	0	0	0	0	0	0	0	0
90)=	32	351	72	0	0	0	3000	0	0	0	0	0	0	0	0	0
91)=	32	491	1181	0	0	0	40	0	0	0	0	0	0	0	0	0
92)=	32	492	32	0	0	0	3000	0	0	0	0	0	0	0	0	0
93)=	32	493	469	0	0	0	40	0	0	0	0	0	0	0	0	0
94)=	32	494	66	0	0	0	3000	0	0	0	0	0	0	0	0	0
95)=	32	495	203	0	527	203	40	0	0	0	0	0	0	0	0	0
96)=	32	497	860	0	525	144	40	527	752	40	0	0	0	0	0	0
97)=	32	498	30	0	528	30	3000	0	0	0	0	0	0	0	0	0
98)=	32	521	127	0	493	127	40	0	0	0	0	0	0	0	0	0
99)=	32	522	36	0	494	36	3000	0	0	0	0	0	0	0	0	0
100)=	32	523	527	0	0	0	0	0	0	0	0	0	0	0	0	0
*** DISTANCE > 0 BUT CRUISE TIME/SPEED=0 FOR THIS LINK.THUS CRUISE TIME BASED ON DISTANCE GIVEN AND DEFAULT SPEED OF 43 KM/H																
101)=	32	524	42	0	494	30	3000	0	0	0	0	0	0	0	0	0
102)=	32	525	1249	0</												

CARD

[illegible]

0 160 SECOND CYCLE 40 STEPS
0 INITIAL SETTINGS
- (SECONDS)

[illegible]

NO	OF STAGES	1	2	3	4	5	6	7											
3	3	75	103	129	155	23	49												
9	5	90	120	138	28	58													
49	7	40	58	70	103	124	152	4											
52	3	37	79	102	117	159	22												
194	2	46	113	126	33														
1990	2	39	106	119	26														
0 LINK NUMBER	FLOW INTO LINK	SAT FLOW (PCU/H)	DEGREE OF SAT (%)	MEAN TIMES PER PCU CRUISE DELAY (SEC)	MEAN TIMES PER PCU CRUISE DELAY (SEC)	-----DELAY----- UNIFORM (U+R+O=MEAN Q) (PCU-H/H)	RANDOM+ OVERSAT OF (\$/H)	-----STOPS----- MEAN STOPS /PCU (%)	COST OF STOPS (\$/H)	-----QUEUE----- MEAN MAX. (PCU)	AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES START END 1ST (SECONDS)	GREEN TIMES START END 2ND (SECONDS)				
11	794<	3957	20	24	1	0.0 + 0.1	(1.4)	0	(0.0)	0		1.4							
13	995<	3898	26	35	1	0.0 + 0.2	(1.9)	0	(0.1)	0		2.0							
15	186	600	60	18	17	0.2 + 0.7	(9.9)	52	(1.7)	3		11.6							
31BL	62	1700	15	24	29	0.4 + 0.1	(5.5)	79	(0.5)	1		6.0	3	110 129	30 49				
32	650	2100	124	18	421	11.0 + 65.0	(835.7)	260	(29.0)	87	+	864.6	3	110 129	30 49				
33	612	3600	62	35	30	4.3 + 0.8	(56.3)	86	(9.0)	12		65.3	3	82 103	2 23				
34	563	1700S	123	18	411	9.9 + 54.4	(707.3)	259	(25.0)	75	+	732.3	3	82 103	2 23				
35	625	1800S	80	18	26	2.8 + 1.7	(49.3)	100	(10.7)	15		60.0	3	110 155	30 75				
37BL	1024<	3300	113	49	266	13.3 + 62.4	(833.0)	223	(23.5)	95		856.5	3	82 103	2 23				
90BL	30	93L	134	24	552	0.7 + 3.9	(50.6)	253	(0.7)	140	+	51.4	9	95 120	33 58				
91	79	1811	15	18	17	0.3 + 0.1	(4.0)	62	(0.8)	1		4.9	9	145 30	64 92				
92	10	1773	8	18	40	0.1 + 0.0	(1.2)	119	(0.2)	0		1.4	9	95 122	33 60				
93	801<	1900S	134	18	544	16.6 +104.5	(999.9)	256	(36.3)	140	+	1368.2	9	95 120	33 58				
94	193	1719S	41	18	21	0.8 + 0.3	(12.4)	75	(2.5)	4		14.9	9	145 30	64 92				
95BL	12	94L	41	24	21	0.1 + 0.0	(0.8)	75	(0.1)	4		0.9	9	145 30	64 92				
96	135	1644	100	4	199	1.5 + 5.9	(81.9)	223	(5.2)	10	+	87.1	9	95 122	33 60				
98	1004	1908S	167	18	821	26.8 +202.2	(999.9)	258	(44.4)	273	+	2563.4	9	95 120	33 58				
99BL	30	98L	167	24	821	0.8 + 6.0	(75.3)	258	(0.7)	273	+	76.0	9	95 120	33 58				
341BL	10	34L	123	24	411	0.2 + 1.0	(12.6)	259	(0.2)	75	+	12.8	3	82 103	2 23				
351BL	72	35L	80	24	26	0.3 + 0.2	(5.7)	100	(0.7)	15		6.4	3	110 155	30 75				
491	1181	5707S	58	18	24	7.3 + 0.7	(87.3)	77	(15.5)	28		102.8	49	76 103	10 40				
492BL	32	491L	58	24	24	0.2 + 0.0	(2.4)	77	(0.2)	28		2.6	49	76 103	10 40				
493	469	3931S	57	18	32	3.6 + 0.6	(45.9)	88	(7.1)	12		53.0	49	45 58	129 152				
494BL	66	493L	57	24	32	0.5 + 0.1	(6.5)	88	(0.6)	12		7.0	49	45 58	129 152				
495	129<	1860	36	12	31	0.8 + 0.3	(12.2)	59	(2.1)	5		14.3	49	45 70	129 4				
497	576<	3990S	39	12	19	2.7 + 0.3	(33.5)	35	(5.2)	12		38.6	49	45 70	129 4				
498BL	21	497L	39	16	15	0.1 + 0.0	(0.9)	24	(0.1)	12		1.0	49	45 70	129 4				
521	127	1854S	52	12	13	0.1 + 0.4	(5.2)	55	(1.2)	3		6.4	52	42 81	122 1				
522BL	36	521L	52	16	15	0.0 + 0.1	(1.6)	62	(0.2)	3		1.8	52	42 81	122 1				
523	527	1825S	66	11	22	2.3 + 0.9	(34.9)	75	(7.8)	10		42.7	52	42 79	122 159				
524BL	42	523L	66	16	9	0.0 + 0.1	(1.1)	16	(0.1)	10		1.2	52	42 79	122 159				
525	1032<	5977	66	31	20	4.9 + 1.0	(64.6)	73	(15.5)	21		80.2	52	84 104	4 24				
527	735<	3780S	43	18	10	1.6 + 0.4	(21.4)	27	(5.2)	14		26.6	52	42 79	122 159				
528BL	30<	527L	43	24	14	0.1 + 0.0	(1.3)	39	(0.2)	14		1.4	52	42 79	122 159				
1941	806<	3970S	27	1	2	0.3 + 0.2	(5.8)	18	(3.4)	14	+	9.2	194	51 113	131 33				
1942BL	42	1941L	27	2	2	0.0 + 0.0	(0.2)	10	(0.0)	14	+	0.3	194	51 113	131 33				
1991	998<	3970S	33	1	1	0.2 + 0.2	(4.4)	9	(2.0)	14	+	6.4	1990	44 106	124 26				
1992BL	45	1991L	33	2	1	0.0 + 0.0	(0.1)	1	(0.0)	14	+	0.1	1990	44 106	124 26				

0 160 SECOND CYCLE 40 STEPS

0 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)	
0 3547.1	722.5	4.9	114.8	514.8	(6924.9) + (	257.7)	+ (0.0)	= 7182.6	TOTALS

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49	7	40	58	70	103	124	152	4			
52	3	37	79	102	117	159	22				
194	2	14	81	94	1						
1990	2	39	106	119	26						
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
	DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		
	TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX		
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0	3547.1	237.6	14.9	71.9	72.7	(1590.5) + (	203.5)	+ (0.0)	=	1794.0	TOTALS
0	530.1	52.0	10.2	10.4	23.9	(377.1) + (	21.7)	+ (0.0)	=	398.9	BUSES
0	3017.0	185.6	16.3	61.6	48.7	(1213.4) + (	181.8)	+ (0.0)	=	1395.1	OTHER
0											

NO. OF ENTRIES TO SUBPT = 100
NO. OF LINKS RECALCULATED= 1670

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24
- (SECONDS)

3	3	68	100	135	148	20	55				
9	5	48	119	137	3	33					
49	7	40	58	70	103	124	152	4			
52	3	37	79	102	117	159	22				
194	2	38	105	118	25						
1990	2	39	106	119	26						
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
	DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		
	TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX		
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0	3547.1	237.4	14.9	71.7	72.7	(1588.3) + (	202.2)	+ (0.0)	=	1790.5	TOTALS
0	530.1	51.9	10.2	10.4	23.9	(377.0) + (	21.7)	+ (0.0)	=	398.6	BUSES
0	3017.0	185.4	16.3	61.4	48.8	(1211.4) + (	180.5)	+ (0.0)	=	1391.9	OTHER
0											

NO. OF ENTRIES TO SUBPT = 13
NO. OF LINKS RECALCULATED= 262

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64
- (SECONDS)

3	3	68	100	135	148	20	55				
9	5	112	23	41	67	97					
49	7	40	58	70	103	124	152	4			
52	3	37	79	102	117	159	22				
194	2	38	105	118	25						
1990	2	39	106	119	26						
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
	DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		
	TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX		
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0	3547.1	236.6	15.0	71.0	72.6	(1579.4) + (	197.7)	+ (0.0)	=	1777.1	TOTALS
0	530.1	51.6	10.3	10.1	23.9	(373.6) + (	21.4)	+ (0.0)	=	395.1	BUSES
0	3017.0	184.9	16.3	60.9	48.7	(1205.8) + (	176.2)	+ (0.0)	=	1382.0	OTHER
0											

NO. OF ENTRIES TO SUBPT = 13
NO. OF LINKS RECALCULATED= 262

3	3	68	100	135	148	20	55	
9	5	112	23	41	67	97		
49	7	40	58	70	103	124	152	4
52	3	37	79	102	117	159	22	
194	2	38	105	118	25			
1990	2	39	106	119	26			

NO. OF ENTRIES TO SUBPT = 15
NO. OF LINKS RECALCULATED= 297

3	3	68	102	135	148	22	55	
9	5	112	23	41	67	97		
49	7	40	67	79	106	127	151	3
52	3	37	79	102	117	159	22	
194	2	38	105	118	25			
1990	2	39	106	119	26			

NO. OF ENTRIES TO SUBPT = 62
NO. OF LINKS RECALCULATED= 1231

0	NO NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
	3	3	68	102	135	148	22	55	
	9	5	112	23	41	67	97		
	49	7	40	67	79	106	127	151	3
	52	3	37	79	102	117	159	22	
	194	2	39	106	119	26			
	1990	2	40	107	120	27			

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER CRUISE DELAY	TIMES PCU DELAY	-----DELAY----- UNIFORM RANDOM+ COST (U+R+O=MEAN Q) DELAY	-----STOPS----- MEAN COST STOPS OF /PCU STOPS	----QUEUE---- MEAN MAX. AVERAGE EXCESS	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES	EXIT NODE	GREEN START END 1ST 2ND	TIMES START END
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	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)	(\$/H)	(%)	(\$/H)	(PCU)	(PCU)	(\$/H)	(SECONDS)
11	857	3957	22	24	1	0.0 + 0.1	(1.5)	0	(0.1)	0		1.6	
13	1209	3898	31	35	1	0.0 + 0.2	(2.5)	0	(0.1)	0		2.6	
15	186	600	67	18	26	0.4 + 1.0	(15.0)	75	(2.4)	3		17.4	
31BL	62	1700	11	24	22	0.3 + 0.1	(4.1)	70	(0.4)	1		4.5	3 109 135 29 55
32	650	2100	92	18	52	4.6 + 4.8	(102.9)	119	(13.3)	18		116.2	3 109 135 29 55
33	612	3600	49	35	23	3.5 + 0.5	(43.2)	75	(7.9)	11		51.0	3 75 102 155 22
34	563	1700S	96	18	74	4.0 + 7.5	(126.8)	142	(13.8)	20		140.5	3 75 102 155 22
35	625	1800S	100	18	92	3.9 + 12.0	(175.1)	163	(17.5)	29		192.6	3 109 148 29 68
37BL	1091	3300	94	49	43	6.0 + 7.0	(142.9)	113	(11.9)	30		154.9	3 75 102 155 22
90BL	30	93L	78	24	23	0.1 + 0.1	(2.1)	64	(0.2)	21		2.3	9 117 23 72 97
91	79	1811	38	18	47	0.7 + 0.3	(11.3)	111	(1.5)	2		12.8	9 48 69 103 114
92	11	1773	4	18	12	0.0 + 0.0	(0.4)	38	(0.1)	0		0.5	9 117 25 72 99
93	826	1900S	78	18	21	3.2 + 1.6	(53.8)	67	(9.5)	21		63.3	9 117 23 72 97
94	193	1719S	95	18	124	2.2 + 4.5	(73.2)	176	(5.8)	11		79.0	9 48 69 103 114
95BL	12	94L	95	24	124	0.1 + 0.3	(4.6)	176	(0.2)	11		4.8	9 48 69 103 114
96	135	1644	45	4	23	0.5 + 0.4	(9.6)	82	(1.9)	3		11.5	9 117 25 72 99
98	1004	1908S	93	18	46	6.9 + 5.8	(139.9)	110	(19.0)	33		158.9	9 117 23 72 97
99BL	30	98L	93	24	46	0.2 + 0.2	(4.2)	110	(0.3)	33		4.5	9 117 23 72 97
341BL	10	34L	96	24	74	0.1 + 0.1	(2.3)	142	(0.1)	20		2.4	3 75 102 155 22
351BL	72	35L	100	24	92	0.4 + 1.4	(20.2)	163	(1.1)	29		21.3	3 109 148 29 68
491	1181	5707S	63	18	25	7.5 + 0.8	(91.8)	81	(16.3)	26		108.1	49 85 106 9 40
492BL	32	491L	63	24	25	0.2 + 0.0	(2.5)	81	(0.2)	26		2.7	49 85 106 9 40
493	469	3931S	51	18	28	3.2 + 0.4	(40.6)	82	(6.6)	11		47.2	49 45 67 132 151
494BL	66	493L	51	24	28	0.5 + 0.1	(5.7)	82	(0.5)	11		6.2	49 45 67 132 151
495	202	1860	54	12	20	0.5 + 0.6	(12.4)	88	(3.1)	4		15.4	49 45 79 132 3
497	860	3990S	53	12	11	2.0 + 0.5	(27.9)	33	(4.8)	9		32.7	49 45 79 132 3
498BL	30	497L	53	16	9	0.1 + 0.0	(0.8)	23	(0.1)	9		0.9	49 45 79 132 3
521	127	1854S	73	12	33	0.2 + 1.0	(12.9)	114	(2.5)	4		15.3	52 42 81 122 1
522BL	36	521L	73	16	35	0.1 + 0.3	(3.8)	123	(0.4)	4		4.2	52 42 81 122 1
523	527	1825S	66	11	22	2.3 + 0.9	(34.9)	75	(7.9)	10		42.8	52 42 79 122 159
524BL	42	523L	66	16	9	0.0 + 0.1	(1.2)	17	(0.1)	10		1.3	52 42 79 122 159
525	1249	5977	80	31	26	7.2 + 1.9	(100.0)	99	(21.1)	28		121.1	52 84 104 4 24
527	1146	3780S	66	18	23	6.5 + 0.9	(82.1)	77	(15.2)	22		97.4	52 42 79 122 159
528BL	42	527L	66	24	23	0.2 + 0.0	(3.0)	78	(0.3)	22		3.3	52 42 79 122 159
1941	1089	3970S	36	1	1	0.1 + 0.3	(3.7)	3	(0.5)	1		4.2	194 44 106 124 26
1942BL	50	1941L	36	2	1	0.0 + 0.0	(0.2)	5	(0.0)	1		0.2	194 44 106 124 26
1991	1237	3970S	41	1	2	0.3 + 0.3	(6.8)	16	(3.4)	19	+	10.2	1990 45 107 125 27
1992BL	48	1991L	41	2	1	0.0 + 0.0	(0.1)	1	(0.0)	19	+	0.1	1990 45 107 125 27

0 160 SECOND CYCLE 40 STEPS

0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)
0 3547.1	217.1	16.3	68.0	56.2	(1365.9) + (	190.2)	+ (0.0)	= 1556.1
0 530.1	35.6	14.9	8.4	9.6	(197.7) + (	16.0)	+ (0.0)	= 213.7
0 3017.0	181.5	16.6	59.6	46.6	(1168.2) + (	174.2)	+ (0.0)	= 1342.4

0	CRUISE	DELAY	STOPS	TOTALS
	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS	199.2	+ 142.8	+ 112.7	= 454.6

0
NO. OF ENTRIES TO SUBPT = 13
NO. OF LINKS RECALCULATED= 264

PROGRAM TRANSYT FINISHED

Traffic Network Study Tool

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

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CORE REQUESTED = 3921 WORDS
CORE AVAILABLE = 72000 WORDS
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OCARD NO.	CARD TYPE	CYCLE TIME	NO. OF STEPS PER CYCLE	TIME PERIOD 1-1200 MINS.	EFFECTIVE-GREEN START (SEC)	DISPLACEMENTS END (SEC)	EQUISAT SETTINGS 0=NO 1=YES	0=UNEQUAL FLOW CYCLE 1=EQUAL CYCLE	SCALE 10-200 %	CRUISE-SPEEDS SCALE 50-200 %	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
(1)=	TITLE:-	Baseline 1/5/02 counts PM Baseline CH11 JP 24/02/03 - PMBas9wc.prt														
2)=	1	176	44	60	2	3	1	1	0	0	1	2	0	0	1100	200
LIST OF NODES TO BE OPTIMISED																
3)=	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LINKS HAVING SHARED STOPLINES																
FIRST SET..... SECOND SET..... THIRD SET.....																
4)=	7	93	90	0	0	0	0	0	0	0	0	0	0	0	0	0
5)=	7	94	95	0	0	0	0	0	0	0	0	0	0	0	0	0
6)=	7	98	99	0	0	0	0	0	0	0	0	0	0	0	0	0
NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES																
7)=	15	9	8	12	87	18	105	14	134	12	166	13	0	0	0	0
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
8)=	30	91	0	94	49	0	26	0	0	0	0	200	0	730	0	0
9)=	30	92	98	0	0	24	0	0	0	0	0	200	0	790	0	0
10)=	30	94	0	91	82	0	23	0	0	0	0	200	0	640	0	0
11)=	30	95	0	0	0	0	0	0	0	0	0	200	0	640	0	0

[illegible]

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0*****END OF SUBROUTINE TINPUT*****
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0 176 SECOND CYCLE 44 STEPS

INITIAL SETTINGS

- (SECONDS)

0	NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
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9	5	8	41	59	115	148	-----DELAY-----			-----STOPS-----		-----QUEUE-----		PERFORMANCE	EXIT	GREEN TIMES		
0 LINK	FLOW	SAT	DEGREE	MEAN	UNIFORM	RANDOM+	COST	MEAN	COST	MEAN	AVERAGE	INDEX.				START	START	END
NUMBER	INTO	FLOW	OF	PER	(U+R+O=	Q)	OF	STOPS	OF	MAX.	EXCESS	WEIGHTED	SUM	NODE		END	END	
	(PCU/H)	(PCU/H)	(%)	(SEC)	(PCU-H/H)	(\$/H)		(%)	(\$/H)	(PCU)	(PCU)	OF ()	VALUES			1ST	2ND	(SECONDS)
90BL	24	93L	134	24	553	0.6 + 3.1	(40.6)	260	(0.6)	153	+	41.2		9	13	41	120	148
91	43	1809	10	18	18	0.2 + 0.1	(2.4)	60	(0.4)	1		2.8		9	66	117	154	10
92	34	1773	23	18	38	0.2 + 0.1	(4.0)	99	(0.6)	1		4.6		9	13	43	120	150
93	831	1932S	134	18	553	19.8 +108.0	(999.9)	260	(37.1)	153	+	1442.4		9	13	41	120	148
94	244	1722S	41	18	20	1.1 + 0.3	(15.2)	71	(3.0)	5		18.1		9	66	117	154	10
95BL	12	94L	41	24	20	0.1 + 0.0	(0.7)	71	(0.1)	5		0.8		9	66	117	154	10
96	95	1644	63	4	60	0.7 + 0.8	(17.3)	144	(2.3)	4		19.7		9	13	43	120	150
98	869	1904S	142	18	635	22.5 +130.8	(999.9)	261	(38.9)	180	+	1725.9		9	13	41	120	148
99BL	24	98L	142	24	635	0.6 + 3.6	(46.6)	261	(0.6)	180	+	47.2		9	13	41	120	148
0 TOTAL		TOTAL		MEAN	TOTAL	TOTAL	TOTAL	TOTAL		PENALTY		TOTAL						
DISTANCE		TIME		JOURNEY	UNIFORM	RANDOM+	COST	COST		FOR		PERFORMANCE						
TRAVELLED		SPENT		SPEED	DELAY	OVERSAT	OF	OF		EXCESS		INDEX						
	(PCU-KM/H)	(PCU-H/H)		(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)		(\$/H)		(\$/H)						
0	420.0	303.2		1.4	45.7	246.9	(3219.0) + (	83.6)	+	(0.0)	=	3302.6		TOTALS				
0	12.0	8.4		1.4	1.2	6.7	(87.9) + (	1.3)	+	(0.0)	=	89.2		BUSES				
0	408.0	294.8		1.4	44.5	240.1	(3131.1) + (	82.3)	+	(0.0)	=	3213.4		OTHER				

U CRUISE DELAY STOPS TOTALS
LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR
OFUEL CONSUMPTION PREDICTIONS 23.1 + 336.5 + 49.5 = 409.2

0
NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 12

0 176 SECOND CYCLE 44 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26
- (SECONDS)

9	5	86	119	137	17	50					
TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE			
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES				
					(\$/H)	(\$/H)	(\$/H)	(\$/H)			
0 420.0	295.8	1.4	37.9	247.3	(3137.0) + (	84.0)	+ (	0.0)	=	3221.0	TOTALS
0 12.0	8.2	1.5	1.0	6.7	(85.5) + (	1.3)	+ (	0.0)	=	86.8	BUSES
0 408.0	287.6	1.4	36.9	240.5	(3051.5) + (	82.7)	+ (	0.0)	=	3134.2	OTHER

0
NO. OF ENTRIES TO SUBPT = 5
NO. OF LINKS RECALCULATED= 47

0 176 SECOND CYCLE 44 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70
- (SECONDS)

9	5	86	119	137	17	50					
TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE			
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES				
					(\$/H)	(\$/H)	(\$/H)	(\$/H)			
0 420.0	295.8	1.4	37.9	247.3	(3137.0) + (	84.0)	+ (	0.0)	=	3221.0	TOTALS
0 12.0	8.2	1.5	1.0	6.7	(85.5) + (	1.3)	+ (	0.0)	=	86.8	BUSES
0 408.0	287.6	1.4	36.9	240.5	(3051.5) + (	82.7)	+ (	0.0)	=	3134.2	OTHER

0
NO. OF ENTRIES TO SUBPT = 3
NO. OF LINKS RECALCULATED= 29

0 176 SECOND CYCLE 44 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1
- (SECONDS)

9	5	64	142	160	16	49					
TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE			
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	DELAY	STOPS	QUEUES				
					(\$/H)	(\$/H)	(\$/H)	(\$/H)			
0 420.0	31.6	13.3	13.9	7.1	(230.6) + (	33.3)	+ (	0.0)	=	264.0	TOTALS
0 12.0	1.1	11.4	0.4	0.2	(7.2) + (	0.6)	+ (	0.0)	=	7.8	BUSES
0 408.0	30.5	13.4	13.4	6.9	(223.4) + (	32.8)	+ (	0.0)	=	256.2	OTHER

0
NO. OF ENTRIES TO SUBPT = 55
NO. OF LINKS RECALCULATED= 497

0 176 SECOND CYCLE 44 STEPS
0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26

- (SECONDS)

0	9	5	116	18	36	68	101	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX (\$/H)		
	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)						
0	420.0		31.6	13.3		13.9	7.1	(230.6) + (	33.3)	+ (0.0)	=	264.0	TOTALS
0	12.0		1.1	11.4		0.4	0.2	(7.2) + (	0.6)	+ (0.0)	=	7.8	BUSES
0	408.0		30.5	13.4		13.4	6.9	(223.4) + (	32.8)	+ (0.0)	=	256.2	OTHER
0													
NO. OF ENTRIES TO SUBPT = 4													
NO. OF LINKS RECALCULATED= 38													

0 176 SECOND CYCLE 44 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70
 - (SECONDS)

0	9	5	10	88	106	138	171	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX (\$/H)		
	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)						
0	420.0		31.5	13.3		13.9	7.1	(230.3) + (	33.2)	+ (0.0)	=	263.5	TOTALS
0	12.0		1.1	11.4		0.4	0.2	(7.2) + (	0.6)	+ (0.0)	=	7.8	BUSES
0	408.0		30.5	13.4		13.4	6.8	(223.1) + (	32.7)	+ (0.0)	=	255.7	OTHER
0													
NO. OF ENTRIES TO SUBPT = 3													
NO. OF LINKS RECALCULATED= 29													

0 176 SECOND CYCLE 44 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1
 - (SECONDS)

0	9	5	10	88	106	138	171	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX (\$/H)		
	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)						
0	420.0		31.5	13.3		13.9	7.1	(230.3) + (	33.2)	+ (0.0)	=	263.5	TOTALS
0	12.0		1.1	11.4		0.4	0.2	(7.2) + (	0.6)	+ (0.0)	=	7.8	BUSES
0	408.0		30.5	13.4		13.4	6.8	(223.1) + (	32.7)	+ (0.0)	=	255.8	OTHER
0													
NO. OF ENTRIES TO SUBPT = 4													
NO. OF LINKS RECALCULATED= 40													

0 176 SECOND CYCLE 44 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1 -1
 - (SECONDS)

0	9	5	11	89	107	137	170	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX (\$/H)		
	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)						
0	420.0		31.2	13.5		13.5	7.1	(226.7) + (	31.8)	+ (0.0)	=	258.5	TOTALS

0 12.0 1.0 11.5 0.4 0.2 (7.1) + (0.5) + (0.0) = 7.6 BUSES
 0 408.0 30.2 13.5 13.1 6.9 (219.6) + (31.2) + (0.0) = 250.9 OTHER
 0

NO. OF ENTRIES TO SUBPT = 15
 NO. OF LINKS RECALCULATED= 137

0 176 SECOND CYCLE 44 STEPS
 OFINAL SETTINGS OBTAINED WITH INCREMENTS :- 26 70 -1 26 70 1 -1 1
 - (SECONDS)

0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
 NO OF STAGES 1 2 3 4 5 6 7

9	5	11	89	107	137	170	-----DELAY-----		----STOPS----		----QUEUE----		PERFORMANCE	EXIT	GREEN TIMES		
0 LINK	FLOW	SAT	DEGREE	MEAN TIMES	UNIFORM RANDOM+ COST		MEAN	COST	MEAN	AVERAGE	INDEX.	NODE	START	START	END	END	
NUMBER	INTO	FLOW	OF	PER PCU	(U+R+O=MEAN Q) DELAY		STOPS	OF	MAX.	EXCESS	WEIGHTED SUM		1ST	2ND			
	LINK		SAT	CRUISE	DELAY	(PCU-H/H)	(\$/H)	(\$/H)	(PCU)	(PCU)	OF () VALUES		(SECONDS)				
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)												
90BL	24	93L	76	24	26	0.1 + 0.0	(1.9)	78	(0.2)	23		2.1	9	16	89	142	170
91	43	1809	27	18	50	0.4 + 0.2	(6.6)	95	(0.7)	1		7.3	9	114	139	0	13
92	34	1773	13	18	17	0.1 + 0.1	(1.7)	55	(0.3)	1		2.1	9	16	91	142	172
93	831	1932S	76	18	26	4.5 + 1.5	(65.5)	78	(11.1)	23		76.6	9	16	89	142	170
94	244	1722S	88	18	84	2.7 + 2.9	(62.3)	135	(5.7)	12		68.0	9	114	139	0	13
95BL	12	94L	88	24	84	0.1 + 0.1	(3.1)	135	(0.2)	12		3.2	9	114	139	0	13
96	95	1644	34	4	21	0.3 + 0.3	(6.1)	69	(1.1)	2		7.2	9	16	91	142	172
98	869	1904S	80	18	29	5.1 + 1.9	(77.4)	83	(12.3)	25		89.7	9	16	89	142	170
99BL	24	98L	80	24	29	0.1 + 0.1	(2.1)	83	(0.2)	25		2.3	9	16	89	142	170

0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL	
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	COST	FOR	PERFORMANCE	
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	OF	EXCESS	INDEX	
			DELAY	DELAY	DELAY	STOPS	STOPS	QUEUES		
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 420.0	31.2	13.5	13.5	7.1	(226.7) + (31.8)	+ (0.0)	=	258.5	TOTALS	
0 12.0	1.0	11.5	0.4	0.2	(7.1) + (0.5)	+ (0.0)	=	7.6	BUSES	
0 408.0	30.2	13.5	13.1	6.9	(219.6) + (31.2)	+ (0.0)	=	250.9	OTHER	

0*****

0	CRUISE	DELAY	STOPS	TOTALS
	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS	23.1	+ 23.7	+ 18.8	= 65.6

NO. OF ENTRIES TO SUBPT = 4
 NO. OF LINKS RECALCULATED= 40

PROGRAM TRANSYT FINISHED

Traffic Network Study Tool

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES	=	6
NUMBER OF LINKS	=	38
NUMBER OF OPTIMISED NODES	=	6
MAXIMUM NUMBER OF GRAPHIC PLOTS	=	0
NUMBER OF STEPS IN CYCLE	=	40
MAXIMUM NUMBER OF SHARED STOPLINES	=	2
MAXIMUM NUMBER OF TIMING POINTS	=	7
MAXIMUM LINKS AT ANY NODE	=	8

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CORE REQUESTED = 7684 WORDS
CORE AVAILABLE = 72000 WORDS

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0 DATA INPUT :-
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OCARD NO.	CARD TYPE
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(1)= TITLE:- Baseline 1/5/02 counts PM Baseline CH11 JP 24/02/03 - PMBas wc.prt

OCARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	PERIOD 1-1200 MINS.	EFFECTIVE-START (SEC)	GREEN-END (SEC)	EQUISAT SETTINGS 0=NO 1=YES	CHIT JP CYCLE 0=UNEQUAL 1=EQUAL	24/02/03 - PMBas_wc.prt SCALE 10-200 %	CRUISE-SPEEDS SCALE 50-200 %	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	160	40	60	2	3	1	1	0	0	1	2	0	0	1100	200

DCARD NO.	CARD TYPE
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3)=	2	3	52	49	9	1990	194	0	0	0	0	0	0	0	0
-----	---	---	----	----	---	------	-----	---	---	---	---	---	---	---	---

CARD NO.	CARD TYPE	FIRST SET.....	LINKS HAVING SHARED STOPLINES	SECOND SET.....	THIRD SET.....
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9
10	10	10	10	10	10
11	11	11	11	11	11
12	12	12	12	12	12
13	13	13	13	13	13
14	14	14	14	14	14
15	15	15	15	15	15
16	16	16	16	16	16
17	17	17	17	17	17
18	18	18	18	18	18
19	19	19	19	19	19
20	20	20	20	20	20
21	21	21	21	21	21
22	22	22	22	22	22
23	23	23	23	23	23
24	24	24	24	24	24
25	25	25	25	25	25
26	26	26	26	26	26
27	27	27	27	27	27
28	28	28	28	28	28
29	29	29	29	29	29
30	30	30	30	30	30
31	31	31	31	31	31
32	32	32	32	32	32
33	33	33	33	33	33
34	34	34	34	34	34
35	35	35	35	35	35
36	36	36	36	36	36
37	37	37	37	37	37
38	38	38	38	38	38
39	39	39	39	39	39
40	40	40	40	40	40
41	41	41	41	41	41
42	42	42	42	42	42
43	43	43	43	43	43
44	44	44	44	44	44
45	45	45	45	45	45
46	46	46	46	46	46
47	47	47	47	47	47
48	48	48	48	48	48
49	49	49	49	49	49
50	50	50	50	50	50
51	51	51	51	51	51
52	52	52	52	52	52
53	53	53	53	53	53
54	54	54	54	54	54
55	55	55	55	55	55
56	56	56	56	56	56
57	57	57	57	57	57
58	58	58	58	58	58
59	59	59	59	59	59
60	60	60	60	60	60
61	61	61	61	61	61
62	62	62	62	62	62
63	63	63	63	63	63
64	64	64	64	64	64
65	65	65	65	65	65
66	66	66	66	66	66
67	67	67	67	67	67
68	68	68	68	68	68
69	69	69	69	69	69
70	70	70	70	70	70
71	71	71	71	71	71
72	72	72	72	72	72
73	73	73	73	73	73
74	74	74	74	74	74

[illegible][illegible]

NO.	TYPE	NO.	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN
17)=	23	3	76	17	30	15	63	12	0	0	0	0	0	0	0	0
18)=	15	9	63	12	131	18	149	14	17	12	48	13	0	0	0	0
19)=	17	49	125	12	145	12	157	13	31	21	52	12	77	12	89	13
20)=	23	52	39	12	76	12	24	15	0	0	0	0	0	0	0	0
21)=	22	194	46	12	33	13	0	0	0	0	0	0	0	0	0	0
22)=	22	1990	39	12	26	13	0	0	0	0	0	0	0	0	0	0

0

LINK CARDS: GIVEWAY DATA

CARD		LINK		PRIORITY LINKS		LINK1 GIVEWAY		COEFFS.		LINK		STOP		MAX		DELAY		DISPSN	
NO.	TYPE	NO.	NO.	LINK1	LINK2	ONLY	A1	A2		LENGTH	WT.X100	WT.X100	WT.X100	FLOW	WT.X100	WT.X100	WT.X100	X100	X100
23)=	30	15	13	11	12	21	20	0	0	0	0	200	0	600	0	0	0	0	0
24)=	30	35	0	32	80	0	25	0	0	0	0	200	0	1000	0	0	0	0	0
25)=	30	91	0	94	49	0	26	0	0	0	0	200	0	730	0	0	0	0	0
26)=	30	92	98	0	0	24	0	0	0	0	0	200	0	790	0	0	0	0	0
27)=	30	94	0	91	82	0	23	0	0	0	0	200	0	640	0	0	0	0	0
28)=	30	95	0	0	0	0	0	0	0	0	0	200	0	640	0	0	0	0	0
29)=	30	96	93	0	0	21	0	0	0	0	0	40	0	750	0	0	0	0	0
30)=	30	351	0	0	0	0	0	0	0	0	0	200	0	1000	0	0	0	0	0
31)=	30	495	493	0	0	16	0	0	0	0	0	130	0	680	0	0	0	0	0
32)=	30	521	527	0	0	19	0	0	0	0	0	130	0	800	0	0	0	0	0
33)=	30	522	0	0	0	0	0	0	0	0	0	130	0	800	0	0	0	0	0

0

LINK CARDS: FIXED DATA

CARD NO.	CARD TYPE	LINK NO.	EXIT NODE	FIRST		GREEN		SECOND		GREEN		LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
				START STAGE	LAG	END STAGE	LAG	START STAGE	LAG	END STAGE	LAG					
34)=	31	11	0	0	0	0	0	0	0	0	0	270	0	2500	0	0
35)=	31	13	0	0	0	0	0	0	0	0	0	390	0	2500	0	0
36)=	31	31	3	2	7	3	0	0	0	0	0	200	0	1700	0	0
37)=	31	32	3	2	7	3	0	0	0	0	0	200	0	2100	0	0
38)=	31	33	3	1	7	2	0	0	0	0	0	390	0	3600	0	0
39)=	31	34	3	1	7	2	0	0	0	0	0	200	0	1700	0	0
40)=	31	35	3	2	7	1	0	0	0	0	0	200	0	1800	0	0
41)=	31	37	3	1	7	2	0	0	0	0	0	406	0	3300	0	0
42)=	31	90	0	0	0	0	0	0	0	0	0	200	0	0	0	0
43)=	31	91	9	3	7	4	2	5	6	1	2	200	0	1809	0	0
44)=	31	92	9	1	5	2	2	4	5	5	2	200	0	1773	0	0
45)=	31	93	9	1	5	2	0	4	5	5	0	200	0	1932	0	0
46)=	31	94	9	3	7	4	2	5	6	1	2	200	0	1722	0	0
47)=	31	95	0	0	0	0	0	0	0	0	0	200	0	0	0	0
48)=	31	96	9	1	5	2	2	4	5	5	2	40	0	1644	0	0
49)=	31	98	9	1	5	2	0	4	5	5	0	200	0	1904	0	0
50)=	31	99	0	0	0	0	0	0	0	0	0	200	0	0	0	0
51)=	31	341	0	0	0	0	0	0	0	0	0	200	0	0	0	0
52)=	31	351	0	0	0	0	0	0	0	0	0	200	0	0	0	0
53)=	31	491	49	3	6	4	0	7	6	1	0	200	0	5749	0	0
54)=	31	492	0	0	0	0	0	0	0	0	0	200	0	0	0	0
55)=	31	493	49	1	5	2	0	5	5	6	0	200	0	3938	0	0
56)=	31	494	0	0	0	0	0	0	0	0	0	200	0	0	0	0
57)=	31	495	49	1	5	3	0	5	5	7	0	130	0	1860	0	0
58)=	31	497	49	1	5	3	0	5	5	7	0	130	0	3990	0	0
59)=	31	498	0	0	0	0	0	0	0	0	0	130	0	0	0	0
60)=	31	521	52	1	5	2	2	0	0	0	0	130	0	1862	0	0
61)=	31	522	0	0	0	0	0	0	0	0	0	130	0	0	0	0
62)=	31	523	52	1	5	2	0	0	0	0	0	130	0	1825	0	0
63)=	31	524	0	0	0	0	0	0	0	0	0	130	0	0	0	0
64)=	31	525	52	2	5	3	0	0	0	0	0	340	0	5967	0	0
65)=	31	527	52	1	5	2	0	0	0	0	0	200	0	3735	0	0
66)=	31	528	0	0	0	0	0	0	0	0	0	200	0	0	0	0
67)=	31	1941	194	1	5	2	0	0	0	0	0	16	0	3970	0	0

68)=	31	1942	0	0	0	0	0	0	0	0	0	16	0	0	0	0
69)=	31	1991	1990	1	5	2	0	0	0	0	0	14	0	3970	0	0
70)=	31	1992	0	0	0	0	0	0	0	0	0	14	0	0	0	0

0

LINK CARDS: FLOW DATA

CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	ENTRY 1 LINK NO.	ENTRY 1 FLOW	ENTRY 1 CRUISE SPEED	ENTRY 2 LINK NO.	ENTRY 2 FLOW	ENTRY 2 CRUISE SPEED	ENTRY 3 LINK NO.	ENTRY 3 FLOW	ENTRY 3 CRUISE SPEED	ENTRY 4 LINK NO.	ENTRY 4 FLOW	ENTRY 4 CRUISE SPEED
71)=	32	11	1008	0	491	869	40	493	60	40	495	176	40	0	0	0
72)=	32	13	1332	0	34	931	40	35	124	40	0	0	0	0	0	0
73)=	32	15	148	0	0	0	40	0	0	0	0	0	0	0	0	0
74)=	32	31	58	0	0	0	3000	0	0	0	0	0	0	0	0	0
75)=	32	32	795	0	0	0	40	0	0	0	0	0	0	0	0	0
76)=	32	33	559	0	0	0	40	0	0	0	0	0	0	0	0	0
77)=	32	34	641	0	0	0	40	0	0	0	0	0	0	0	0	0
78)=	32	35	533	0	0	0	40	0	0	0	0	0	0	0	0	0
79)=	32	37	1158	0	11	984	3000	15	131	3000	0	0	0	0	0	0
80)=	32	90	24	0	524	36	3000	0	0	0	0	0	0	0	0	0
81)=	32	91	43	0	0	0	40	0	0	0	0	0	0	0	0	0
82)=	32	92	34	0	523	288	40	525	105	40	0	0	0	0	0	0
83)=	32	93	831	0	523	288	40	525	105	40	0	0	0	0	0	0
84)=	32	94	244	0	0	0	40	0	0	0	0	0	0	0	0	0
85)=	32	95	12	0	0	0	3000	0	0	0	0	0	0	0	0	0
86)=	32	96	95	0	0	0	40	0	0	0	0	0	0	0	0	0
87)=	32	98	869	0	0	0	40	0	0	0	0	0	0	0	0	0
88)=	32	99	24	0	0	0	3000	0	0	0	0	0	0	0	0	0
89)=	32	341	10	0	0	0	3000	0	0	0	0	0	0	0	0	0
90)=	32	351	68	0	0	0	3000	0	0	0	0	0	0	0	0	0
91)=	32	491	1253	0	0	0	40	0	0	0	0	0	0	0	0	0
92)=	32	492	32	0	0	0	3000	0	0	0	0	0	0	0	0	0
93)=	32	493	524	0	0	0	40	0	0	0	0	0	0	0	0	0
94)=	32	494	54	0	0	0	3000	0	0	0	0	0	0	0	0	0
95)=	32	495	176	0	527	176	40	0	0	0	0	0	0	0	0	0
96)=	32	497	594	0	525	116	40	527	483	40	0	0	0	0	0	0
97)=	32	498	24	0	528	24	3000	0	0	0	0	0	0	0	0	0
98)=	32	521	112	0	493	112	40	0	0	0	0	0	0	0	0	0
99)=	32	522	30	0	494	30	3000	0	0	0	0	0	0	0	0	0
100)=	32	523	518	0	0	0	0	0	0	0	0	0	0	0	0	0
*** DISTANCE > 0 BUT CRUISE TIME/SPEED=0 FOR THIS LINK. THUS CRUISE TIME BASED ON DISTANCE GIVEN AND DEFAULT SPEED OF 43 KM/H																
101)=	32	524	36	0	494	24	3000	0	0	0	0	0	0	0	0	0
102)=	32	525	1327	0	13	1108	40	15	17	40	0	0	0	0	0	0
103)=	32	527	893	0	91	17	40	94	59	40	98	842	40	0	0	0
104)=	32	528	36	0	95	12	3000	99	24	3000	0	0	0	0	0	0
105)=	32	1941	820	0	491	226	40	497	594	40	0	0	0	0	0	0
106)=	32	1942	44	0	492	20	3000	498	24	3000	0	0	0	0	0	0
107)=	32	1991	1288	0	521	54	40	525	1000	40	527	234	40	0	0	0
108)=	32	1992	42	0	522	30	3000	528	12	3000	0	0	0	0	0	0

FOLLOWING CARD IGNORED:-

CARD NO.

109)=	103	1	15	13	11	0	0	0	0	0	0	0	0	0	0	0
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*****END OF SUBROUTINE TINPUT*****

0 160 SECOND CYCLE 40 STEPS

0 INITIAL SETTINGS

- (SECONDS)

0	NOOE NO.	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
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3	3	76	106	135	156	26	55												
9	5	63	93	111	1	31													
49	7	125	144	156	29	50	78	90											
52	3	39	76	104	119	156	24												
194	2	46	113	126	33														
1990	2	39	106	119	26														
0 LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER CRUISE	TIMES PCU DELAY	-----DELAY----- UNIFORM RANDOM+ COST OVERSAT OF (U+R+O=MEAN Q) DELAY (PCU-H/H) (\$/H)			-----STOPS----- MEAN COST STOPS OF /PCU STOPS (%) (\$/H)		-----QUEUE----- MEAN AVERAGE MAX. EXCESS (PCU) (PCU)		PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES START START END END 1ST 2ND (SECONDS)				
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)														
11	962<	2500	38	24	1	0.1	+	0.3	(4.2)	5	(0.9)	12	5.0						
13	1078<	2500	43	35	1	0.0	+	0.4	(4.3)	1	(0.2)	3	4.5						
15	148	600	58	18	25	0.3	+	0.7	(11.3)	71	(1.8)	3	13.1						
31BL	58	1700	12	24	25	0.3	+	0.1	(4.5)	75	(0.4)	1	4.9	3	113	135	33	55	
32	795	2100	132	18	508	14.6	+	97.7	(999.9)	263	(35.9)	129	1270.3	3	113	135	33	55	
33	559	3600	52	35	27	3.6	+	0.5	(45.5)	81	(7.7)	10	53.2	3	83	106	3	26	
34	641	1700S	128	18	470	12.1	+	71.6	(921.1)	262	(28.8)	98	950.0	3	83	106	3	26	
35	533	1800S	75	18	25	2.4	+	1.3	(40.4)	97	(8.8)	12	49.2	3	113	156	33	76	
37BL	1112<	3300	112	49	257	14.2	+	65.2	(873.2)	225	(25.2)	99	898.3	3	83	106	3	26	
90BL	24	93L	130	24	479	0.4	+	2.8	(35.1)	273	(0.6)	120	35.7	9	68	93	6	31	
91	43	1809	11	18	18	0.2	+	0.1	(2.3)	63	(0.5)	1	2.8	9	118	3	37	65	
92	31	1773	21	18	29	0.1	+	0.1	(2.7)	79	(0.5)	1	3.2	9	68	95	6	33	
93	790<	1932S	130	18	476	11.9	+	92.5	(999.9)	250	(35.6)	120	1184.9	9	68	93	6	31	
94	244	1722S	42	18	20	1.0	+	0.3	(14.9)	73	(3.1)	5	18.0	9	118	3	37	65	
95BL	12	94L	42	24	20	0.0	+	0.0	(0.7)	73	(0.1)	5	0.8	9	118	3	37	65	
96	95	1644	62	4	56	0.7	+	0.8	(16.4)	146	(2.4)	3	18.7	9	68	95	6	33	
98	869	1904S	144	18	636	18.4	+	135.0	(999.9)	263	(39.2)	172	1726.7	9	68	93	6	31	
99BL	24	98L	144	24	636	0.5	+	3.7	(46.6)	263	(0.6)	172	47.2	9	68	93	6	31	
341BL	10	34L	128	24	470	0.2	+	1.1	(14.4)	262	(0.3)	98	14.6	3	83	106	3	26	
351BL	68	35L	75	24	25	0.3	+	0.2	(5.2)	97	(0.6)	12	5.8	3	113	156	33	76	
491	1253	5749S	62	18	25	7.9	+	0.8	(95.8)	79	(17.0)	31	112.8	49	2	29	96	125	
492BL	32	491L	62	24	25	0.2	+	0.0	(2.4)	79	(0.2)	31	2.7	49	2	29	96	125	
493	524	3938S	60	18	32	4.0	+	0.7	(51.6)	90	(8.1)	14	59.7	49	130	144	55	78	
494BL	54	493L	60	24	32	0.4	+	0.1	(5.3)	90	(0.5)	14	5.8	49	130	144	55	78	
495	127<	1860	36	12	17	0.3	+	0.3	(6.8)	67	(2.0)	3	8.8	49	130	156	55	90	
497	436<	3990S	29	12	10	1.0	+	0.2	(13.5)	23	(2.4)	5	15.8	49	130	156	55	90	
498BL	19	497L	29	16	9	0.0	+	0.0	(0.5)	16	(0.0)	5	0.6	49	130	156	55	90	
521	112	1862S	57	12	23	0.2	+	0.5	(7.8)	34	(0.6)	1	8.5	52	44	78	124	158	
522BL	30	521L	57	16	27	0.1	+	0.1	(2.5)	42	(0.1)	1	2.6	52	44	78	124	158	
523	518	1825S	74	11	29	2.8	+	1.3	(45.2)	87	(9.0)	11	54.1	52	44	76	124	156	
524BL	36	523L	74	16	21	0.1	+	0.1	(2.4)	40	(0.1)	11	2.5	52	44	76	124	156	
525	1078<	5967	60	31	19	4.9	+	0.8	(61.8)	63	(14.4)	20	76.2	52	81	104	1	24	
527	641<	3735S	43	18	20	3.3	+	0.4	(40.1)	62	(9.5)	14	49.7	52	44	76	124	156	
528BL	29	527L	43	24	17	0.1	+	0.0	(1.5)	54	(0.2)	14	1.7	52	44	76	124	156	
1941	662<	3970S	22	1	1	0.1	+	0.1	(2.4)	4	(0.5)	4	3.0	194	51	113	131	33	
1942BL	39	1941L	22	2	1	0.0	+	0.0	(0.2)	5	(0.0)	4	0.2	194	51	113	131	33	
1991	1035<	3970S	34	1	1	0.1	+	0.3	(4.4)	8	(1.8)	15	6.2	1990	44	106	124	26	
1992BL	40	1991L	34	2	1	0.0	+	0.0	(0.1)	1	(0.0)	15	0.1	1990	44	106	124	26	
0 160 SECOND CYCLE 40 STEPS																			
0	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)										
0	3586.1	681.2	5.3	107.0	480.1	(6458.2)	+	(259.8)	+	(0.0)	=	6718.0	TOTALS						
0	546.7	108.6	5.0	17.0	73.5	(994.5)	+	(29.0)	+	(0.0)	=	1023.6	BUSES						

0 3039.4 572.6 5.3 90.1 406.6 (5463.7) + (230.8) + (0.0) = 5694.4 OTHER
 0*****

0
 CRUISE DELAY STOPS TOTALS
 LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR LITRES PER HOUR
 OFUEL CONSUMPTION PREDICTIONS 201.4 + 675.2 + 153.9 = 1030.5

0
 NO. OF ENTRIES TO SUBPT = 1
 NO. OF LINKS RECALCULATED= 51

0 160 SECOND CYCLE 40 STEPS
 OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24
 - (SECONDS)

3	3	76	106	135	156	26	55				
9	5	87	117	135	25	55					
49	7	125	144	156	29	50	78	90			
52	3	39	76	104	119	156	24				
194	2	46	113	126	33						
1990	2	39	106	119	26						
0 TOTAL											
DISTANCE	TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
TRAVELLED	TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		
	SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX		
				DELAY	DELAY	DELAY	STOPS	QUEUES			
(PCU-KM/H)	(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0 3586.1	681.1	5.3		106.9	480.1	(6456.8) + (	255.5)	+ (0.0)	= 6712.3	TOTALS	
0 546.7	108.8	5.0		17.1	73.5	(996.1) + (	29.0)	+ (0.0)	= 1025.1	BUSES	
0 3039.4	572.3	5.3		89.8	406.6	(5460.7) + (	226.5)	+ (0.0)	= 5687.2	OTHER	

0
 NO. OF ENTRIES TO SUBPT = 13
 NO. OF LINKS RECALCULATED= 246

0 160 SECOND CYCLE 40 STEPS
 OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64
 - (SECONDS)

3	3	76	106	135	156	26	55				
9	5	87	117	135	25	55					
49	7	125	144	156	29	50	78	90			
52	3	39	76	104	119	156	24				
194	2	46	113	126	33						
1990	2	39	106	119	26						
0 TOTAL											
DISTANCE	TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
TRAVELLED	TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		
	SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX		
				DELAY	DELAY	DELAY	STOPS	QUEUES			
(PCU-KM/H)	(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0 3586.1	681.1	5.3		106.9	480.1	(6456.7) + (	255.5)	+ (0.0)	= 6712.2	TOTALS	
0 546.7	108.8	5.0		17.1	73.4	(996.0) + (	29.0)	+ (0.0)	= 1025.0	BUSES	
0 3039.4	572.3	5.3		89.8	406.6	(5460.7) + (	226.5)	+ (0.0)	= 5687.2	OTHER	

0
 NO. OF ENTRIES TO SUBPT = 15
 NO. OF LINKS RECALCULATED= 302

0 160 SECOND CYCLE 40 STEPS
 OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1
 - (SECONDS)

3	3	68	102	135	148	22	55				
9	5	87	117	135	25	55					
49	7	125	144	156	29	50	78	90			

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0 160 SECOND CYCLE 40 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24
- (SECONDS)

```

3	3	68	102	135	148	22	55				
9	5	87	117	135	25	55					
49	7	125	144	156	29	50	78	90			
52	3	39	76	104	119	156	24				
194	2	46	113	126	33						
1990	2	39	106	119	26						
0 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)			
0 3586.1	537.0	6.7	94.2	348.7	(4872.4) + (	245.3)	+ (	0.0)	=	5117.7	TOTALS
0 546.7	46.2	11.8	10.8	17.2	(307.8) + (	16.4)	+ (	0.0)	=	324.2	BUSES
0 3039.4	490.8	6.2	83.4	331.5	(4564.5) + (	229.0)	+ (	0.0)	=	4793.5	OTHER
0											
NO. OF ENTRIES TO SUBPT = 13											
NO. OF LINKS RECALCULATED= 255											

0 160 SECOND CYCLE 40 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64
- (SECONDS)

[illegible]

0 160 SECOND CYCLE 40 STEPS

3	3	3	37	70	83	117	150	
9	5	87	117	135	25	55		
49	7	125	144	156	29	50	78	90
52	3	39	76	104	119	156	24	
194	2	46	113	126	33			
1990	2	39	106	119	26			

```

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64 1 -1
- (SECONDS)

```

3	3	3	37	70	83	117	150	
9	5	69	137	155	23	54		
49	7	124	148	0	32	53	77	89
52	3	39	76	104	119	156	24	
194	2	46	113	126	33			
1990	2	39	106	119	26			

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0 160 SECOND CYCLE 40 STEPS
FINAL SETTINGS OBTAINED WITH INCREMENTS :- 24 64 -1 24 64 1 -1 1
- (SECONDS)

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0.	NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
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3	3	3	37	70	83	117	150	
9	5	69	137	155	23	54		
49	7	124	148	0	32	53	77	89
52	3	39	76	104	119	156	24	
194	2	46	113	126	33			
1990	2	39	106	119	26			

O LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE	-----DELAY-----		----STOPS----		----QUEUE----		PERFORMANCE INDEX.	EXIT NODE	GREEN TIMES			
					UNIFORM	RANDOM+ COST OVERSAT OF	MEAN STOPS	COST OF STOPS	MEAN MAX.	AVERAGE EXCESS			WEIGHTED SUM OF () VALUES	START	END	END
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(U+R+O=MEAN Q) (PCU-H/H)	DELAY (\$/H)	/PCU (%)	STOPS (\$/H)	(PCU)	(PCU)	(\$/H)		1ST	2ND	(SECONDS)

11	1008	2500	40	24	1	0.1 + 0.3	(4.3)	4	(0.7)	9	5.0						
13	1231<	2500	49	35	2	0.1 + 0.5	(5.9)	3	(0.7)	7	6.6						
15	148	600	67	18	34	0.4 + 1.0	(15.3)	98	(2.5)	3	17.8						
31BL	58	1700	10	24	21	0.3 + 0.1	(3.7)	66	(0.4)	1	4.1	3	44	70	124	150	
32	795	2100	112	18	258	9.6 + 47.3	(626.5)	237	(32.3)	71	658.8	3	44	70	124	150	
33	559	3600	44	35	23	3.1 + 0.4	(38.8)	75	(7.2)	10	46.0	3	10	37	90	117	
34	641	1700S	109	18	223	7.3 + 32.4	(437.4)	227	(25.0)	51	462.3	3	10	37	90	117	
35	533	1800S	88	18	40	3.0 + 3.0	(65.8)	110	(10.0)	16	75.8	3	44	83	124	3	
37BL	1158	3300	100	49	80	7.8 + 17.8	(281.3)	155	(17.3)	45	298.6	3	10	37	90	117	
90BL	24	93L	76	24	41	0.2 + 0.0	(3.0)	105	(0.2)	22	3.2	9	74	137	28	54	
91	43	1809	28	18	47	0.4 + 0.2	(6.2)	115	(0.8)	1	7.0	9	2	25	60	71	
92	32	1773	13	18	22	0.1 + 0.1	(2.2)	73	(0.4)	1	2.6	9	74	139	28	56	
93	816<	1932S	76	18	36	6.5 + 1.6	(88.6)	98	(14.0)	22	102.5	9	74	137	28	54	
94	244	1722S	89	18	82	2.5 + 3.1	(61.5)	179	(7.5)	11	69.0	9	2	25	60	71	
95BL	12	94L	89	24	82	0.1 + 0.2	(3.0)	179	(0.2)	11	3.2	9	2	25	60	71	
96	95	1644	35	4	21	0.3 + 0.3	(6.2)	73	(1.2)	2	7.4	9	74	139	28	56	
98	869	1904S	82	18	30	5.1 + 2.2	(80.8)	88	(13.1)	24	94.0	9	74	137	28	54	
99BL	24	98L	82	24	30	0.1 + 0.1	(2.2)	88	(0.2)	24	2.4	9	74	137	28	54	
341BL	10	34L	109	24	223	0.1 + 0.5	(6.8)	227	(0.2)	51	7.0	3	10	37	90	117	
351BL	68	35L	88	24	40	0.4 + 0.4	(8.4)	110	(0.7)	16	9.1	3	44	83	124	3	
491	1253	5749S	63	18	25	7.7 + 0.8	(94.2)	79	(17.0)	28	111.2	49	6	32	95	124	
492BL	32	491L	63	24	25	0.2 + 0.0	(2.4)	79	(0.2)	28	2.7	49	6	32	95	124	
493	524	3938S	59	18	31	3.9 + 0.6	(50.2)	86	(7.8)	13	57.9	49	129	148	58	77	
494BL	54	493L	59	24	31	0.4 + 0.1	(5.2)	86	(0.4)	13	5.6	49	129	148	58	77	
495	177	1860	50	12	18	0.4 + 0.5	(10.0)	83	(2.5)	4	12.5	49	129	0	58	89	
497	584	3990S	38	12	11	1.5 + 0.3	(19.3)	32	(3.2)	6	22.5	49	129	0	58	89	
498BL	24	497L	38	16	7	0.0 + 0.0	(0.5)	23	(0.1)	6	0.5	49	129	0	58	89	
521	112	1862S	71	12	44	0.4 + 0.9	(15.2)	94	(1.8)	5	17.0	52	44	78	124	158	
522BL	30	521L	71	16	52	0.2 + 0.2	(4.8)	105	(0.3)	5	5.1	52	44	78	124	158	
523	518	1825S	74	11	29	2.8 + 1.3	(45.4)	88	(9.0)	11	54.4	52	44	76	124	156	
524BL	36	523L	74	16	26	0.2 + 0.1	(2.9)	52	(0.2)	11	3.0	52	44	76	124	156	
525	1229<	5967	69	31	20	5.7 + 1.1	(75.0)	65	(14.9)	23	89.9	52	81	104	1	24	
527	893	3735S	60	18	17	3.4 + 0.7	(45.1)	64	(9.8)	24	54.9	52	44	76	124	156	
528BL	36	527L	60	24	17	0.1 + 0.0	(1.9)	70	(0.2)	24	2.1	52	44	76	124	156	
1941	810	3970S	27	1	1	0.1 + 0.2	(3.0)	6	(0.8)	4	3.8	194	51	113	131	33	
1942BL	44	1941L	27	2	1	0.0 + 0.0	(0.2)	5	(0.0)	4	0.2	194	51	113	131	33	
1991	1215<	3970S	40	1	1	0.2 + 0.3	(5.5)	10	(2.2)	15	7.7	1990	44	106	124	26	
1992BL	42	1991L	40	2	1	0.0 + 0.0	(0.1)	1	(0.0)	15	0.1	1990	44	106	124	26	

0 160 SECOND CYCLE 40 STEPS

0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	QUEUES	(\$/H)
0 3586.1	287.6	12.5	74.8	118.7	(2128.7) + (205.2)	+ (0.0)	=	2333.9
0 546.7	47.9	11.4	10.2	19.5	(326.4) + (20.7)	+ (0.0)	=	347.1
0 3039.4	239.7	12.7	64.6	99.2	(1802.3) + (184.5)	+ (0.0)	=	1986.8

0	CRUISE	DELAY	STOPS	TOTALS
	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
0 FUEL CONSUMPTION PREDICTIONS	201.4	+ 222.5	+ 121.5	= 545.5

0
 NO. OF ENTRIES TO SUBPT = 14
 NO. OF LINKS RECALCULATED= 316

PROGRAM TRANSYT FINISHED

TRAFFIC NETWORK STUDY TOOL

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
 Implementation for IBM-PC or compatible
 Program TRANSYT 11, Analysis Program Version 1.3
 Run with file:- "TMPTRAN.DAT" at 12:30 on 24/02/03
 Future 1/5/02 counts AM dev + Buses JP 24/02/03 - AMFut9wc.prt

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES = 1
 NUMBER OF LINKS = 8
 NUMBER OF OPTIMISED NODES = 1
 MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
 NUMBER OF STEPS IN CYCLE = 44
 MAXIMUM NUMBER OF SHARED STOPLINES = 2
 MAXIMUM NUMBER OF TIMING POINTS = 5
 MAXIMUM LINKS AT ANY NODE = 6

CORE REQUESTED = 3803 WORDS
 CORE AVAILABLE = 72000 WORDS

0 DATA INPUT :-

OCARD CARD
 NO. TYPE

(1)= TITLE:- Future 1/5/02 counts AM dev + Buses JP 24/02/03 - AMFut9wc.prt

OCARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME EFFECTIVE PERIOD 1-1200 MINS.	EFFECTIVE-GREEN DISPLACEMENTS START (SEC)	EFFECTIVE-GREEN DISPLACEMENTS END (SEC)	EQUISAT SETTINGS 0=NO 1=YES	0=UNEQUAL FLOW 1=EQUAL CYCLE	CRUISE-SPEEDS SCALE 10-200 %	CRUISE-SPEEDS SCALE 50-200 %	OPTIMISE 0=NONE 1=D/SET 2=FULL	EXTRA COPIES FINAL OUTPUT	HILL-CLIMB 1=FULL	DELAY VALUE P PER	STOP VALUE P PER	
2)=	1	176	44	60	2	3	1	1	0	0	1	2	0	0	1100	200

LIST OF NODES TO BE OPTIMISED

OCARD CARD
 NO. TYPE

3)= 2 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0

LINKS HAVING SHARED STOPLINES

CARD CARD
 NO. TYPE

CARD NO.	CARD TYPE	FIRST SET	SECOND SET	THIRD SET
4)=	7	93	90	0
5)=	7	98	99	0

0

CARD NO.	CARD TYPE	NODE NO.	STAGE 1 CHANGE	STAGE 1 MIN	STAGE 2 CHANGE	STAGE 2 MIN	STAGE 3 CHANGE	STAGE 3 MIN	STAGE 4 CHANGE	STAGE 4 MIN	STAGE 5 CHANGE	STAGE 5 MIN	STAGE 6 CHANGE	STAGE 6 MIN	STAGE 7 CHANGE	STAGE 7 MIN
6)=	15	9	147	68	40	18	58	28	87	40	127	15	0	0	0	0

0

LINK CARDS: GIVEWAY DATA

CARD NO.	CARD TYPE	LINK NO.	PRIORITY LINKS LINK1 LINK2	LINK1 GIVEWAY COEFFS. ONLY	A1	A2	LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100
7)=	30	91	0	94	0	26	0	0	0	0	0
8)=	30	92	98	0	24	0	0	0	0	0	0
9)=	30	94	0	91	61	23	0	0	0	0	0
10)=	30	96	93	0	21	0	0	0	0	0	0

0

LINK CARDS: FIXED DATA

CARD NO.	CARD TYPE	LINK NO.	EXIT NODE	FIRST START STAGE	LAG	GREEN END STAGE	LAG	SECOND START STAGE	LAG	GREEN END STAGE	LAG	LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
11)=	31	90	0	0	0	0	0	0	0	0	0	200	0	0	0	0
12)=	31	91	9	3	7	4	2	5	6	1	2	200	0	1809	0	0
13)=	31	92	9	1	5	2	2	4	5	5	2	200	0	1773	0	0
14)=	31	93	9	1	5	2	0	4	5	5	0	200	0	1936	0	0
15)=	31	94	9	3	7	4	2	5	6	1	2	200	0	1722	0	0
16)=	31	96	9	1	5	2	2	4	5	5	2	40	0	1644	0	0
17)=	31	98	9	1	5	2	0	4	5	5	0	200	0	1904	0	0
18)=	31	99	0	0	0	0	0	0	0	0	0	200	0	0	0	0

LINK CARDS: FLOW DATA																
CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	ENTRY 1 LINK NO.	CRUISE FLOW	CRUISE SPEED	ENTRY 2 LINK NO.	CRUISE FLOW	CRUISE SPEED	ENTRY 3 LINK NO.	CRUISE FLOW	CRUISE SPEED	ENTRY 4 LINK NO.	CRUISE FLOW	CRUISE SPEED
19)=	32	90	30	0	0	0	3000	0	0	0	0	0	0	0	0	0
20)=	32	91	79	0	0	0	40	0	0	0	0	0	0	0	0	0
21)=	32	92	10	0	0	0	40	0	0	0	0	0	0	0	0	0
22)=	32	93	853	0	0	0	40	0	0	0	0	0	0	0	0	0
23)=	32	94	222	0	0	0	40	0	0	0	0	0	0	0	0	0
24)=	32	96	157	0	0	0	40	0	0	0	0	0	0	0	0	0
25)=	32	98	1004	0	0	0	40	0	0	0	0	0	0	0	0	0
26)=	32	99	30	0	0	0	3000	0	0	0	0	0	0	0	0	0

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

0 176 SECOND CYCLE 44 STEPS

0 INITIAL SETTINGS

- (SECONDS)

0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7

LINK NUMBER	9	5	147	39	57	88	128	-----DELAY-----			----STOPS----		----QUEUE----		PERFORMANCE INDEX.	EXIT NODE	GREEN TIMES			
	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER PCU	MEAN TIMES PER PCU	UNIFORM DELAY (U+R+O=MEAN Q)	RANDOM+ OVERSAT OF DELAY (\$/H)	COST OF DELAY (\$/H)	MEAN STOPS /PCU	COST OF STOPS (\$/H)	MEAN MAX. STOPS	AVERAGE EXCESS (PCU)	WEIGHTED SUM OF () VALUES (\$/H)				START 1ST	START 2ND	END	END
908L	30	93L	80	24	28	0.2 +	0.1 (2.6)	84 (0.2)	25				2.8	9	152	39	93	128		
91	79	1809	65	18	75	0.7 +	0.9 (18.1)	159 (2.2)	3				20.3	9	64	90	134	149		
92	10	1773	4	18	17	0.0 +	0.0 (0.5)	47 (0.1)	0				0.6	9	152	41	93	130		
93	853	1936S	80	18	28	4.7 +	1.9 (73.0)	84 (12.3)	25				85.3	9	152	39	93	128		
94	222	1722	95	18	119	2.3 +	5.1 (81.1)	169 (6.4)	12				87.5	9	64	90	134	149		
96	157	1644	56	4	30	0.7 +	0.6 (14.6)	95 (2.6)	4				17.1	9	152	41	93	130		
98	1004	1904S	96	18	55	7.6 +	7.8 (169.9)	119 (20.5)	37				190.4	9	152	39	93	128		
99BL	30	98L	96	24	55	0.2 +	0.2 (5.1)	119 (0.3)	37				5.4	9	152	39	93	128		
0 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)							
0 451.9		44.6		10.1		16.5	16.7	(364.8) + (44.7)			(0.0)		409.5							
0 12.0		1.1		11.0		0.4	0.3	(7.6) + (0.6)			(0.0)		8.2							
0 439.9		43.5		10.1		16.1	16.4	(357.1) + (44.1)			(0.0)		401.2							

0*****

CRUISE LITRES PER HOUR	DELAY LITRES PER HOUR	STOPS LITRES PER HOUR	TOTALS LITRES PER HOUR
24.9	38.1	26.5	89.5

0 FUEL CONSUMPTION PREDICTIONS

0 NO. OF ENTRIES TO SUBPT = 1

NO. OF LINKS RECALCULATED= 10

0 176 SECOND CYCLE 44 STEPS

0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26

- (SECONDS)

9	5	147	39	57	88	128						
0 TOTAL		TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		
TRAVELLED		SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX		
						DELAY	DELAY	STOPS	QUEUES			
(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0 451.9		44.6	10.1		16.5	16.8	(365.6) + (	44.7)	+ (0.0)	=	410.3	TOTALS
0 12.0		1.1	11.0		0.4	0.3	(7.6) + (	0.6)	+ (0.0)	=	8.2	BUSES
0 439.9		43.5	10.1		16.1	16.5	(358.0) + (	44.1)	+ (0.0)	=	402.1	OTHER

0 NO. OF ENTRIES TO SUBPT = 5

0 NO. OF LINKS RECALCULATED= 42

0 176 SECOND CYCLE 44 STEPS

0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70

- (SECONDS)

9	5	147	39	57	88	128						
0 TOTAL		TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		
TRAVELLED		SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX		
						DELAY	DELAY	STOPS	QUEUES			
(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0 451.9		44.7	10.1		16.5	16.8	(365.9) + (	44.7)	+ (0.0)	=	410.6	TOTALS
0 12.0		1.1	11.0		0.4	0.3	(7.6) + (	0.6)	+ (0.0)	=	8.2	BUSES
0 439.9		43.6	10.1		16.1	16.5	(358.2) + (	44.1)	+ (0.0)	=	402.3	OTHER

0 NO. OF ENTRIES TO SUBPT = 5

0 NO. OF LINKS RECALCULATED= 42

0 176 SECOND CYCLE 44 STEPS

0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1

- (SECONDS)

9	5	146	39	57	86	127						
0 TOTAL		TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		
TRAVELLED		SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX		
						DELAY	DELAY	STOPS	QUEUES			
(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0 451.9		44.3	10.2		15.6	17.3	(362.1) + (	43.8)	+ (0.0)	=	406.0	TOTALS
0 12.0		1.0	11.9		0.4	0.2	(6.6) + (	0.6)	+ (0.0)	=	7.2	BUSES
0 439.9		43.3	10.2		15.2	17.1	(355.5) + (	43.3)	+ (0.0)	=	398.8	OTHER

0 NO. OF ENTRIES TO SUBPT = 10

0 NO. OF LINKS RECALCULATED= 81

0 176 SECOND CYCLE 44 STEPS

0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26

- (SECONDS)

9	5	146	39	57	86	127						
0 TOTAL		TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE		

TRAVELLED	SPENT	SPEED	DELAY	OVERSAT DELAY	OF DELAY	OF STOPS	EXCESS QUEUES	INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 451.9	44.5	10.2	15.6	17.4	(363.7) + (	43.9)	+ (0.0)	=	407.5
0 12.0	1.0	11.9	0.4	0.2	(6.6) + (	0.6)	+ (0.0)	=	7.2
0 439.9	43.5	10.1	15.3	17.2	(357.0) + (	43.3)	+ (0.0)	=	400.3
0									
NO. OF ENTRIES TO SUBPT = 4									
NO. OF LINKS RECALCULATED= 34									

0 176 SECOND CYCLE 44 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70
 - (SECONDS)

9	5	40	109	127	156	21					
0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	COST	FOR	PERFORMANCE		
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)		(\$/H)		
0 451.9	44.4	10.2	15.6	17.4	(363.3) + (	43.9)	+ (0.0)	=	407.2	TOTALS	
0 12.0	1.0	12.0	0.4	0.2	(6.6) + (	0.6)	+ (0.0)	=	7.2	BUSES	
0 439.9	43.4	10.1	15.3	17.2	(356.7) + (	43.4)	+ (0.0)	=	400.0	OTHER	
0											
NO. OF ENTRIES TO SUBPT = 3											
NO. OF LINKS RECALCULATED= 25											

0 176 SECOND CYCLE 44 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1
 - (SECONDS)

9	5	39	108	126	155	20					
0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	COST	FOR	PERFORMANCE		
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)		(\$/H)		
0 451.9	44.3	10.2	15.6	17.3	(362.0) + (	43.8)	+ (0.0)	=	405.8	TOTALS	
0 12.0	1.0	12.0	0.4	0.2	(6.6) + (	0.6)	+ (0.0)	=	7.2	BUSES	
0 439.9	43.3	10.2	15.2	17.1	(355.3) + (	43.3)	+ (0.0)	=	398.6	OTHER	
0											
NO. OF ENTRIES TO SUBPT = 4											
NO. OF LINKS RECALCULATED= 33											

0 176 SECOND CYCLE 44 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1 -1
 - (SECONDS)

9	5	39	108	126	155	20					
0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	COST	FOR	PERFORMANCE		
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)		(\$/H)		
0 451.9	44.3	10.2	15.6	17.3	(362.1) + (	43.8)	+ (0.0)	=	405.9	TOTALS	
0 12.0	1.0	12.0	0.4	0.2	(6.6) + (	0.6)	+ (0.0)	=	7.2	BUSES	
0 439.9	43.3	10.2	15.2	17.1	(355.4) + (	43.3)	+ (0.0)	=	398.7	OTHER	
0											
NO. OF ENTRIES TO SUBPT = 6											
NO. OF LINKS RECALCULATED= 50											

0 176 SECOND CYCLE 44 STEPS

OFINAL SETTINGS OBTAINED WITH INCREMENTS :- 26 70 -1 26 70 1 -1 1
- (SECONDS)

0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
NO OF STAGES 1 2 3 4 5 6 7

9	5	39	108	126	155	20	-----DELAY-----				-----STOPS-----		-----QUEUE-----		PERFORMANCE	EXIT	GREEN TIMES				
0 LINK	FLOW	SAT	DEGREE	MEAN	TIMES		UNIFORM	RANDOM+	COST	MEAN	COST	MEAN	AVERAGE	INDEX.	WEIGHTED SUM	OF () VALUES	EXIT	START	START	END	
NUMBER	INTO	FLOW	OF	PER	PCU		(U+R+O=MEAN Q)	OVERSAT	OF	STOPS	OF	MAX.	EXCESS				NODE	1ST	2ND	END	
	LINK		SAT	CRUISE	DELAY		(PCU-H/H)	(\$/H)		(%)	(\$/H)	(PCU)	(PCU)	(\$/H)				(SECONDS)			
90BL	30	93L	79	24	25		0.1 + 0.1	(2.3)		81	(0.2)	24		2.6			9	44	108	160	20
91	79	1809	70	18	85		0.8 + 1.1	(20.5)		173	(2.3)	3		22.9			9	133	157	26	41
92	10	1773	4	18	16		0.0 + 0.0	(0.5)		44	(0.1)	0		0.6			9	44	110	160	22
93	853	1936S	79	18	25		4.3 + 1.8	(66.2)		81	(11.9)	24		78.1			9	44	108	160	20
94	222	1722	100	18	163		2.5 + 7.5	(110.4)		196	(7.5)	15		117.8			9	133	157	26	41
96	157	1644	55	4	29		0.6 + 0.6	(13.7)		93	(2.5)	4		16.2			9	44	110	160	22
98	1004	1904S	94	18	47		7.0 + 6.1	(144.4)		111	(19.1)	34		163.5			9	44	108	160	20
99BL	30	98L	94	24	47		0.2 + 0.2	(4.3)		111	(0.3)	34		4.6			9	44	108	160	20

0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	COST	FOR	PERFORMANCE
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	OF	EXCESS	INDEX
			DELAY	DELAY	DELAY	STOPS	STOPS	QUEUES	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)
0 451.9	44.3	10.2	15.6	17.3	(362.3) + (	43.9)	+ (	0.0)	= 406.2
0 12.0	1.0	12.0	0.4	0.2	(6.6) + (	0.6)	+ (	0.0)	= 7.2
0 439.9	43.3	10.2	15.2	17.1	(355.7) + (	43.3)	+ (	0.0)	= 399.0

0*****

0	CRUISE	DELAY	STOPS	TOTALS
	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
0FUEL CONSUMPTION PREDICTIONS	24.9	+ 37.9	+ 26.0	= 88.7

0
NO. OF ENTRIES TO SUBPT = 4
NO. OF LINKS RECALCULATED= 34

PROGRAM TRANSYT FINISHED

T R A N S Y T

Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
 Implementation for IBM-PC or compatible
 Program TRANSYT 11, Analysis Program Version 1.3
 Run with file:- "TMPTRAN.DAT" at 12:33 on 24/02/03
 Future 1/5/02 counts AM dev + Buses JP 24/02/03 - AMFut_wc.prt

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES = 7
 NUMBER OF LINKS = 45
 NUMBER OF OPTIMISED NODES = 6
 MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
 NUMBER OF STEPS IN CYCLE = 40
 MAXIMUM NUMBER OF SHARED STOPLINES = 2
 MAXIMUM NUMBER OF TIMING POINTS = 7
 MAXIMUM LINKS AT ANY NODE = 6

CORE REQUESTED = 8546 WORDS
 CORE AVAILABLE = 72000 WORDS

0 DATA INPUT :-

OCARD CARD
 NO. TYPE

(1)= TITLE:- Future 1/5/02 counts AM dev + Buses JP 24/02/03 - AMFut_wc.prt

OCARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME EFFECTIVE-GREEN PERIOD 1-1200 MINS.	EFFECTIVE-GREEN DISPLACEMENTS START (SEC) END (SEC)	EQUISAT SETTINGS 0=NO 1=YES	0=UNEQUAL FLOW 1=EQUAL	CRUISE-SPEEDS SCALE 10-200 %	CRUISE-SPEEDS SCALE 50-200 %	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	160	40	60	2	3	1	1	0	0	1	2	0	0	1100	200

LIST OF NODES TO BE OPTIMISED

OCARD NO.	CARD TYPE	52	49	1990	194	1	3	0	0	0	0	0	0	0	0
3)=	2														

LINKS HAVING SHARED STOPLINES

CARD NO.	CARD TYPE	FIRST SET.....	SECOND SET.....	THIRD SET.....
4)=	7	11	12	0
5)=	7	13	14	0
6)=	7	15	16	0
7)=	7	17	18	0
8)=	7	33	331	0
9)=	7	34	341	0
10)=	7	35	351	0
11)=	7	37	371	0
12)=	7	93	90	0
13)=	7	98	99	0
14)=	7	491	492	0
15)=	7	493	494	0
16)=	7	497	498	0
17)=	7	521	522	0
18)=	7	523	524	0

19)=	7	525	526	0	0	0	0	0	0	0	0	0	0	0	0	0
20)=	7	527	528	0	0	0	0	0	0	0	0	0	0	0	0	0
21)=	7	1941	1942	0	0	0	0	0	0	0	0	0	0	0	0	0
22)=	7	1991	1992	0	0	0	0	0	0	0	0	0	0	0	0	0

0

CARD NO.	CARD TYPE	NODE NO.	STAGE 1		STAGE 2		STAGE 3		STAGE 4		STAGE 5		STAGE 6		STAGE 7	
			CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN
23)=	15	1	81	18	102	12	145	21	6	18	25	14	0	0	0	0
24)=	23	3	68	17	22	15	55	12	0	0	0	0	0	0	0	0
25)=	15	9	0	12	56	18	74	14	89	12	145	13	0	0	0	0
26)=	17	49	47	12	74	12	89	13	113	21	134	12	158	12	10	13
27)=	23	52	37	13	79	12	22	15	0	0	0	0	0	0	0	0
28)=	22	194	46	12	33	13	0	0	0	0	0	0	0	0	0	0
29)=	22	1990	38	12	25	13	0	0	0	0	0	0	0	0	0	0

0

LINK CARDS: GIVEWAY DATA

CARD NO.	CARD TYPE	LINK NO.	LINK1 NO.	LINK2 NO.	LINK1 ONLY % FLOW	LINK1 GIVEWAY COEFFS.		LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100
						A1 X100	A2 X100					
30)=	30	17	13	0	0	20	0	0	0	0	0	0
31)=	30	18	0	0	0	0	0	0	0	0	0	0
32)=	30	35	0	32	80	0	25	0	0	0	0	0
33)=	30	91	0	94	0	0	26	0	0	0	0	0
34)=	30	92	98	0	0	24	0	0	0	0	0	0
35)=	30	94	0	91	61	0	23	0	0	0	0	0
36)=	30	96	93	0	0	21	0	0	0	0	0	0
37)=	30	351	0	0	0	0	0	0	0	0	0	0
38)=	30	495	493	0	0	16	0	0	0	0	0	0
39)=	30	521	0	527	38	0	19	0	0	0	0	0
40)=	30	522	0	0	0	0	0	0	0	0	0	0

0

LINK CARDS: FIXED DATA

CARD NO.	CARD TYPE	LINK NO.	EXIT NODE	FIRST GREEN		SECOND GREEN		LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
				START STAGE	LAG	START STAGE	LAG					
41)=	31	11	1	2	5	3	0	5	5	1	0	0
42)=	31	12	0	0	0	0	0	0	0	0	0	0
43)=	31	13	1	2	5	3	0	5	5	1	0	0
44)=	31	14	0	0	0	0	0	0	0	0	0	0
45)=	31	15	1	1	7	2	0	4	7	5	0	0
46)=	31	16	0	0	0	0	0	0	0	0	0	0
47)=	31	17	1	2	5	3	0	5	5	1	0	0
48)=	31	18	0	0	0	0	0	0	0	0	0	0
49)=	31	31	3	2	7	3	0	0	0	0	0	0
50)=	31	32	3	2	7	3	0	0	0	0	0	0
51)=	31	33	3	1	7	2	0	0	0	0	0	0
52)=	31	34	3	1	7	2	0	0	0	0	0	0
53)=	31	35	3	2	7	1	0	0	0	0	0	0
54)=	31	37	3	1	7	2	0	0	0	0	0	0
55)=	31	90	0	0	0	0	0	0	0	0	0	0
56)=	31	91	9	3	7	4	2	5	6	1	2	0
57)=	31	92	9	1	5	2	2	4	5	5	2	0
58)=	31	93	9	1	5	2	0	4	5	5	0	0
59)=	31	94	9	3	7	4	2	5	6	1	2	0
60)=	31	96	9	1	5	2	2	4	5	5	2	0
61)=	31	98	9	1	5	2	0	4	5	5	0	0
62)=	31	99	0	0	0	0	0	0	0	0	0	0
63)=	31	331	0	0	0	0	0	0	0	0	0	0
64)=	31	341	0	0	0	0	0	0	0	0	0	0
65)=	31	351	0	0	0	0	0	0	0	0	0	0
66)=	31	371	0	0	0	0	0	0	0	0	0	0
67)=	31	491	49	3	6	4	0	7	6	1	0	0

68)=	31	492	0	0	0	0	0	0	0	0	0	200	0	0	0	0
69)=	31	493	49	1	5	2	0	5	5	6	0	200	0	3969	0	0
70)=	31	494	0	0	0	0	0	0	0	0	0	200	0	0	0	0
71)=	31	495	49	1	5	3	0	5	5	7	0	130	0	1860	0	0
72)=	31	497	49	1	5	3	0	5	5	7	0	130	0	3990	0	0
73)=	31	498	0	0	0	0	0	0	0	0	0	130	0	0	0	0
74)=	31	521	52	1	5	2	2	0	0	0	0	130	0	1854	0	0
75)=	31	522	0	0	0	0	0	0	0	0	0	130	0	0	0	0
76)=	31	523	52	1	5	2	0	0	0	0	0	130	0	1825	0	0
77)=	31	524	0	0	0	0	0	0	0	0	0	130	0	0	0	0
78)=	31	525	52	2	5	3	2	0	0	0	0	340	0	5982	0	0
79)=	31	526	0	0	0	0	0	0	0	0	0	340	0	0	0	0
80)=	31	527	52	1	5	2	0	0	0	0	0	200	0	3785	0	0
81)=	31	528	0	0	0	0	0	0	0	0	0	200	0	0	0	0
82)=	31	1941	194	1	5	2	0	0	0	0	0	16	0	3970	0	0
83)=	31	1942	0	0	0	0	0	0	0	0	0	16	0	0	0	0
84)=	31	1991	1990	1	5	2	0	0	0	0	0	14	0	3970	0	0
85)=	31	1992	0	0	0	0	0	0	0	0	0	14	0	0	0	0

0

LINK CARDS: FLOW DATA

CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	ENTRY 1 LINK NO.	ENTRY 1 FLOW	ENTRY 1 CRUISE SPEED	ENTRY 2 LINK NO.	ENTRY 2 FLOW	ENTRY 2 CRUISE SPEED	ENTRY 3 LINK NO.	ENTRY 3 FLOW	ENTRY 3 CRUISE SPEED	ENTRY 4 LINK NO.	ENTRY 4 FLOW	ENTRY 4 CRUISE SPEED
86)=	32	11	831	0	491	738	40	493	59	40	495	203	40	0	0	0
87)=	32	12	10	0	492	10	3000	0	0	0	0	0	0	0	0	0
88)=	32	13	1236	0	34	1041	40	35	47	40	0	0	0	0	0	0
89)=	32	14	12	0	331	12	3000	0	0	0	0	0	0	0	0	0
90)=	32	15	215	0	0	0	40	0	0	0	0	0	0	0	0	0
91)=	32	16	28	0	0	0	3000	0	0	0	0	0	0	0	0	0
92)=	32	17	31	0	491	738	40	493	59	40	495	203	40	0	0	0
93)=	32	18	16	0	492	16	3000	0	0	0	0	0	0	0	0	0
94)=	32	31	62	0	0	0	3000	0	0	0	0	0	0	0	0	0
95)=	32	32	650	0	0	0	40	0	0	0	0	0	0	0	0	0
96)=	32	33	625	0	0	0	40	0	0	0	0	0	0	0	0	0
97)=	32	34	571	0	0	0	40	0	0	0	0	0	0	0	0	0
98)=	32	35	630	0	0	0	40	0	0	0	0	0	0	0	0	0
99)=	32	37	1119	0	11	831	3000	15	194	3000	0	0	0	0	0	0
100)=	32	90	30	0	524	30	3000	0	0	0	0	0	0	0	0	0
101)=	32	91	79	0	0	0	40	0	0	0	0	0	0	0	0	0
102)=	32	92	10	0	523	303	40	525	67	40	0	0	0	0	0	0
103)=	32	93	853	0	523	303	40	525	67	40	0	0	0	0	0	0
104)=	32	94	222	0	0	0	40	0	0	0	0	0	0	0	0	0
105)=	32	96	157	0	0	0	40	0	0	0	0	0	0	0	0	0
106)=	32	98	1004	0	0	0	40	0	0	0	0	0	0	0	0	0
107)=	32	99	30	0	0	0	3000	0	0	0	0	0	0	0	0	0
108)=	32	331	12	0	0	0	3000	0	0	0	0	0	0	0	0	0
109)=	32	341	10	0	0	0	3000	0	0	0	0	0	0	0	0	0
110)=	32	351	72	0	0	0	3000	0	0	0	0	0	0	0	0	0
111)=	32	371	12	0	16	12	3000	0	0	0	0	0	0	0	0	0
112)=	32	491	1202	0	0	0	40	0	0	0	0	0	0	0	0	0
113)=	32	492	36	0	0	0	3000	0	0	0	0	0	0	0	0	0
114)=	32	493	483	0	0	0	40	0	0	0	0	0	0	0	0	0
115)=	32	494	66	0	0	0	3000	0	0	0	0	0	0	0	0	0
116)=	32	495	203	0	527	203	40	0	0	0	0	0	0	0	0	0
117)=	32	497	871	0	525	147	40	527	760	40	0	0	0	0	0	0
118)=	32	498	30	0	528	30	3000	0	0	0	0	0	0	0	0	0
119)=	32	521	129	0	493	129	40	0	0	0	0	0	0	0	0	0
120)=	32	522	36	0	494	36	3000	0	0	0	0	0	0	0	0	0
121)=	32	523	546	0	0	0	0	0	0	0	0	0	0	0	0	0
122)=	32	524	30	0	494	30	3000	0	0	0	0	0	0	0	0	0

*** DISTANCE > 0 BUT CRUISE TIME/SPEED=0 FOR THIS LINK. THUS CRUISE TIME BASED ON DISTANCE GIVEN AND DEFAULT SPEED OF 43 KM/H

123)=	32	525	1300	0	13	1046	40	15	21	40	0	0	0	0	0	0
124)=	32	526	16	0	16	16	3000	0	0	0	0	0	0	0	0	0
125)=	32	527	1157	0	91	47	40	94	76	40	98	985	40	0	0	0
126)=	32	528	30	0	99	30	3000	0	0	0	0	0	0	0	0	0
127)=	32	1941	1099	0	491	228	40	497	871	40	0	0	0	0	0	0
128)=	32	1942	50	0	492	20	3000	498	30	3000	0	0	0	0	0	0
129)=	32	1991	1281	0	521	68	40	525	1019	40	527	194	40	0	0	0
130)=	32	1992	52	0	522	36	3000	526	16	3000	528	10	3000	0	0	0

0 LINK CARDS : FLARE SATURATION FLOW DATA

..LANE 1..		..LANE 2..		..LANE 3..	
CARD	LINK	SAT.	CAPAC	SAT.	CAPAC
TYPE	NO.	FLOW	VEH.	FLOW	VEH.
131)=	33	13	1665	6	0

OLINK 13 IS MULTIPLYING UPSTREAM FLOW ON ENTRY 1 BY 207 PER CENT

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

0 160 SECOND CYCLE 40 STEPS

0 INITIAL SETTINGS

- (SECONDS)

0	NODE	NUMBER	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE
	NO	OF STAGES	1	2	3	4	5	6	7
	1	5	81	99	141	2	20		
	3	3	68	97	122	148	17	42	
	9	5	0	56	74	89	145		
	49	7	47	65	77	110	131	159	11
	52	3	37	77	102	117	157	22	
	194	2	46	113	126	33			
	1990	2	38	105	118	25			

0 LINK	FLOW	SAT	DEGREE	MEAN TIMES	-----DELAY-----		-----STOPS-----		-----QUEUE-----		PERFORMANCE	EXIT	GREEN TIMES		
NUMBER	INTO	FLOW	OF	PER PCU	UNIFORM	RANDOM+	COST	MEAN	COST	MAX.	AVERAGE	INDEX.	NODE	START	START
	LINK		SAT	CRUISE	(U+R+Q=MEAN Q)	OVERSAT	OF	STOPS	OF		EXCESS	WEIGHTED SUM		END	END
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)	(\$/H)	(%)	(\$/H)	(PCU)	(PCU)	(\$/H)		1ST	2ND
														(SECONDS)	(SECONDS)
11	826	1915S	74	24	11	1.1 + 1.4	(27.5)	52	(7.4)	14		34.9	1	104	141
12BL	10	11L	74	32	8	0.0 + 0.0	(0.3)	40	(0.0)	14		0.3	1	104	141
13	1048<	2509Sf	71	35	8	1.0 + 1.2	(24.4)	30	(6.3)	13		30.7	1	104	141
14BL	12	13L	71	47	7	0.0 + 0.0	(0.3)	35	(0.0)	13		0.3	1	104	141
15	215	1791S	90	18	88	2.0 + 3.3	(57.8)	151	(5.6)	9		63.3	1	88	99
16BL	28	15L	90	24	88	0.3 + 0.4	(7.5)	151	(0.4)	9		7.9	1	88	99
17	32	1856S	24	2	27	0.1 + 0.1	(2.6)	114	(0.6)	1		3.3	1	104	141
18BL	16	17L	24	3	26	0.1 + 0.1	(1.3)	120	(0.2)	1		1.5	1	104	141
31BL	62	1700	15	24	29	0.4 + 0.1	(5.5)	82	(0.5)	1		6.0	3	104	122
32	650	2100	130	18	500	12.5 + 77.7	(992.4)	263	(29.3)	102	+	1021.7	3	104	122
33	625	3600S	62	35	29	4.3 + 0.8	(55.7)	87	(9.3)	13		65.1	3	75	97
34	571	1700S	119	18	363	9.4 + 48.2	(633.9)	254	(24.9)	68	+	658.8	3	75	97
35	630	1800S	82	18	28	2.9 + 1.9	(53.3)	104	(11.2)	15		64.5	3	104	148
37BL	1114	3300S	119	49	341	14.9 + 90.6	(999.9)	251	(27.1)	125		1187.4	3	75	97
90BL	30	93L	68	24	27	0.2 + 0.0	(2.4)	100	(0.3)	20		2.7	9	5	56
91	79	1809	112	18	383	1.4 + 7.1	(92.5)	262	(3.6)	9		96.1	9	81	91
92	10	1773	3	18	15	0.0 + 0.0	(0.5)	56	(0.1)	0		0.5	9	5	58
93	830<	1936S	68	18	25	4.8 + 1.0	(64.2)	89	(13.1)	20		77.3	9	5	56
94	222	1722	167	18	864	7.4 + 45.9	(586.2)	258	(9.8)	57	+	596.0	9	81	91
96	157	1644	45	4	18	0.4 + 0.4	(8.7)	73	(2.0)	3		10.7	9	5	58
98	1004	1904S	84	18	20	3.3 + 2.4	(62.8)	76	(13.2)	25		76.0	9	5	56
99BL	30	98L	84	24	20	0.1 + 0.1	(1.9)	76	(0.2)	25		2.1	9	5	56
331BL	12	33L	62	47	29	0.1 + 0.0	(1.1)	87	(0.1)	13		1.2	3	75	97
341BL	10	34L	119	24	363	0.2 + 0.8	(11.1)	254	(0.2)	68	+	11.3	3	75	97
351BL	72	35L	82	24	28	0.3 + 0.2	(6.1)	104	(0.7)	15		6.8	3	104	148

371BL	12	37L	119	49	324	0.1 + 1.0	(11.9)	266	(0.3)	125	12.2	3	75	97	155	17
491	1202	5714S	59	18	24	7.4 + 0.7	(89.4)	77	(16.0)	29	105.4	49	83	110	17	47
492BL	36	491L	59	24	24	0.2 + 0.0	(2.7)	77	(0.3)	29	2.9	49	83	110	17	47
493	483	3969S	58	18	32	3.7 + 0.6	(47.4)	89	(7.4)	13	54.8	49	52	65	136	159
494BL	66	493L	58	24	32	0.5 + 0.1	(6.5)	89	(0.6)	13	7.0	49	52	65	136	159
495	197	1860	56	12	23	0.7 + 0.6	(14.1)	95	(3.3)	5	17.4	49	52	77	136	11
497	825<	3990S	55	12	12	2.1 + 0.6	(29.7)	40	(6.0)	14	35.7	49	52	77	136	11
498BL	30	497L	55	16	9	0.1 + 0.0	(0.9)	27	(0.1)	14	0.9	49	52	77	136	11
521	129	1854S	68	12	30	0.3 + 0.8	(11.8)	93	(2.1)	5	13.9	52	42	79	122	159
522BL	36	521L	68	16	34	0.1 + 0.2	(3.7)	97	(0.3)	5	4.0	52	42	79	122	159
523	546	1825S	70	11	25	2.7 + 1.1	(41.4)	81	(8.7)	11	50.1	52	42	77	122	157
524BL	30	523L	70	16	18	0.1 + 0.1	(1.7)	36	(0.1)	11	1.8	52	42	77	122	157
525	1108<	5982S	65	31	22	5.8 + 0.9	(74.3)	80	(17.8)	25	92.1	52	82	104	2	24
526BL	16	525L	65	41	36	0.1 + 0.0	(1.7)	103	(0.2)	25	1.9	52	82	104	2	24
527	1119<	3785S	67	18	14	3.3 + 1.0	(47.2)	60	(11.8)	23	59.0	52	42	77	122	157
528BL	30	527L	67	24	13	0.1 + 0.0	(1.2)	56	(0.2)	23	1.3	52	42	77	122	157

0 160 SECOND CYCLE 40 STEPS																
0 LINK	FLOW	SAT	DEGREE	MEAN TIMES	-----DELAY-----				-----STOPS-----		-----QUEUE-----		PERFORMANCE	EXIT	GREEN TIMES	
NUMBER	INTO	FLOW	OF	PER PCU	UNIFORM	RANDOM+	COST	MEAN	COST	MEAN	AVERAGE	INDEX.	NODE		START	START
	LINK		SAT	CRUISE	(U+R+O=MEAN Q)	OVERSAT	OF	STOPS	OF	MAX.	EXCESS	WEIGHTED SUM			END	END
	(PCU/H)	(PCU/H)	(%)	(SEC)	(PCU-H/H)	(\$/H)		(%)	(\$/H)	(PCU)	(PCU)	OF () VALUES			1ST	2ND
															(SECONDS)	
1941	1053<	3970S	35	1	1	0.1 + 0.3	(3.9)	4	(0.7)	4		4.6	194		51	113
1942BL	50	1941L	35	2	1	0.0 + 0.0	(0.2)	6	(0.0)	4		0.3	194		51	113
1991	1125<	3970S	38	1	2	0.3 + 0.3	(6.5)	16	(3.5)	20	+	10.0	1990		43	105
1992BL	52	1991L	38	2	1	0.0 + 0.0	(0.2)	5	(0.0)	20	+	0.2	1990		43	105

*** f - average saturation flow for flared link ***

0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	COST	FOR	PERFORMANCE		
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	OF	EXCESS	INDEX		
			DELAY	DELAY	DELAY	STOPS	STOPS	QUEUES			
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)		
0 3641.2	482.6	7.5	94.7	292.2	(4256.4) + (245.4)	+	(0.0)	=	4501.9	TOTALS	
0 563.9	130.5	4.3	17.8	93.8	(1228.2) + (31.9)	+	(0.0)	=	1260.1	BUSES	
0 3077.3	352.1	8.7	76.9	198.4	(3028.2) + (213.6)	+	(0.0)	=	3241.8	OTHER	

0*****											
0	CRUISE		DELAY		STOPS		TOTALS				
	LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR		LITRES PER HOUR				
0FUEL CONSUMPTION PREDICTIONS	204.6		+ 445.0		+ 145.4		= 795.0				

0 NO. OF ENTRIES TO SUBPT = 1
0 NO. OF LINKS RECALCULATED= 62

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24
- (SECONDS)

1	5	81	99	141	2	20					
3	3	68	97	122	148	17	42				
9	5	0	56	74	89	145					
49	7	47	65	77	110	131	159	11			
52	3	37	77	102	117	157	22				
194	2	46	113	126	33						
1990	2	38	105	118	25						
0 TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL		
DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	COST	FOR	PERFORMANCE		
TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	OF	EXCESS	INDEX		
			DELAY	DELAY	DELAY	STOPS	STOPS	QUEUES			

	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	3641.2	483.1	7.5	94.8	292.7	(4262.1) + (	245.4)	+ (	0.0)	= 4507.5
0	563.9	130.4	4.3	17.8	93.8	(1228.1) + (	31.9)	+ (	0.0)	= 1259.9
0	3077.3	352.6	8.7	77.0	198.9	(3034.1) + (	213.6)	+ (	0.0)	= 3247.6
0										

TOTALS
BUSES
OTHER

NO. OF ENTRIES TO SUBPT = 14
NO. OF LINKS RECALCULATED= 302

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64
- (SECONDS)

1	5	81	99	141	2	20				
3	3	68	97	122	148	17	42			
9	5	0	56	74	89	145				
49	7	47	65	77	110	131	159	11		
52	3	37	77	102	117	157	22			
194	2	46	113	126	33					
1990	2	38	105	118	25					

	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)		
0	3641.2	483.1	7.5	94.8	292.7	(4262.1) + (	245.4)	+ (	0.0)	= 4507.5
0	563.9	130.4	4.3	17.8	93.8	(1228.1) + (	31.9)	+ (	0.0)	= 1259.9
0	3077.3	352.6	8.7	77.0	198.9	(3034.1) + (	213.6)	+ (	0.0)	= 3247.6
0										

TOTALS
BUSES
OTHER

NO. OF ENTRIES TO SUBPT = 13
NO. OF LINKS RECALCULATED= . 242

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1
- (SECONDS)

1	5	78	100	141	2	22				
3	3	62	96	129	142	16	49			
9	5	0	56	74	89	145				
49	7	45	74	86	111	132	158	10		
52	3	37	77	102	117	157	22			
194	2	46	113	126	33					
1990	2	38	105	118	25					

	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)		
0	3641.2	285.4	12.8	77.0	112.8	(2087.7) + (	225.1)	+ (	0.0)	= 2312.8
0	563.9	42.8	13.2	10.4	13.6	(264.2) + (	18.3)	+ (	0.0)	= 282.5
0	3077.3	242.6	12.7	66.5	99.2	(1823.5) + (	206.8)	+ (	0.0)	= 2030.3
0										

TOTALS
BUSES
OTHER

NO. OF ENTRIES TO SUBPT = 75
NO. OF LINKS RECALCULATED= 1201

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24
- (SECONDS)

1	5	78	100	141	2	22
3	3	62	96	129	142	16

9	5	0	56	74	89	145						
49	7	45	74	86	111	132	158	10				
52	3	37	77	102	117	157	22					
194	2	46	113	126	33							
1990	2	38	105	118	25							
0 TOTAL												
DISTANCE	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL				
TRAVELLED	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE				
	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX				
				DELAY	DELAY	STOPS	QUEUES					
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)				
0 3641.2	285.4	12.8	77.0	112.8	(2087.7) + (	225.1)	+ (	0.0)	=	2312.8	TOTALS	
0 563.9	42.8	13.2	10.4	13.6	(264.2) + (	18.3)	+ (	0.0)	=	282.5	BUSES	
0 3077.3	242.6	12.7	66.5	99.2	(1823.5) + (	206.8)	+ (	0.0)	=	2030.3	OTHER	

NO. OF ENTRIES TO SUBPT = 13

NO. OF LINKS RECALCULATED= 277

0 160 SECOND CYCLE 40 STEPS

0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64

- (SECONDS)

1	5	78	100	141	2	22						
3	3	62	96	129	142	16	49					
9	5	0	56	74	89	145						
49	7	45	74	86	111	132	158	10				
52	3	37	77	102	117	157	22					
194	2	46	113	126	33							
1990	2	38	105	118	25							
0 TOTAL												
DISTANCE	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL				
TRAVELLED	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE				
	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX				
				DELAY	DELAY	STOPS	QUEUES					
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)				
0 3641.2	285.4	12.8	77.0	112.8	(2087.7) + (	225.1)	+ (	0.0)	=	2312.8	TOTALS	
0 563.9	42.8	13.2	10.4	13.6	(264.2) + (	18.3)	+ (	0.0)	=	282.5	BUSES	
0 3077.3	242.6	12.7	66.5	99.2	(1823.5) + (	206.8)	+ (	0.0)	=	2030.3	OTHER	

NO. OF ENTRIES TO SUBPT = 13

NO. OF LINKS RECALCULATED= 279

0 160 SECOND CYCLE 40 STEPS

0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64 1

- (SECONDS)

1	5	77	99	140	1	21						
3	3	64	98	131	144	18	51					
9	5	0	56	74	89	145						
49	7	44	73	85	110	131	157	9				
52	3	35	75	100	115	155	20					
194	2	42	109	122	29							
1990	2	39	106	119	26							
0 TOTAL												
DISTANCE	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL				
TRAVELLED	TIME	JOURNEY	UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE				
	SPENT	SPEED	DELAY	OVERSAT	OF	OF	EXCESS	INDEX				
				DELAY	DELAY	STOPS	QUEUES					
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)				
0 3641.2	284.0	12.8	75.7	112.7	(2072.3) + (	221.3)	+ (	0.0)	=	2293.6	TOTALS	
0 563.9	42.2	13.4	9.8	13.6	(256.9) + (	18.3)	+ (	0.0)	=	275.3	BUSES	
0 3077.3	241.8	12.7	65.9	99.1	(1815.4) + (	203.0)	+ (	0.0)	=	2018.3	OTHER	

NO. OF ENTRIES TO SUBPT = 22
NO. OF LINKS RECALCULATED= 392

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64 1 -1
- (SECONDS)

	1	5	79	98	141	2	21											
3	3	64	98	131	144	18	51											
9	5	0	56	74	89	145												
49	7	44	74	86	111	132	155	7										
52	3	35	76	100	115	156	20											
194	2	42	109	122	29													
1990	2	39	106	119	26													
0 TOTAL																		
DISTANCE																		
TRAVELLED																		
(PCU-KM/H)																		
0 3641.2																		
0 563.9																		
0 3077.3																		
0																		
0 TOTAL																		
TIME																		
SPENT																		
(PCU-H/H)																		
0 282.8																		
0 41.6																		
0 241.2																		
0																		
0 TOTAL																		
MEAN																		
JOURNEY																		
SPEED																		
(KM/H)																		
0 12.9																		
0 13.6																		
0 12.8																		
0																		
0 TOTAL																		
UNIFORM																		
DELAY																		
(PCU-H/H)																		
0 74.6																		
0 9.1																		
0 65.5																		
0																		
0 TOTAL																		
RANDOM+																		
OVERSAT																		
DELAY																		
(PCU-H/H)																		
0 112.6																		
0 13.7																		
0 98.9																		
0																		
0 TOTAL																		
COST																		
OF																		
DELAY																		
(\$/H)																		
0 (2059.4) + (219.9)																		
0 (250.8) + (18.1)																		
0 (1808.6) + (201.8)																		
0																		
0 TOTAL																		
PENALTY																		
FOR																		
EXCESS																		
QUEUES																		
(\$/H)																		
0 (0.0)																		
0 (0.0)																		
0 (0.0)																		
0																		
0 TOTAL																		
TOTALS																		
BUSES																		
OTHER																		
0																		

NO. OF ENTRIES TO SUBPT = 50
NO. OF LINKS RECALCULATED= 1098

0 160 SECOND CYCLE 40 STEPS
0 FINAL SETTINGS OBTAINED WITH INCREMENTS :- 24 64 -1 24 64 1 -1 1
- (SECONDS)

0	LINK	NUMBER	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE										
	NO	OF STAGES	1	2	3	4	5	6	7										
	1	5	79	98	141	2	21												
	3	3	64	98	131	144	18	51											
	9	5	0	56	74	89	145												
	49	7	43	73	85	110	131	154	6										
	52	3	34	75	99	114	155	19											
	194	2	42	109	122	29													
	1990	2	34	101	114	21													
0 LINK	NUMBER	FLOW	SAT	DEGREE	MEAN	TIME	-----DELAY-----	-----STOPS-----	-----QUEUE-----	PERFORMANCE	EXIT	GREEN	TIME						
		INTO	FLOW	OF	PER	PCU	UNIFORM	RANDOM+	COST	INDEX.	NODE	START	START						
		LINK		SAT	CRUISE		(U+R+O=MEAN Q)	OVERSAT	OF	WEIGHTED SUM		END	END						
					DELAY		(PCU-H/H)	(\$/H)	STOPS	OF () VALUES		1ST	2ND						
					(SEC)				(\$/H)			(SECONDS)							
		(PCU/H)	(PCU/H)	(%)	(SEC)														
	11	826	1915S	75	24	11	1.1 + 1.5	(28.3)	46 (6.6)	34.9	1	103	141	26	79				
	12BL	10	11L	75	32	9	0.0 + 0.0	(0.3)	31 (0.0)	0.3	1	103	141	26	79				
	13	1236	2519Sf	85	35	13	1.7 + 2.8	(49.2)	61 (12.8)	62.1	1	103	141	26	79				
	14BL	12	13L	85	47	12	0.0 + 0.0	(0.4)	55 (0.1)	0.5	1	103	141	26	79				
	15	215	1791S	83	18	67	1.9 + 2.0	(43.9)	130 (4.8)	48.7	1	86	98	9	21				
	16BL	28	15L	83	24	67	0.3 + 0.3	(5.7)	130 (0.4)	6.1	1	86	98	9	21				
	17	32	1856S	30	2	36	0.2 + 0.1	(3.6)	127 (0.7)	4.2	1	103	141	26	79				
	18BL	16	17L	30	3	36	0.1 + 0.1	(1.8)	135 (0.2)	2.0	1	103	141	26	79				
	31BL	62	1700	11	24	22	0.3 + 0.1	(4.1)	70 (0.4)	4.5	3	105	131	25	51				
	32	650	2100	92	18	52	4.6 + 4.8	(102.9)	119 (13.3)	116.2	3	105	131	25	51				
	33	625	3600S	51	35	23	3.6 + 0.5	(44.6)	76 (8.1)	52.7	3	71	98	151	18				
	34	571	1700S	98	18	82	4.1 + 8.9	(142.6)	150 (14.7)	157.2	3	71	98	151	18				
	35	630	1800S	101	18</														

91	79	1809	112	18	377	1.3 + 6.9	(91.1)	262	(3.5)	9	94.7	9	81	91	151	2
92	10	1773	3	18	15	0.0 + 0.0	(0.5)	54	(0.1)	0	0.6	9	5	58	94	147
93	852	1936S	70	18	25	4.7 + 1.1	(64.4)	85	(12.5)	20	76.9	9	5	56	94	145
94	222	1722	169	18	875	7.4 + 46.5	(593.6)	257	(9.8)	57	603.4	9	81	91	151	2
96	157	1644	46	4	18	0.4 + 0.4	(8.8)	74	(2.0)	3	10.8	9	5	58	94	147
98	1004	1904S	84	18	20	3.3 + 2.4	(62.8)	76	(13.2)	25	76.0	9	5	56	94	145
99BL	30	98L	84	24	20	0.1 + 0.1	(1.9)	76	(0.2)	25	2.1	9	5	56	94	145
331BL	12	33L	51	47	23	0.1 + 0.0	(0.9)	76	(0.1)	12	0.9	3	71	98	151	18
341BL	10	34L	98	24	82	0.1 + 0.2	(2.5)	150	(0.1)	21	2.6	3	71	98	151	18
351BL	72	35L	101	24	99	0.5 + 1.5	(21.9)	170	(1.2)	31	23.0	3	105	144	25	64
371BL	12	37L	97	49	56	0.1 + 0.1	(2.1)	137	(0.2)	39	2.2	3	71	98	151	18
491	1202	5714S	67	18	27	7.9 + 1.0	(97.5)	84	(17.3)	27	114.8	49	91	110	12	43
492BL	36	491L	67	24	27	0.2 + 0.0	(2.9)	84	(0.3)	27	3.2	49	91	110	12	43
493	483	3969S	49	18	27	3.2 + 0.4	(40.1)	81	(6.7)	11	46.8	49	48	73	136	154
494BL	66	493L	49	24	27	0.4 + 0.1	(5.5)	81	(0.5)	11	6.0	49	48	73	136	154
495	197	1860	52	12	19	0.5 + 0.5	(11.6)	86	(3.0)	4	14.6	49	48	85	136	6
497	846<	3990S	51	12	10	1.9 + 0.5	(26.6)	40	(6.0)	13	32.6	49	48	85	136	6
498BL	30	497L	51	16	6	0.0 + 0.0	(0.5)	23	(0.1)	13	0.6	49	48	85	136	6
521	129	1854S	64	12	27	0.3 + 0.7	(10.4)	101	(2.2)	4	12.7	52	39	77	119	157
522BL	36	521L	64	16	30	0.1 + 0.2	(3.3)	103	(0.4)	4	3.7	52	39	77	119	157
523	546	1825S	68	11	23	2.5 + 1.0	(39.1)	78	(8.4)	10	47.5	52	39	75	119	155
524BL	30	523L	68	16	20	0.1 + 0.1	(1.8)	41	(0.1)	10	1.9	52	39	75	119	155
525	1301	5982S	80	31	24	6.9 + 2.0	(97.0)	97	(21.7)	30	118.7	52	80	101	0	21
526BL	16	525L	80	41	36	0.1 + 0.0	(1.8)	106	(0.2)	30	1.9	52	80	101	0	21
527	1119<	3785S	66	18	13	3.1 + 0.9	(44.3)	55	(11.0)	22	55.3	52	39	75	119	155
528BL	30	527L	66	24	12	0.1 + 0.0	(1.1)	52	(0.2)	22	1.3	52	39	75	119	155

0	160 SECOND CYCLE	40 STEPS	DEGREE OF SAT				MEAN TIMES PER PCU CRUISE		-----DELAY-----		-----STOPS-----		-----QUEUE-----		PERFORMANCE INDEX	EXIT NODE	GREEN TIMES	
0 LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE	MEAN TIMES PER PCU CRUISE	UNIFORM DELAY (PCU-H/H)	RANDOM+ OVERSAT OF DELAY (\$/H)	COST OF STOPS	MEAN COST OF STOPS	MEAN MAX. AVERAGE EXCESS	AVERAGE EXCESS	WEIGHTED SUM OF () VALUES (\$/H)	PERFORMANCE INDEX	EXIT NODE	START 1ST	START 2ND	END	
1941	1074<	3970S	36	1	1	0.1 + 0.3	(3.7)	3	(0.6)	1	4.3	194	47	109	127	29		
1942BL	50	1941L	36	2	1	0.0 + 0.0	(0.2)	5	(0.0)	1	0.2	194	47	109	127	29		
1991	1276	3970S	42	1	2	0.3 + 0.4	(7.7)	19	(4.1)	21	11.8	1990	39	101	119	21		
1992BL	52	1991L	42	2	1	0.0 + 0.0	(0.2)	3	(0.0)	21	0.2	1990	39	101	119	21		

*** f - average saturation flow for flared link ***

0	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	TOTALS
0	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	3641.2	282.6	12.9	74.4	112.6	(2056.7) + (219.5)	+ (0.0)	=	2276.2	TOTALS
0	563.9	41.6	13.6	9.2	13.6	(251.0) + (18.1)	+ (0.0)	=	269.1	BUSES
0	3077.3	241.0	12.8	65.2	98.9	(1805.7) + (201.4)	+ (0.0)	=	2007.1	OTHER

0	CRUISE LITRES PER HOUR	DELAY LITRES PER HOUR	STOPS LITRES PER HOUR	TOTALS LITRES PER HOUR
0	204.6	+ 215.0	+ 130.0	= 549.6

NO. OF ENTRIES TO SUBPT = 20
NO. OF LINKS RECALCULATED= 337

PROGRAM TRANSYT FINISHED

T R A N S Y T
Traffic Network Study Tool

(C) COPYRIGHT 1996,2001 - TRL Limited, Crowthorne, Berkshire, RG45 6AU, UK
 OImplementation for IBM-PC or compatible
 OProgram TRANSYT 11, Analysis Program Version 1.3
 ORun with file:- "TMPTRAN.DAT" at 12:35 on 24/02/03
 OFuture 1/5/02 counts PM dev + Buses JP 24/02/03 - PMFut9wc.prt

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

NUMBER OF NODES = 1
 NUMBER OF LINKS = 8
 NUMBER OF OPTIMISED NODES = 1
 MAXIMUM NUMBER OF GRAPHIC PLOTS = 0
 NUMBER OF STEPS IN CYCLE = 44
 MAXIMUM NUMBER OF SHARED STOPLINES = 2
 MAXIMUM NUMBER OF TIMING POINTS = 5
 MAXIMUM LINKS AT ANY NODE = 6

CORE REQUESTED = 3803 WORDS
 CORE AVAILABLE = 72000 WORDS

DATA INPUT :-

OCARD CARD
 NO. TYPE
 (1)= TITLE:- Future 1/5/02 counts PM dev + Buses JP 24/02/03 - PMFut9wc.prt

OCARD NO.	CARD TYPE	CYCLE TIME (SEC)	NO. OF STEPS PER CYCLE	TIME EFFECTIVE-GREEN PERIOD 1-1200 MINS.	EQUISAT 0=UNEQUAL FLOW 1=EQUAL CYCLE	CRUISE-SPEEDS SCALE 10-200 %	OPTIMISE 0=NONE 1=O/SET 2=FULL	EXTRA COPIES FINAL OUTPUT	HILL-CLIMB OUTPUT 1=FULL	DELAY VALUE P PER	STOP VALUE P PER	
2)=	1	176	44	60	2	3	1	1	0	0	1100	200

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

OCARD NO.	CARD TYPE	9	0	0	0	0	0	0	0	0	0	0	0	0	0
3)=	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0

0 LINKS HAVING SHARED STOPLINES

CARD NO.	CARD TYPE	FIRST SET	SECOND SET	THIRD SET
4)=	7	93	90	0
5)=	7	98	99	0

0 NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES

CARD NO.	CARD TYPE	NODE NO.	STAGE 1 CHANGE MIN	STAGE 2 CHANGE MIN	STAGE 3 CHANGE MIN	STAGE 4 CHANGE MIN	STAGE 5 CHANGE MIN	STAGE 6 CHANGE MIN	STAGE 7 CHANGE MIN
6)=	15	9	76	12	153	18	171	14	25

0 LINK CARDS: GIVEWAY DATA

CARD NO.	CARD TYPE	LINK NO.	LINK1 NO.	LINK2 NO.	% FLOW	LINK1 GIVEWAY COEFFS. A1 X100	A2 X100	LINK LENGTH	STOP WT.X100	MAX FLOW	DELAY WT.X100	DISPSN X100
7)=	30	91	0	94	49	0	26	0	0	0	0	0
8)=	30	92	98	0	0	24	0	0	0	0	0	0
9)=	30	94	0	91	84	0	23	0	0	0	0	0
10)=	30	96	93	0	0	21	0	0	0	0	0	0

0 LINK CARDS: FIXED DATA

CARD NO.	CARD TYPE	LINK NO.	EXIT NODE	FIRST GREEN		SECOND GREEN		LINK LENGTH	STOP WT.X100	SAT FLOW	DELAY WT.X100	DISPSN X100
				START STAGE	END LAG	START STAGE	END LAG					
11)=	31	90	0	0	0	0	0	200	0	0	0	0
12)=	31	91	9	3	7	4	2	200	0	1809	0	0
13)=	31	92	9	1	5	2	2	200	0	1773	0	0
14)=	31	93	9	1	5	2	0	200	0	1936	0	0
15)=	31	94	9	3	7	4	2	200	0	1722	0	0
16)=	31	96	9	1	5	2	2	40	0	1644	0	0
17)=	31	98	9	1	5	2	0	200	0	1904	0	0
18)=	31	99	0	0	0	0	0	200	0	0	0	0

0

LINK CARDS: FLOW DATA

CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	ENTRY 1		ENTRY 2		ENTRY 3		ENTRY 4	
					LINK NO.	CRUISE SPEED	LINK NO.	CRUISE SPEED	LINK NO.	CRUISE SPEED	LINK NO.	CRUISE SPEED
19)=	32	90	24	0	0	0	3000	0	0	0	0	0
20)=	32	91	43	0	0	0	40	0	0	0	0	0
21)=	32	92	34	0	0	0	40	0	0	0	0	0
22)=	32	93	851	0	0	0	40	0	0	0	0	0
23)=	32	94	269	0	0	0	40	0	0	0	0	0
24)=	32	96	108	0	0	0	40	0	0	0	0	0
25)=	32	98	869	0	0	0	40	0	0	0	0	0
26)=	32	99	24	0	0	0	3000	0	0	0	0	0

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

0 176 SECOND CYCLE 44 STEPS

0 INITIAL SETTINGS

- (SECONDS)

0	NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
0	9	5	76	109	127	7	40		

0	LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN PER PCU CRUISE	TIMES DELAY (SEC)	-----DELAY-----		----STOPS----		----QUEUE----		PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES		
							UNIFORM DELAY (PCU-H/H)	RANDOM+ OVERSAT OF DELAY (\$/H)	MEAN STOPS /PCU (%)	COST OF STOPS (\$/H)	MAX. AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. (\$/H)			START 1ST	END 2ND	END
	908L	24	93L	137	24	570	0.5 + 3.3	(41.8)	261	(0.6)	154	+	42.4	9	81	109	12 40
	91	43	1809	10	18	18	0.2 + 0.1	(2.4)	60	(0.4)	1		2.8	9	134	9	46 78
	92	34	1773	23	18	38	0.2 + 0.1	(4.0)	99	(0.6)	1		4.6	9	81	111	12 42
	93	851	1936S	137	18	570	17.7 +117.0	(999.9)	261	(38.1)	154	+	1520.2	9	81	109	12 40
	94	269	1722	42	18	20	1.2 + 0.4	(16.7)	71	(3.3)	5		20.0	9	134	9	46 78
	96	108	1644	72	4	70	0.9 + 1.2	(23.0)	158	(2.9)	4		25.9	9	81	111	12 42
	98	869	1904S	142	18	622	19.4 +130.8	(999.9)	261	(38.9)	170	+	1691.3	9	81	109	12 40
	998L	24	98L	142	24	622	0.5 + 3.6	(45.6)	261	(0.6)	170	+	46.2	9	81	109	12 40

0	TOTAL DISTANCE TRAVELLED (PCU-KM/H)	TOTAL TIME SPENT (PCU-H/H)	MEAN JOURNEY SPEED (KM/H)	TOTAL UNIFORM DELAY (PCU-H/H)	TOTAL RANDOM+ OVERSAT DELAY (PCU-H/H)	TOTAL COST OF DELAY (\$/H)	TOTAL COST OF STOPS (\$/H)	PENALTY FOR EXCESS QUEUES (\$/H)	TOTAL PERFORMANCE INDEX (\$/H)	TOTALS BUSES OTHER
0	427.1	307.8	1.4	40.6	256.5	(3268.0) + (85.4)	+ (0.0)	=	3353.4	TOTALS
0	9.6	8.3	1.2	1.0	6.9	(87.4) + (1.2)	+ (0.0)	=	88.6	BUSES
0	417.5	299.6	1.4	39.5	249.6	(3180.5) + (84.2)	+ (0.0)	=	3264.7	OTHER

0*****

0	FUEL CONSUMPTION PREDICTIONS	CRUISE LITRES PER HOUR	DELAY LITRES PER HOUR	STOPS LITRES PER HOUR	TOTALS LITRES PER HOUR
0		23.5	+ 341.7	+ 50.6	= 415.7

0

NO. OF ENTRIES TO SUBPT = 1

NO. OF LINKS RECALCULATED= 10

0 176 SECOND CYCLE 44 STEPS

0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26
- (SECONDS)

0	9	5	76	109	127	7	40	TOTAL	TOTAL	PENALTY	TOTAL	
	TOTAL		TOTAL	MEAN		TOTAL	TOTAL	COST	COST	FOR	PERFORMANCE	
	DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	OF	OF	EXCESS	INDEX	
	TRAVELLED		SPENT	SPEED		DELAY	OVERSAT	DELAY	STOPS	QUEUES		
	(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	427.1		307.8	1.4		40.6	256.5	(3268.0) + (	85.4)	+ (0.0)	=	3353.4
0	9.6		8.3	1.2		1.0	6.9	(87.4) + (	1.2)	+ (0.0)	=	88.6
0	417.5		299.6	1.4		39.5	249.6	(3180.5) + (	84.2)	+ (0.0)	=	3264.7
0												TOTALS
												BUSES
												OTHER

NO. OF ENTRIES TO SUBPT = 4

NO. OF LINKS RECALCULATED= 34

0 176 SECOND CYCLE 44 STEPS

0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70
- (SECONDS)

0	9	5	76	109	127	7	40	TOTAL	TOTAL	PENALTY	TOTAL	
	TOTAL		TOTAL	MEAN		TOTAL	TOTAL	COST	COST	FOR	PERFORMANCE	
	DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	OF	OF	EXCESS	INDEX	
	TRAVELLED		SPENT	SPEED		DELAY	OVERSAT	DELAY	STOPS	QUEUES		
	(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	427.1		307.8	1.4		40.6	256.5	(3268.0) + (	85.4)	+ (0.0)	=	3353.4
0	9.6		8.3	1.2		1.0	6.9	(87.4) + (	1.2)	+ (0.0)	=	88.6
0	417.5		299.6	1.4		39.5	249.6	(3180.5) + (	84.2)	+ (0.0)	=	3264.7
0												TOTALS
												BUSES
												OTHER

NO. OF ENTRIES TO SUBPT = 3

NO. OF LINKS RECALCULATED= 25

0 176 SECOND CYCLE 44 STEPS

0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1
- (SECONDS)

0	9	5	54	131	149	6	39	TOTAL	TOTAL	PENALTY	TOTAL	
	TOTAL		TOTAL	MEAN		TOTAL	TOTAL	COST	COST	FOR	PERFORMANCE	
	DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+	OF	OF	EXCESS	INDEX	
	TRAVELLED		SPENT	SPEED		DELAY	OVERSAT	DELAY	STOPS	QUEUES		
	(PCU-KM/H)		(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0	427.1		32.8	13.0		14.7	7.4	(242.7) + (	34.8)	+ (0.0)	=	277.5
0	9.6		0.7	13.4		0.3	0.1	(4.4) + (	0.4)	+ (0.0)	=	4.8
0	417.5		32.1	13.0		14.4	7.3	(238.4) + (	34.4)	+ (0.0)	=	272.8
0												TOTALS
												BUSES
												OTHER

NO. OF ENTRIES TO SUBPT = 54

NO. OF LINKS RECALCULATED= 433

0 176 SECOND CYCLE 44 STEPS

0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26
- (SECONDS)

0	9	5	54	131	149	6	39	TOTAL	TOTAL	PENALTY	TOTAL	
	TOTAL		TOTAL	MEAN		TOTAL	TOTAL	COST	COST	FOR	PERFORMANCE	
	DISTANCE		TIME	JOURNEY		UNIFORM	RANDOM+					

TRAVELLED	SPENT	SPEED	DELAY	OVERSAT DELAY	OF DELAY	OF STOPS	EXCESS QUEUES	INDEX	
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 427.1	32.9	13.0	14.7	7.4	(243.1) + (	34.8)	+ (0.0)	=	277.9
0 9.6	0.7	13.4	0.3	0.1	(4.4) + (	0.4)	+ (0.0)	=	4.8
0 417.5	32.1	13.0	14.4	7.3	(238.7) + (	34.4)	+ (0.0)	=	273.1

NO. OF ENTRIES TO SUBPT = 4
NO. OF LINKS RECALCULATED= 34

0 176 SECOND CYCLE 44 STEPS
OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70
- (SECONDS)

9	5	54	131	149	6	39	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED					(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 427.1	32.9	13.0			14.7	7.4	(243.1)	(34.8)	+ (0.0)	=	277.9	TOTALS	
0 9.6	0.7	13.4			0.3	0.1	(4.4)	(0.4)	+ (0.0)	=	4.8	BUSES	
0 417.5	32.1	13.0			14.4	7.3	(238.7)	(34.4)	+ (0.0)	=	273.1	OTHER	

NO. OF ENTRIES TO SUBPT = 4
NO. OF LINKS RECALCULATED= 34

0 176 SECOND CYCLE 44 STEPS
OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1
- (SECONDS)

9	5	56	133	151	8	41	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED					(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 427.1	32.8	13.0			14.7	7.4	(242.7)	(34.9)	+ (0.0)	=	277.6	TOTALS	
0 9.6	0.7	13.4			0.3	0.1	(4.4)	(0.4)	+ (0.0)	=	4.8	BUSES	
0 417.5	32.1	13.0			14.4	7.3	(238.4)	(34.5)	+ (0.0)	=	272.8	OTHER	

NO. OF ENTRIES TO SUBPT = 4
NO. OF LINKS RECALCULATED= 33

0 176 SECOND CYCLE 44 STEPS
OINTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 26 70 -1 26 70 1 -1
- (SECONDS)

9	5	57	134	152	7	40	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF DELAY	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	
TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED					(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 427.1	32.5	13.1			14.3	7.4	(239.2)	(34.8)	+ (0.0)	=	274.0	TOTALS	
0 9.6	0.7	13.6			0.3	0.1	(4.3)	(0.4)	+ (0.0)	=	4.7	BUSES	
0 417.5	31.8	13.1			14.0	7.3	(234.9)	(34.5)	+ (0.0)	=	269.4	OTHER	

NO. OF ENTRIES TO SUBPT = 15
NO. OF LINKS RECALCULATED= 121

0 176 SECOND CYCLE 44 STEPS
 OFINAL SETTINGS OBTAINED WITH INCREMENTS :- 26 70 -1 26 70 1 -1 1
 - (SECONDS)

0 NODE NUMBER STAGE STAGE STAGE STAGE STAGE STAGE STAGE
 NO OF STAGES 1 2 3 4 5 6 7

9	5	59	136	154	9	42	-----DELAY-----		-----STOPS-----		-----QUEUE-----		PERFORMANCE	EXIT	GREEN TIMES			
0 LINK	FLOW	SAT	DEGREE	MEAN	UNIFORM	RANDOM+	COST	MEAN	COST	MEAN	AVERAGE	INDEX.	NODE	START	START	END	END	
NUMBER	INTO	FLOW	OF	PER	(U+R+O=MEAN Q)	OVERSAT	OF	STOPS	OF	MAX.	EXCESS	WEIGHTED SUM		1ST	2ND			
	LINK		SAT	CRUISE	(PCU-H/H)	(\$/H)		/PCU	STOPS	(PCU)	(PCU)	OF () VALUES						
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)			(%)	(\$/H)			(\$/H)					(SECONDS)	
90BL	24	93L	78	24	28	0.1 + 0.0	(2.0)	81	(0.2)	24		2.2	9	64	136	14	42	
91	43	1809	27	18	49	0.4 + 0.2	(6.5)	110	(0.8)	1		7.3	9	161	11	48	61	
92	34	1773	13	18	17	0.1 + 0.1	(1.8)	56	(0.3)	1		2.1	9	64	138	14	44	
93	851	1936S	78	18	28	4.9 + 1.7	(72.6)	81	(11.8)	24		84.4	9	64	136	14	42	
94	269	1722	88	18	80	3.0 + 3.0	(66.0)	132	(6.1)	13		72.1	9	161	11	48	61	
96	108	1644	40	4	23	0.4 + 0.3	(7.7)	75	(1.4)	2		9.1	9	64	138	14	44	
98	869	1904S	81	18	30	5.3 + 2.0	(80.5)	84	(12.6)	25		93.1	9	64	136	14	42	
99BL	24	98L	81	24	30	0.1 + 0.1	(2.2)	84	(0.2)	25		2.4	9	64	136	14	42	
0 TOTAL		TOTAL		MEAN	TOTAL	TOTAL	TOTAL	TOTAL		PENALTY		TOTAL						
DISTANCE		TIME		JOURNEY	UNIFORM	RANDOM+	COST	COST		FOR		PERFORMANCE						
TRAVELLED		SPENT		SPEED	DELAY	OVERSAT	OF	OF		EXCESS		INDEX						
	(PCU-KM/H)	(PCU-H/H)		(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)		(\$/H)		(\$/H)						
0	427.1	32.5		13.1	14.3	7.4	(239.4)	+ (33.4)	+ (0.0)	=	272.7		TOTALS					
0	9.6	0.7		13.6	0.3	0.1	(4.3)	+ (0.4)	+ (0.0)	=	4.7		BUSES					
0	417.5	31.8		13.1	14.0	7.3	(235.1)	+ (33.0)	+ (0.0)	=	268.1		OTHER					

0*****
 0

CRUISE	DELAY	STOPS	TOTALS
LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR	LITRES PER HOUR
23.5	+ 25.0	+ 19.8	= 68.3

 OFUEL CONSUMPTION PREDICTIONS

0
 NO. OF ENTRIES TO SUBPT = 4
 NO. OF LINKS RECALCULATED= 33

PROGRAM TRANSYT FINISHED

TRAffic Network Study Tool

PARAMETERS CONTROLLING DIMENSIONS OF PROBLEM :

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CORE REQUESTED = 8547 WORDS
CORE AVAILABLE = 72000 WORDS

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[illegible]

19)=	7	525	526	0	0	0	0	0	0	0	0	0	0	0	0	0
20)=	7	527	528	0	0	0	0	0	0	0	0	0	0	0	0	0
21)=	7	1941	1942	0	0	0	0	0	0	0	0	0	0	0	0	0
22)=	7	1991	1992	0	0	0	0	0	0	0	0	0	0	0	0	0

0																
NODE CARDS: STAGE CHANGE TIMES AND MINIMUM STAGE TIMES																
CARD NO.	CARD TYPE	NODE NO.	STAGE 1		STAGE 2		STAGE 3		STAGE 4		STAGE 5		STAGE 6		STAGE 7	
			CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN	CHANGE	MIN
23)=	15	1	80	15	96	12	142	21	3	15	20	14	0	0	0	0
24)=	23	3	68	17	24	15	57	10	0	0	0	0	0	0	0	0
25)=	15	9	122	12	31	18	49	14	77	12	107	13	0	0	0	0
26)=	17	49	41	12	67	12	80	13	109	21	130	12	154	12	6	13
27)=	23	52	35	12	72	12	20	15	0	0	0	0	0	0	0	0
28)=	22	194	42	12	29	13	0	0	0	0	0	0	0	0	0	0
29)=	22	1990	36	12	23	13	0	0	0	0	0	0	0	0	0	0

0																
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
30)=	30	17	13	0	0	20	0	0	0	0	0	25	0	700	0	0
31)=	30	18	0	0	0	0	0	0	0	0	0	25	0	700	0	0
32)=	30	35	0	32	80	0	25	0	0	0	0	200	0	1000	0	0
33)=	30	91	0	94	49	0	26	0	0	0	0	200	0	730	0	0
34)=	30	92	98	0	0	24	0	0	0	0	0	200	0	790	0	0
35)=	30	94	0	91	84	0	23	0	0	0	0	200	0	640	0	0
36)=	30	96	93	0	0	21	0	0	0	0	0	40	0	750	0	0
37)=	30	351	0	0	0	0	0	0	0	0	0	200	0	1000	0	0
38)=	30	495	493	0	0	16	0	0	0	0	0	130	0	680	0	0
39)=	30	521	527	0	0	19	0	0	0	0	0	130	0	800	0	0
40)=	30	522	0	0	0	0	0	0	0	0	0	130	0	800	0	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
41)=	31	11	1	2	5	3	0	5	5	1	0	270	0	2029	0	0
42)=	31	12	0	0	0	0	0	0	0	0	0	270	0	0	0	0
43)=	31	13	1	2	5	3	0	5	5	1	0	390	0	2055	0	0
44)=	31	14	0	0	0	0	0	0	0	0	0	390	0	0	0	0
45)=	31	15	1	1	7	2	0	4	7	5	0	200	0	1791	0	0
46)=	31	16	0	0	0	0	0	0	0	0	0	200	0	0	0	0
47)=	31	17	1	2	5	3	0	5	5	1	0	25	0	1856	0	0
48)=	31	18	0	0	0	0	0	0	0	0	0	25	0	0	0	0
49)=	31	31	3	2	7	3	0	0	0	0	0	200	0	1700	0	0
50)=	31	32	3	2	7	3	0	0	0	0	0	200	0	2100	0	0
51)=	31	33	3	1	7	2	0	0	0	0	0	390	0	3600	0	0
52)=	31	34	3	1	7	2	0	0	0	0	0	200	0	1700	0	0
53)=	31	35	3	2	7	1	0	0	0	0	0	200	0	1800	0	0
54)=	31	37	3	1	7	2	0	0	0	0	0	406	0	3300	0	0
55)=	31	90	0	0	0	0	0	0	0	0	0	200	0	0	0	0
56)=	31	91	9	3	7	4	2	5	6	1	2	200	0	1809	0	0
57)=	31	92	9	1	5	2	2	4	5	5	2	200	0	1773	0	0
58)=	31	93	9	1	5	2	0	4	5	5	0	200	0	1936	0	0
59)=	31	94	9	3	7	4	2	5	6	1	2	200	0	1722	0	0
60)=	31	96	9	1	5	2	2	4	5	5	2	40	0	1644	0	0
61)=	31	98	9	1	5	2	0	4	5	5	0	200	0	1904	0	0
62)=	31	99	0	0	0	0	0	0	0	0	0	200	0	0	0	0
63)=	31	331	0	0	0	0	0	0	0	0	0	390	0	0	0	0
64)=	31	341	0	0	0	0	0	0	0	0	0	200	0	0	0	0
65)=	31	351	0	0	0	0	0	0	0	0	0	200	0	0	0	0
66)=	31	371	0	0	0	0	0	0	0	0	0	406	0	0	0	0
67)=	31	491	49	3	6	4	0	7	6	1	0	200	0	5758	0	0

68)=	31	492	0	0	0	0	0	0	0	0	200	0	0	0	0
69)=	31	493	49	1	5	2	0	5	5	6	200	0	3938	0	0
70)=	31	494	0	0	0	0	0	0	0	0	200	0	0	0	0
71)=	31	495	49	1	5	3	0	5	5	7	130	0	1860	0	0
72)=	31	497	49	1	5	3	0	5	5	7	130	0	3990	0	0
73)=	31	498	0	0	0	0	0	0	0	0	130	0	0	0	0
74)=	31	521	52	1	5	2	2	0	0	0	130	0	1862	0	0
75)=	31	522	0	0	0	0	0	0	0	0	130	0	0	0	0
76)=	31	523	52	1	5	2	0	0	0	0	130	0	1825	0	0
77)=	31	524	0	0	0	0	0	0	0	0	130	0	0	0	0
78)=	31	525	52	2	5	3	0	0	0	0	340	0	5973	0	0
79)=	31	526	0	0	0	0	0	0	0	0	340	0	0	0	0
80)=	31	527	52	1	5	2	0	0	0	0	200	0	3740	0	0
81)=	31	528	0	0	0	0	0	0	0	0	200	0	0	0	0
82)=	31	1941	194	1	5	2	0	0	0	0	16	0	3970	0	0
83)=	31	1942	0	0	0	0	0	0	0	0	16	0	0	0	0
84)=	31	1991	1990	1	5	2	0	0	0	0	14	0	3970	0	0
85)=	31	1992	0	0	0	0	0	0	0	0	14	0	0	0	0

0

LINK CARDS: FLOW DATA

CARD NO.	CARD TYPE	LINK NO.	TOTAL FLOW	UNIFORM FLOW	ENTRY 1			ENTRY 2			ENTRY 3			ENTRY 4		
					LINK NO.	FLOW	CRUISE SPEED	LINK NO.	FLOW	CRUISE SPEED	LINK NO.	FLOW	CRUISE SPEED	LINK NO.	FLOW	CRUISE SPEED
86)=	32	11	984	0	491	888	40	493	62	40	495	176	40	0	0	0
87)=	32	12	10	0	492	10	3000	0	0	0	0	0	0	0	0	0
88)=	32	13	1367	0	34	960	40	35	131	40	0	0	0	0	0	0
89)=	32	14	12	0	331	12	3000	0	0	0	0	0	0	0	0	0
90)=	32	15	170	0	0	0	40	0	0	0	0	0	0	0	0	0
91)=	32	16	28	0	0	0	3000	0	0	0	0	0	0	0	0	0
92)=	32	17	27	0	491	888	40	493	62	40	495	176	40	0	0	0
93)=	32	18	16	0	492	16	3000	0	0	0	0	0	0	0	0	0
94)=	32	31	58	0	0	0	3000	0	0	0	0	0	0	0	0	0
95)=	32	32	795	0	0	0	40	0	0	0	0	0	0	0	0	0
96)=	32	33	576	0	0	0	40	0	0	0	0	0	0	0	0	0
97)=	32	34	652	0	0	0	40	0	0	0	0	0	0	0	0	0
98)=	32	35	540	0	0	0	40	0	0	0	0	0	0	0	0	0
99)=	32	37	1177	0	11	984	3000	15	150	3000	0	0	0	0	0	0
100)=	32	90	24	0	524	24	3000	0	0	0	0	0	0	0	0	0
101)=	32	91	43	0	0	0	40	0	0	0	0	0	0	0	0	0
102)=	32	92	34	0	523	295	40	525	108	40	0	0	0	0	0	0
103)=	32	93	851	0	523	295	40	525	108	40	0	0	0	0	0	0
104)=	32	94	269	0	0	0	40	0	0	0	0	0	0	0	0	0
105)=	32	96	108	0	0	0	40	0	0	0	0	0	0	0	0	0
106)=	32	98	869	0	0	0	40	0	0	0	0	0	0	0	0	0
107)=	32	99	24	0	0	0	3000	0	0	0	0	0	0	0	0	0
108)=	32	331	12	0	0	0	3000	0	0	0	0	0	0	0	0	0
109)=	32	341	10	0	0	0	3000	0	0	0	0	0	0	0	0	0
110)=	32	351	68	0	0	0	3000	0	0	0	0	0	0	0	0	0
111)=	32	371	12	0	16	12	3000	0	0	0	0	0	0	0	0	0
112)=	32	491	1277	0	0	0	40	0	0	0	0	0	0	0	0	0
113)=	32	492	36	0	0	0	3000	0	0	0	0	0	0	0	0	0
114)=	32	493	536	0	0	0	40	0	0	0	0	0	0	0	0	0
115)=	32	494	54	0	0	0	3000	0	0	0	0	0	0	0	0	0
116)=	32	495	176	0	527	176	40	0	0	0	0	0	0	0	0	0
117)=	32	497	598	0	525	116	40	527	487	40	0	0	0	0	0	0
118)=	32	498	24	0	528	24	3000	0	0	0	0	0	0	0	0	0
119)=	32	521	113	0	493	113	40	0	0	0	0	0	0	0	0	0
120)=	32	522	30	0	494	30	3000	0	0	0	0	0	0	0	0	0
121)=	32	523	532	0	0	0	0	0	0	0	0	0	0	0	0	0
122)=	32	524	24	0	494	24	3000	0	0	0	0	0	0	0	0	0

*** DISTANCE > 0 BUT CRUISE TIME/SPEED=0 FOR THIS LINK.THUS CRUISE TIME BASED ON DISTANCE GIVEN AND DEFAULT SPEED OF 43 KM/H

123)=	32	525	1359	0	13	1108	40	15	20	40	0	0	0	0	0	0
124)=	32	526	16	0	16	16	3000	0	0	0	0	0	0	0	0	0
125)=	32	527	898	0	91	17	40	94	64	40	98	842	40	0	0	0
126)=	32	528	24	0	99	24	3000	0	0	0	0	0	0	0	0	0
127)=	32	1941	824	0	491	226	40	497	598	40	0	0	0	0	0	0
128)=	32	1942	44	0	492	20	3000	498	24	3000	0	0	0	0	0	0
129)=	32	1991	1316	0	521	54	40	525	1028	40	527	235	40	0	0	0
130)=	32	1992	46	0	522	30	3000	526	16	3000	528	10	3000	0	0	0

0 LINK CARDS : FLARE SATURATION FLOW DATA

CARD	LINK	SAT.	CAPAC	SAT.	CAPAC	SAT.	CAPAC
TYPE	NO.	FLOW	VEH.	FLOW	VEH.	FLOW	VEH.
131)=	33	13	1665	6	0	0	0

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

0 160 SECOND CYCLE 40 STEPS

0INITIAL SETTINGS

- (SECONDS)

0	NODE	NUMBER	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE	STAGE
	NO	OF STAGES	1	2	3	4	5	6	7

1	5	80	95	139	0	15			
3	3	68	100	126	148	20	46		
9	5	122	152	10	60	90			
49	7	41	60	72	105	126	154	6	
52	3	35	71	100	115	151	20		
194	2	42	109	122	29				
1990	2	36	103	116	23				

0 LINK	FLOW	SAT	DEGREE	MEAN	TIME	-----DELAY-----	-----STOPS-----	-----QUEUE-----	PERFORMANCE	EXIT	GREEN TIMES
NUMBER	INTO	FLOW	OF	PER	PCU	UNIFORM RANDOM+ COST	MEAN COST	MEAN AVERAGE	INDEX.	NOOE	START START
	LINK		SAT	CRUISE	DELAY	(U+R+Q=MEAN Q) DELAY	STOPS OF	MAX. AVERAGE	WEIGHTED SUM		END END
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)	(%) (\$/H)	(PCU) (PCU)	OF () VALUES		1ST 2ND
									(\$/H)		(SECONDS)
11	942<	2029S	74	24	10	1.1 + 1.4 (27.9)	54 (9.1)	18	37.0	1	100 139 20 80
12BL	10	11L	74	32	9	0.0 + 0.0 (0.3)	55 (0.1)	18	0.3	1	100 139 20 80
13	1167<	2482Sf	75	35	10	1.7 + 1.5 (35.5)	38 (8.9)	18	44.4	1	100 139 20 80
14BL	12	13L	75	47	8	0.0 + 0.0 (0.3)	39 (0.0)	18	0.4	1	100 139 20 80
15	170	1791S	98	18	149	1.7 + 5.3 (77.1)	196 (5.7)	11	82.9	1	87 95 7 15
16BL	28	15L	98	24	149	0.3 + 0.9 (12.7)	196 (0.5)	11	13.2	1	87 95 7 15
17	25	1856S	19	2	23	0.1 + 0.1 (1.7)	92 (0.4)	1	2.2	1	100 139 20 80
18BL	16	17L	19	3	22	0.1 + 0.0 (1.1)	107 (0.2)	1	1.2	1	100 139 20 80
31BL	58	1700	14	24	28	0.4 + 0.1 (5.0)	77 (0.4)	1	5.4	3	107 126 27 46
32	795	2100	151	18	703	18.9 +136.5 (999.9)	262 (35.7)	173	1744.1	3	107 126 27 46
33	576	3600S	50	35	25	3.5 + 0.5 (43.7)	78 (7.7)	10	51.4	3	75 100 155 20
34	652	1700S	120	18	372	10.6 + 56.8 (741.3)	255 (28.5)	80	769.9	3	75 100 155 20
35	540	1800S	78	18	28	2.6 + 1.5 (45.5)	101 (9.4)	13	54.9	3	107 148 27 68
37BL	1133<	3300S	107	49	170	10.8 + 42.6 (588.0)	198 (22.5)	73	610.6	3	75 100 155 20
90BL	24	93L	134	24	540	0.5 + 3.1 (39.6)	253 (0.6)	155	40.2	9	127 152 65 90
91	43	1809	11	18	18	0.2 + 0.1 (2.3)	64 (0.5)	1	2.8	9	17 62 96 124
92	31	1773	24	18	37	0.2 + 0.2 (3.5)	85 (0.5)	1	4.0	9	127 154 65 92
93	818<	1936S	134	18	542	17.8 +105.2 (999.9)	254 (37.0)	155	1390.8	9	127 152 65 90
94	269	1722	43	18	20	1.1 + 0.4 (16.4)	73 (3.4)	5	19.8	9	17 62 96 124
96	108	1644	82	4	97	1.0 + 1.9 (32.0)	159 (2.9)	5	34.9	9	127 154 65 92
98	869	1904S	144	18	655	23.1 +135.0 (999.9)	263 (39.2)	191	1778.4	9	127 152 65 90
99BL	24	98L	144	24	655	0.6 + 3.7 (48.0)	263 (0.6)	191	48.6	9	127 152 65 90
331BL	12	33L	50	47	25	0.1 + 0.0 (0.9)	78 (0.1)	10	1.0	3	75 100 155 20
341BL	10	34L	120	24	372	0.2 + 0.9 (11.4)	255 (0.2)	80	11.6	3	75 100 155 20
351BL	68	35L	78	24	28	0.3 + 0.2 (5.7)	101 (0.7)	13	6.4	3	107 148 27 68
371BL	12	37L	107	49	165	0.1 + 0.5 (6.0)	214 (0.2)	73	6.3	3	75 100 155 20

491	1277	5758S	63	18	25	8.1 + 0.8 (98.4)	80 (17.4)	31	115.9	49	78 105 12 41
492BL	36	491L	63	24	25	0.2 + 0.0 (2.8)	80 (0.3)	31	3.1	49	78 105 12 41
493	536	3938S	61	18	32	4.1 + 0.7 (53.2)	90 (8.3)	14	61.5	49	46 60 131 154
494BL	54	493L	61	24	32	0.4 + 0.1 (5.4)	90 (0.5)	14	5.8	49	46 60 131 154
495	127<	1860	36	12	17	0.3 + 0.3 (6.6)	67 (2.0)	3	8.6	49	46 72 131 6
497	445<	3990S	29	12	10	1.0 + 0.2 (13.6)	24 (2.4)	5	16.0	49	46 72 131 6
498BL	17	497L	29	16	3	0.0 + 0.0 (0.1)	4 (0.0)	5	0.1	49	46 72 131 6
521	113	1862S	59	12	25	0.2 + 0.6 (8.7)	58 (1.1)	2	9.9	52	40 73 120 153
522BL	30	521L	59	16	30	0.1 + 0.2 (2.8)	68 (0.2)	2	3.0	52	40 73 120 153
523	532	1825S	76	11	31	3.0 + 1.5 (50.0)	91 (9.6)	12	59.6	52	40 71 120 151
524BL	24	523L	76	16	25	0.1 + 0.1 (1.9)	47 (0.1)	12	2.0	52	40 71 120 151
525	1164<	5973S	63	31	19	5.4 + 0.8 (68.4)	73 (17.1)	26	85.6	52	76 100 156 20
526BL	16	525L	63	41	32	0.1 + 0.0 (1.6)	103 (0.2)	26	1.7	52	76 100 156 20
527	646<	3740S	44	18	29	4.9 + 0.4 (57.8)	64 (9.8)	14	67.7	52	40 71 120 151
528BL	17	527L	44	24	32	0.1 + 0.0 (1.7)	67 (0.2)	14	1.8	52	40 71 120 151

0 160 SECOND CYCLE 40 STEPS

LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE	DEGREE OF SAT	DELA (SEC)	DELA (SEC)	UNIFORM DELAY (PCU-H/H)	RANDOM+ OVERSAT OF (PCU-H/H)	COST OF STOPS (\$/H)	MEAN STOPS /PCU (%)	COST OF STOPS (\$/H)	MEAN MAX. (PCU)	AVERAGE EXCESS (PCU)	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES (\$/H)	EXIT NODE	GREEN TIMES START END 1ST 2ND (SECONDS)
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1941	670<	3970S	23	1	1	0.1 + 0.1 (2.6)	4 (0.6)	4	3.2	194	47 109 127 29
1942BL	37	1941L	23	2	2	0.0 + 0.0 (0.2)	6 (0.0)	4	0.2	194	47 109 127 29
1991	1103<	3970S	37	1	1	0.2 + 0.3 (4.9)	9 (2.0)	18	6.9	1990	41 103 121 23
1992BL	44	1991L	37	2	1	0.0 + 0.0 (0.1)	3 (0.0)	18	0.1	1990	41 103 121 23

*** f - average saturation flow for flared link ***

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF STOPS	TOTAL COST OF STOPS	PENALTY FOR EXCESS QUEUES	TOTAL PERFORMANCE INDEX	TOTALS BUSES OTHER
(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	
0 3670.7	726.3	5.1	125.5	504.3	(6928.1) + (287.1)	+ (0.0)	= 7215.2		
0 577.3	86.1	6.7	14.5	52.3	(735.5) + (27.6)	+ (0.0)	= 763.1		
0 3093.4	640.2	4.8	111.0	452.0	(6192.6) + (259.5)	+ (0.0)	= 6452.1		

OFUEL CONSUMPTION PREDICTIONS	CRUISE LITRES PER HOUR	DELA LITRES PER HOUR	STOPS LITRES PER HOUR	TOTALS LITRES PER HOUR
0	206.4	+ 724.3	+ 170.1	= 1100.7

NO. OF ENTRIES TO SUBPT = 1
NO. OF LINKS RECALCULATED= 57

0 160 SECOND CYCLE 40 STEPS

0INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24
- (SECONDS)

1	5	80	95	139	0	15	
3	3	68	100	126	148	20	46
9	5	10	40	58	108	138	
49	7	41	60	72	105	126	154
52	3	35	71	100	115	151	20
194	2	42	109	122	29		
1990	2	36	103	116	23		

TOTAL DISTANCE TRAVELLED	TOTAL TIME SPENT	MEAN JOURNEY SPEED	TOTAL UNIFORM DELAY	TOTAL RANDOM+ OVERSAT DELAY	TOTAL COST OF STOPS	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)

0	3670.7	721.6	5.1	120.8	504.3	(6876.7) + (	283.2)	+	(	0.0)	=	7159.9	TOTALS
0	577.3	86.3	6.7	14.7	52.3	(737.7) + (	27.6)	+	(	0.0)	=	765.3	BUSES
0	3093.4	635.3	4.9	106.1	452.0	(6139.1) + (	255.6)	+	(	0.0)	=	6394.7	OTHER

0
 NO. OF ENTRIES TO SUBPT = 16
 NO. OF LINKS RECALCULATED= 327

0 160 SECOND CYCLE 40 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64
 - (SECONDS)

1	5	80	95	139	0	15							
3	3	68	100	126	148	20	46						
9	5	74	104	122	12	42							
49	7	41	60	72	105	126	154	6					
52	3	35	71	100	115	151	20						
194	2	42	109	122	29								
1990	2	36	103	116	23								
0	TOTAL	TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL			
	DISTANCE	TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE			
	TRAVELLED	SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX			
						DELAY	DELAY	STOPS	QUEUES				
	(PCU-KM/H)	(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)			
0	3670.7	715.2	5.1		114.4	504.3	(6805.9) + (	284.3)	+	(	0.0)	=	7090.2
0	577.3	85.8	6.7		14.2	52.3	(732.5) + (	27.5)	+	(	0.0)	=	760.0
0	3093.4	629.3	4.9		100.1	452.0	(6073.4) + (	256.7)	+	(	0.0)	=	6330.2
0													TOTALS
													BUSES
													OTHER

0
 NO. OF ENTRIES TO SUBPT = 15
 NO. OF LINKS RECALCULATED= 313

0 160 SECOND CYCLE 40 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1
 - (SECONDS)

1	5	74	95	139	0	16							
3	3	61	96	130	141	16	50						
9	5	56	123	141	9	41							
49	7	41	60	72	105	126	154	6					
52	3	35	71	100	115	151	20						
194	2	42	109	122	29								
1990	2	36	103	116	23								
0	TOTAL	TOTAL	MEAN		TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL			
	DISTANCE	TIME	JOURNEY		UNIFORM	RANDOM+	COST	COST	FOR	PERFORMANCE			
	TRAVELLED	SPENT	SPEED		DELAY	OVERSAT	OF	OF	EXCESS	INDEX			
						DELAY	DELAY	STOPS	QUEUES				
	(PCU-KM/H)	(PCU-H/H)	(KM/H)		(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)			
0	3670.7	286.0	12.8		80.0	109.5	(2084.8) + (	239.6)	+	(	0.0)	=	2324.4
0	577.3	48.4	11.9		11.4	17.8	(320.7) + (	20.6)	+	(	0.0)	=	341.3
0	3093.4	237.6	13.0		68.6	91.7	(1764.1) + (	219.0)	+	(	0.0)	=	1983.1
0													TOTALS
													BUSES
													OTHER

0
 NO. OF ENTRIES TO SUBPT = 112
 NO. OF LINKS RECALCULATED= 1902

0 160 SECOND CYCLE 40 STEPS
 0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24
 - (SECONDS)

1	5	74	95	139	0	16		
3	3	61	96	130	141	16	50	
9	5	56	123	141	9	41		

	49	7	41	60	72	105	126	124	
	52	3	35	71	100	115	151	20	
	194	2	42	109	122	29			
1990	2	2	36	103	116	23			
0 TOTAL									
DISTANCE									
TRAVELLED									
(PCU-KM/H)									
0 3670.7									
0 577.3									
0 3093.4									
0									

NO. OF ENTRIES TO SUBPT = 17
NO. OF LINKS RECALCULATED= 405

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64
- (SECONDS)

	1	5	74	95	139	0	16		
	3	3	61	96	130	141	16	50	
	9	5	56	123	141	9	41		
	49	7	41	60	72	105	126	154	6
	52	3	35	71	100	115	151	20	
	194	2	42	109	122	29			
1990	2	2	36	103	116	23			
0 TOTAL									
DISTANCE									
TRAVELLED									
(PCU-KM/H)									
0 3670.7									
0 577.3									
0 3093.4									
0									

NO. OF ENTRIES TO SUBPT = 16
NO. OF LINKS RECALCULATED= 421

0 160 SECOND CYCLE 40 STEPS
0 INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64 1
- (SECONDS)

	1	5	76	97	141	2	18		
	3	3	72	107	141	152	27	61	
	9	5	56	123	141	9	41		
	49	7	41	60	72	105	126	154	6
	52	3	36	72	101	116	152	21	
	194	2	42	109	122	29			
1990	2	2	34	101	114	21			
0 TOTAL									
DISTANCE									
TRAVELLED									
(PCU-KM/H)									
0 3670.7									
0 577.3									
0 3093.4									
0									

NO. OF ENTRIES TO SUBPT = 28

0 160 SECOND CYCLE 40 STEPS
INTERMEDIATE SETTINGS - INCREMENTS SO FAR :- 24 64 -1 24 64 1 -1
- (SECONDS)

0 160 SECOND CYCLE 40 STEPS
FINAL SETTINGS OBTAINED WITH INCREMENTS :- 24 64 -1 24 64 1 -1 1
- (SECONDS)

- (SECONDS)														
0	NODE NO	NUMBER OF STAGES	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7					
	1	5	78	97	141	2	18							
	3	3	72	108	141	152	28	61						
	9	5	58	124	142	8	41							
	49	7	40	67	80	108	129	153	5					
	52	3	36	72	101	116	152	21						
	194	2	42	109	122	29								
	1990	2	34	101	114	21								
0 LINK NUMBER	FLOW INTO LINK	SAT FLOW	DEGREE OF SAT	MEAN TIMES PER PCU CRUISE	MEAN TIMES PER PCU CRUISE	-----DELAY----- UNIFORM RANDOM+ COST (U+R+O=MEAN Q) DELAY	-----STOPS----- MEAN COST STOPS OF STOPS	-----QUEUE----- MEAN AVERAGE MAX. EXCESS	PERFORMANCE INDEX. WEIGHTED SUM OF () VALUES	EXIT NODE	GREEN TIMES START START END END			
	(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)	(PCU-H/H)	(\$/H)	(PCU)	(\$/H)		1ST	2ND	(SECONDS)	
11	985	2029S	82	24	12	1.2 + 2.2	(37.0)	51	(8.6)	27	45.6	1	102 141 23 78	
12BL	10	11L	82	32	11	0.0 + 0.0	(0.3)	45	(0.0)	27	0.4	1	102 141 23 78	
13	1322<	2505Sf	89	35	20	3.7 + 3.7	(81.5)	72	(16.9)	40	98.4	1	102 141 23 78	
14BL	12	13L	89	47	18	0.0 + 0.0	(0.7)	68	(0.1)	40	0.8	1	102 141 23 78	
15	170	1791S	77	18	62	1.6 + 1.4	(32.0)	122	(3.6)	6	35.6	1	85 97 9 18	
16BL	28	15L	77	24	62	0.3 + 0.2	(5.3)	122	(0.3)	6	5.6	1	85 97 9 18	
17	26	1856S	27	2	34	0.1 + 0.1	(2.7)	116	(0.5)	1	3.2	1	102 141 23 78	
18BL	16	17L	27	3	33	0.1 + 0.1	(1.6)	131	(0.2)	1	1.8	1	102 141 23 78	
31BL	58	1700	10	24	22	0.3 + 0.1	(3.8)	67	(0.4)	1	4.2	3	115 141 35 61	
32	795	2100	112	18	257	9.5 + 47.3	(624.8)	237	(32.3)	71	657.0	3	115 141 35 61	
33	576	3600S	44	35	21	3.0 + 0.4	(37.0)	72	(7.1)	10	44.1	3	79 108 159 28	
34	652	1700S	104	18	143	5.8 + 20.1	(284.2)	195	(21.8)	36	306.1	3	79 108 159 28	
35	540	1800S	95	18	64	3.3 + 6.2	(104.9)	136	(12.6)	21	117.4	3	115 152 35 72	
37BL	1178	3300S	96	49	44	5.4 + 9.0	(158.5)	118	(13.4)	36	171.9	3	79 108 159 28	
90BL	24	93L	79	24	20	0.1 + 0.1	(1.5)	91	(0.2)	20	1.7	9	63 124 13 41	
91	43	1809	29	18	47	0.4 + 0.2	(6.2)	115	(0.9)	1	7.0	9	149 10 47 60	

92	32	1773	12	18	16	0.1 + 0.1 (1.6)	47 (0.5)	1	1.0	9	63 124 13 41
93	843	1936S	79	18	26	4.3 + 1.8 (67.1)	87 (12.7)	20	79.8	9	149 10 47 60
94	269	1722	91	18	87	2.7 + 3.8 (71.5)	147 (6.8)	12	78.3	9	63 126 13 43
96	108	1644	38	4	21	0.3 + 0.3 (7.1)	76 (1.4)	2	8.5	9	63 124 13 41
98	869	1904S	82	18	29	4.8 + 2.2 (77.4)	88 (13.1)	22	90.5	9	63 124 13 41
99BL	24	98L	82	24	29	0.1 + 0.1 (2.1)	88 (0.2)	22	2.3	9	63 124 13 41
331BL	12	33L	44	47	21	0.1 + 0.0 (0.8)	72 (0.1)	10	0.9	3	79 108 159 28
341BL	10	34L	104	24	143	0.1 + 0.3 (4.4)	195 (0.2)	36	4.5	3	79 108 159 28
351BL	68	35L	95	24	64	0.4 + 0.8 (13.2)	136 (0.9)	21	14.1	3	115 152 35 72
371BL	12	37L	96	49	54	0.1 + 0.1 (2.0)	130 (0.2)	36	2.1	3	79 108 159 28
491	1277	5758S	69	18	27	8.4 + 1.1 (104.6)	84 (18.5)	29	123.1	49	86 108 11 40
492BL	36	491L	69	24	27	0.2 + 0.0 (2.9)	84 (0.3)	29	3.2	49	86 108 11 40
493	536	3938S	56	18	29	3.8 + 0.6 (48.1)	84 (7.7)	13	55.8	49	45 67 134 153
494BL	54	493L	56	24	29	0.4 + 0.1 (4.8)	84 (0.4)	13	5.3	49	45 67 134 153
495	176	1860	46	12	18	0.4 + 0.4 (9.4)	83 (2.5)	5	11.9	49	45 80 134 5
497	593	3990S	36	12	9	1.3 + 0.3 (16.8)	32 (3.3)	7	20.1	49	45 80 134 5
498BL	24	497L	36	16	3	0.0 + 0.0 (0.2)	9 (0.0)	7	0.3	49	45 80 134 5
521	113	1862S	74	12	45	0.3 + 1.1 (15.5)	114 (2.2)	5	17.7	52	41 74 121 154
522BL	30	521L	74	16	52	0.1 + 0.3 (4.8)	125 (0.4)	5	5.1	52	41 74 121 154
523	532	1825S	76	11	31	3.1 + 1.5 (50.1)	91 (9.6)	12	59.6	52	41 72 121 152
524BL	24	523L	76	16	28	0.1 + 0.1 (2.0)	54 (0.1)	12	2.2	52	41 72 121 152
525	1314<	5973S	71	31	20	6.2 + 1.2 (81.9)	83 (19.3)	30	101.2	52	77 101 157 21
526BL	16	525L	71	41	34	0.1 + 0.0 (1.7)	104 (0.2)	30	1.8	52	77 101 157 21
527	898	3740S	62	18	20	4.2 + 0.8 (54.3)	78 (12.0)	23	66.3	52	41 72 121 152
528BL	24	527L	62	24	18	0.1 + 0.0 (1.3)	73 (0.2)	23	1.5	52	41 72 121 152

0	160	SECOND	CYCLE	40	STEPS	-----DELAY-----			----STOPS----		----QUEUE----		PERFORMANCE	EXIT	GREEN TIMES			
0	LINK	FLOW	SAT	DEGREE	MEAN	UNIFORM	RANDOM	COST	MEAN	COST	MEAN	AVERAGE	INDEX.	NODE	START	START	END	END
	NUMBER	INTO	FLOW	OF	PER	(U+R+O=MEAN Q)	OVERSAT	OF	STOPS	OF	MAX.	EXCESS	WEIGHTED SUM		1ST	2ND		
		LINK		SAT	PCU	(PCU-H/H)	(\$/H)	(\$/H)	(%)	(\$/H)	(PCU)	(PCU)	OF () VALUES		(SECONDS)			
		(PCU/H)	(PCU/H)	(%)	(SEC)	(SEC)												
	1941	818	3970S	28	1	1	0.1 + 0.2 (2.9)	5 (0.7)	2		2		3.6	194	47	109	127	29
	1942BL	44	1941L	28	2	1	0.0 + 0.0 (0.2)	5 (0.0)	2		2		0.2	194	47	109	127	29
	1991	1283<	3970S	42	1	2	0.3 + 0.4 (6.7)	13 (3.0)	23	+	23	+	9.7	1990	39	101	119	21
	1992BL	46	1991L	42	2	1	0.0 + 0.0 (0.2)	4 (0.0)	23	+	23	+	0.2	1990	39	101	119	21

*** f - average saturation flow for flared link ***																		
0	TOTAL	TOTAL	MEAN	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	PENALTY	TOTAL								
	DISTANCE	TIME	JOURNEY	UNIFORM	RANDOM	COST	COST	COST	FOR	PERFORMANCE								
	TRAVELLED	SPENT	SPEED	DELAY	OVERSAT	OF	OF	OF	EXCESS	INDEX								
	(PCU-KM/H)	(PCU-H/H)	(KM/H)	(PCU-H/H)	(PCU-H/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)	(\$/H)								
0	3670.7	281.7	13.0	76.8	108.4	(2037.4) + (235.0)	+	(0.0)	=	2272.3	TOTALS							
0	577.3	38.5	15.0	8.1	11.2	(212.3) + (17.8)	+	(0.0)	=	230.0	BUSES							
0	3093.4	243.1	12.7	68.7	97.2	(1825.1) + (217.2)	+	(0.0)	=	2042.3	OTHER							

0	*****				*****				*****				*****				*****			
0	CRUISE				DELAY				STOPS				TOTALS							
	LITRES PER HOUR				LITRES PER HOUR				LITRES PER HOUR				LITRES PER HOUR							
	206.4				+ 213.0				+ 139.2				= 558.5							

OFUEL CONSUMPTION PREDICTIONS

0
NO. OF ENTRIES TO SUBPT = 18
NO. OF LINKS RECALCULATED= 445

PROGRAM TRANSYT FINISHED

Appendix B2

LINSIG runs

- Worst Case 90 second cycle
- Worst Case 100 second cycle

Worst case – 90 second cycle

User	Symonds Group Ltd. - London	Project	Lots Road				Page 1
Location		File	C_L AM 90 (sc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future AM (sc) 90 12/02/03			Controller	Generic	Appvd	

Parameters Selected

Parameters Selected	
Flow Group	AM Peak
Flow Group Period	08:00 to 09:00
Phase Minimum Type	Street
CycleTime	90
Flow Factor	1.00
Sat Flows Used	RR67

Stage Results

Stage Timings			
Stage Sequence	1	2	3
Stage Duration	12	47	14
Stage Change Point	0	17	69

User	Symonds Group Ltd. - London	Project	Lots Road				Page 2
Location		File	C_L AM 90 (sc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future AM (sc) 90 12/02/03			Controller	Generic	Appvd	

Link Results

Link Results												
Link Ref	Link Name	Link Type	Full Phs	Arw Phs	Tot Grn	Dem Flow	Satn Flow	Cap pcu	Deg Sat%	Del s/pcu	TDel pcuh	Que' pcu
1/1	Cheyne Walk (westbound) Left Ahead	U	B		47	1235	2505	1336	92.4	34.7	11.9	19.3
2/1	Lots Road Right Left	U	A		12	228	1791	259	88.1	81.3	5.1	7.6
3/1	Crem Road (eastbound) Ahead	U	C		47	831	1915	1021	81.4	25.4	5.9	10.8
3/2	Crem Road (eastbound) Right	O	D		47	45	166	89	50.7	34.3	0.4	0.7
Cycle Time 90 s				PRC -2.7 %				Total Delay 23.3 PCUh				

Opposed Link Results

Opposed Movement Detail				
Link Ref	Link Name	Arr Grn	Gaps /cyc	Ign /cyc
3/2	Crem Road (eastbound) Right	-	0.2	2.0

User	Symonds Group Ltd. - London	Project	Lots Road				Page 1
Location		File	C_L PM 90 (sc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future PM (sc) 90 12/02/03			Controller	Generic	Appvd	

Parameters Selected

Parameters Selected	
Flow Group	PM Peak
Flow Group Period	17:00 to 18:00
Phase Minimum Type	Street
CycleTime	90
Flow Factor	1.00
Sat Flows Used	RR67

Stage Results

Stage Timings			
Stage Sequence	1	2	3
Stage Duration	9	50	14
Stage Change Point	0	14	69

User	Symonds Group Ltd. - London	Project	Lots Road				Page 2
Location		File	C_L PM 90 (sc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future PM (sc) 90 12/02/03			Controller	Generic	Appvd	

Link Results

Link Results												
Link Ref	Link Name	Link Type	Full Phs	Arw Phs	Tot Grn	Dem Flow	Satn Flow	Cap pcu	Deg Sat%	Del s/pcu	TDel pcuh	Que' pcu
1/1	Cheyne Walk (westbound) Left Ahead	U	B		50	1356	2479	1405	96.5	44.6	16.8	24.3
2/1	Lots Road Right Left	U	A		9	183	1791	199	92.0	109.9	5.6	7.6
3/1	Crem Road (eastbound) Ahead	U	C		50	984	1915	1085	90.7	32.7	8.9	14.4
3/2	Crem Road (eastbound) Right	O	D		50	41	141	80	51.3	35.5	0.4	0.6
Cycle Time 90 s				PRC -7.3 %				Total Delay 31.7 PCUh				

Opposed Link Results

Opposed Movement Detail				
Link Ref	Link Name	Arr Grn	Gaps /cyc	Ign /cyc
3/2	Crem Road (eastbound) Right	-	0.0	2.0

User	Symonds Group Ltd. - London	Project	Lots Road				Page 1
Location		File	C_L (wc) AM 90 (sc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future AM (wc)(sc) 90 10/02/03			Controller	Generic	Appvd	

Parameters Selected

Parameters Selected	
Flow Group	AM Peak
Flow Group Period	08:00 to 09:00
Phase Minimum Type	Street
CycleTime	90
Flow Factor	1.00
Sat Flows Used	RR67

Stage Results

Stage Timings			
Stage Sequence	1	2	3
Stage Duration	12	47	14
Stage Change Point	0	17	69

User	Symonds Group Ltd. - London	Project	Lots Road				Page 2
Location		File	C_L (wc) AM 90 (sc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future AM (wc)(sc) 90 10/02/03			Controller	Generic	Appvd	

Link Results

Link Results												
Link Ref	Link Name	Link Type	Full Phs	Arw Phs	Tot Gm	Dem Flow	Satn Flow	Cap pcu	Deg Sat%	Del s/pcu	TDel pcuh	Que' pcu
1/1	Cheyne Walk (westbound) Left Ahead	U	B		47	1248	2505	1336	93.4	36.8	12.8	20.2
2/1	Lots Road Right Left	U	A		12	243	1791	259	93.9	105.5	7.1	9.8
3/1	Crem Road (eastbound) Ahead	U	C		47	841	1915	1021	82.3	26.0	6.1	11.1
3/2	Crem Road (eastbound) Right	O	D		47	47	162	87	54.3	38.3	0.5	0.8
Cycle Time 90 s				PRC -4.4 %				Total Delay 26.5 PCUh				

Opposed Link Results

Opposed Movement Detail				
Link Ref	Link Name	Arr Gm	Gaps /cyc	Ign /cyc
3/2	Crem Road (eastbound) Right	-	0.2	2.0

User	Symonds Group Ltd. - London	Project	Lots Road				Page 1
Location		File	C_L (wc) PM 90 (sc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future PM (wc)(sc) 90 06/01/03			Controller	Generic	Appvd	

Parameters Selected

Parameters Selected	
Flow Group	PM Peak
Flow Group Period	17:00 to 18:00
Phase Minimum Type	Street
CycleTime	90
Flow Factor	1.00
Sat Flows Used	RR67

Stage Results

Stage Timings			
Stage Sequence	1	2	3
Stage Duration	9	50	14
Stage Change Point	0	14	69

User	Symonds Group Ltd. - London	Project	Lots Road				Page 2
Location		File	C_L (wc) PM 90 (sc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future PM (wc)(sc) 90 06/01/03			Controller	Generic	Appvd	

Link Results

Link Results												
Link Ref	Link Name	Link Type	Full Phs	Arw Phs	Tot Grn	Dem Flow	Satn Flow	Cap pcu	Deg Sat%	Del s/pcu	TDel pcuh	Que' pcu
1/1	Cheyne walk (westbound) Left Ahead	U	B		50	1379	2479	1405	98.2	53.5	20.5	28.2
2/1	Lots Road Right Left	U	A		9	198	1791	199	99.5	163.3	9.0	11.2
3/1	Crem Road (eastbound) Ahead	U	C		50	994	1915	1085	91.6	34.4	9.5	15.0
3/2	Crem Road (eastbound) Right	O	D		50	43	141	80	53.8	38.0	0.5	0.7
Cycle Time 90 s				PRC -10.6 %				Total Delay 39.4 PCUh				

Opposed Link Results

Opposed Movement Detail				
Link Ref	Link Name	Arr Grn	Gaps /cyc	Ign /cyc
3/2	Crem Road (eastbound) Right	-	0.0	2.0

Worst case – 160 second cycle

User	Symonds Group Ltd. - London	Project	Lots Road				Page 1
Location		File	Crem_Lots AM (dc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future AM 12/02/03			Controller	Generic	Appvd	

Parameters Selected

Parameters Selected	
Flow Group	AM Peak
Flow Group Period	08:00 to 09:00
Phase Minimum Type	Street
CycleTime	160
Flow Factor	1.00
Sat Flows Used	RR67

Stage Results

Stage Timings					
Stage Sequence	1	2	1	2	3
Stage Duration	10	49	11	49	14
Stage Change Point	0	15	69	85	139

User	Symonds Group Ltd. - London	Project	Lots Road				Page 2
Location		File	Crem_Lots AM (dc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future AM 12/02/03			Controller	Generic	Appvd	

Link Results

Link Results												
Link Ref	Link Name	Link Type	Full Phs	Arw Phs	Tot Grn	Dem Flow	Satn Flow	Cap pcu	Deg Sat%	Del s/pcu	TDel pcuh	Que' pcu
1/1	Cheyne Walk (westbound) Left Ahead	U	B		98	1235	2487	1554	79.5	16.1	5.5	10.8
2/1	Lots Road Right Left	U	A		21	228	1791	257	88.6	78.9	5.0	7.2
3/1	Crem Road (eastbound) Ahead	U	C		98	831	1915	1197	69.4	13.8	3.2	7.2
3/2	Crem Road (eastbound) Right	O	D		98	45	184	115	39.1	17.8	0.2	0.4
Cycle Time 160 s				PRC 1.6 %				Total Delay 14.0 PCUh				

Opposed Link Results

Opposed Movement Detail				
Link Ref	Link Name	Arr Grn	Gaps /cyc	Ign /cyc
3/2	Crem Road (eastbound) Right	-	1.1	4.0

User	Symonds Group Ltd. - London	Project	Lots Road				Page 1
Location		File	Crem_Lots PM (dc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future PM 12/02/03			Controller	Generic	Appvd	

Parameters Selected

Parameters Selected	
Flow Group	PM Peak
Flow Group Period	17:00 to 18:00
Phase Minimum Type	Street
CycleTime	160
Flow Factor	1.00
Sat Flows Used	RR67

Stage Results

Stage Timings					
Stage Sequence	1	2	1	2	3
Stage Duration	9	50	9	51	14
Stage Change Point	0	14	69	83	139

User	Symonds Group Ltd. - London	Project	Lots Road				Page 2
Location		File	Crem_Lots PM (dc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future PM 12/02/03			Controller	Generic	Appvd	

Link Results

Link Results												
Link Ref	Link Name	Link Type	Full Phs	Arr Phs	Tot Grn	Dem Flow	Satn Flow	Cap pcu	Deg Sat%	Del s/pcu	TDel pcuh	Que' pcu
1/1	Cheyne Walk (westbound) Left Ahead	U	B		101	1356	2474	1593	85.1	18.3	6.9	12.6
2/1	Lots Road Right Left	U	A		18	183	1791	224	81.7	67.4	3.4	5.2
3/1	Crem Road (eastbound) Ahead	U	C		101	984	1915	1233	79.8	16.9	4.6	8.7
3/2	Crem Road (eastbound) Right	O	D		101	41	140	90	45.6	24.3	0.3	0.4
Cycle Time 160 s				PRC 5.7 %				Total Delay 15.2 PCUh				

Opposed Link Results

Opposed Movement Detail				
Link Ref	Link Name	Arr Grn	Gaps /cyc	Ign /cyc
3/2	Crem Road (eastbound) Right	-	0.0	4.0

User	Symonds Group Ltd. - London	Project	Lots Road				Page 1
Location		File	Crem_Lots (wc) AM (dc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future AM (wc)(dc) 12/02/03			Controller	Generic	Appvd	

Parameters Selected

Parameters Selected	
Flow Group	AM Peak
Flow Group Period	08:00 to 09:00
Phase Minimum Type	Street
CycleTime	160
Flow Factor	1.00
Sat Flows Used	RR67

Stage Results

Stage Timings					
Stage Sequence	1	2	1	2	3
Stage Duration	11	48	12	48	14
Stage Change Point	0	16	69	86	139

User	Symonds Group Ltd. - London	Project	Lots Road				Page 2
Location		File	Crem_Lots (wc) AM (dc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future AM (wc)(dc) 12/02/03			Controller	Generic	Appvd	

Link Results

Link Results												
Link Ref	Link Name	Link Type	Full Phs	Arw Phs	Tot Grn	Dem Flow	Satn Flow	Cap pcu	Deg Sat%	Del s/pcu	TDel pcuh	Que' pcu
1/1	Cheyne Walk (westbound) Left Ahead	U	B		96	1248	2496	1529	81.6	17.7	6.1	11.7
2/1	Lots Road Right Left	U	A		23	243	1791	280	86.8	70.5	4.8	7.1
3/1	Crem Road (eastbound) Ahead	U	C		96	841	1915	1173	71.7	15.1	3.5	7.5
3/2	Crem Road (eastbound) Right	O	D		96	47	178	109	43.1	21.0	0.3	0.5
Cycle Time 160 s				PRC 3.6 %				Total Delay 14.7 PCUh				

Opposed Link Results

Opposed Movement Detail				
Link Ref	Link Name	Arr Grn	Gaps /cyc	Ign /cyc
3/2	Crem Road (eastbound) Right	-	0.9	4.0

User	Symonds Group Ltd. - London	Project	Lots Road				Page 1
Location		File	Crem_Lots (wc) PM (dc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future PM (wc) 12/02/03			Controller	Generic	Appvd	

Parameters Selected

Parameters Selected	
Flow Group	PM Peak
Flow Group Period	17:00 to 18:00
Phase Minimum Type	Street
CycleTime	160
Flow Factor	1.00
Sat Flows Used	RR67

Stage Results

Stage Timings					
Stage Sequence	1	2	1	2	3
Stage Duration	9	50	9	51	14
Stage Change Point	0	14	69	83	139

User	Symonds Group Ltd. - London	Project	Lots Road				Page 2
Location		File	Crem_Lots (wc) PM (dc).LSG	SCN		Chkd	
Title	Lots Rd / Cremorne Rd future PM (wc) 12/02/03			Controller	Generic	Appvd	

Link Results

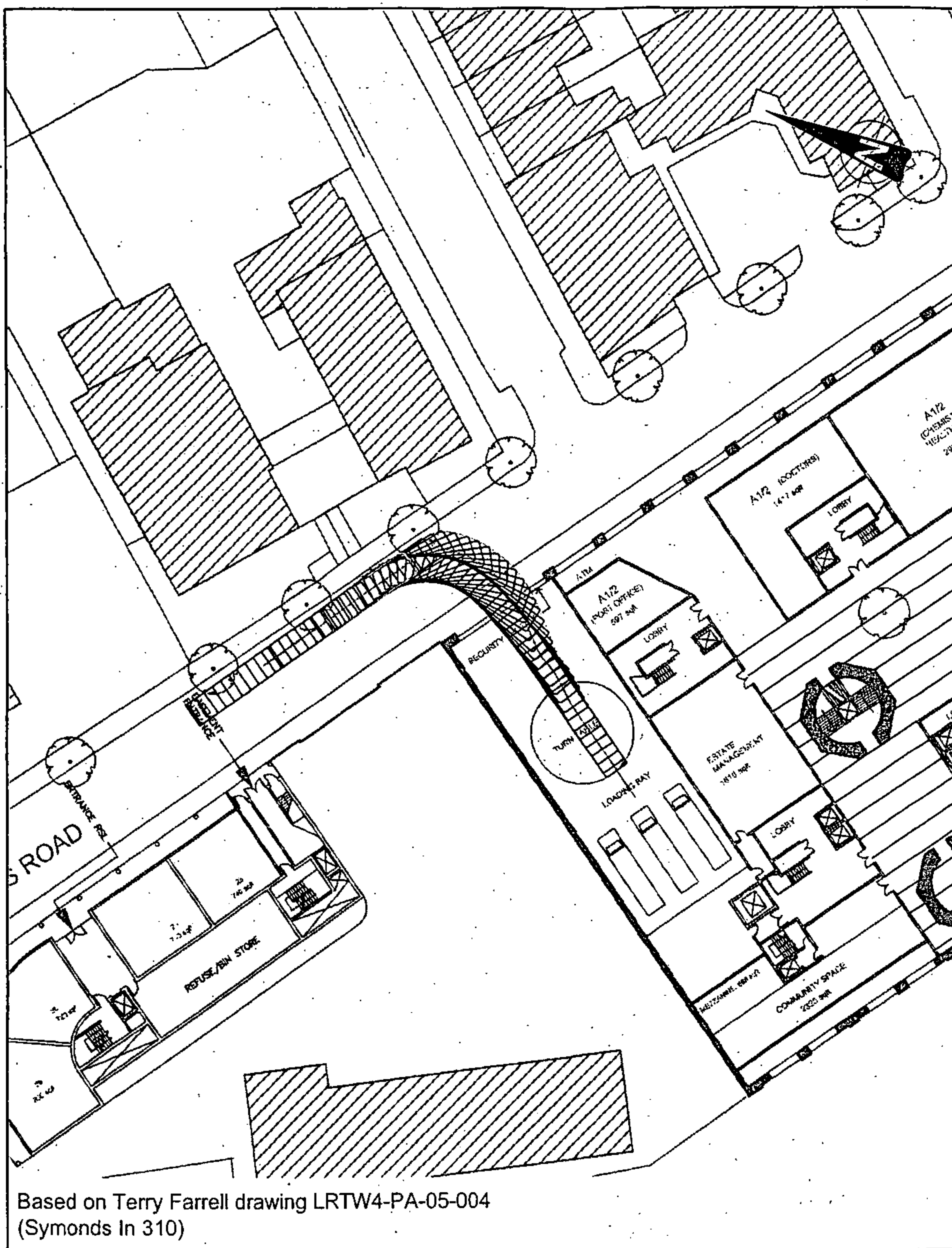
Link Results												
Link Ref	Link Name	Link Type	Full Phs	Arw Phs	Tot Grn	Dem Flow	Satn Flow	Cap pcu	Deg Sat%	Del s/pcu	TDel pcuh	Que' pcu
1/1	Cheyne Walk (westbound) Left Ahead	U	B		101	1379	2474	1593	86.6	19.3	7.4	13.2
2/1	Lots Road Right Left	U	A		18	198	1791	224	88.4	84.7	4.7	6.6
3/1	Crem Road (eastbound) Ahead	U	C		101	994	1915	1233	80.6	17.3	4.8	8.9
3/2	Crem Road (eastbound) Right	O	D		101	43	140	90	47.8	26.0	0.3	0.5
Cycle Time 160 s				PRC 1.8 %				Total Delay 17.2 PCUh				

Opposed Link Results

Opposed Movement Detail				
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3/2	Crem Road (eastbound) Right	-	0.0	4.0

Appendix B3

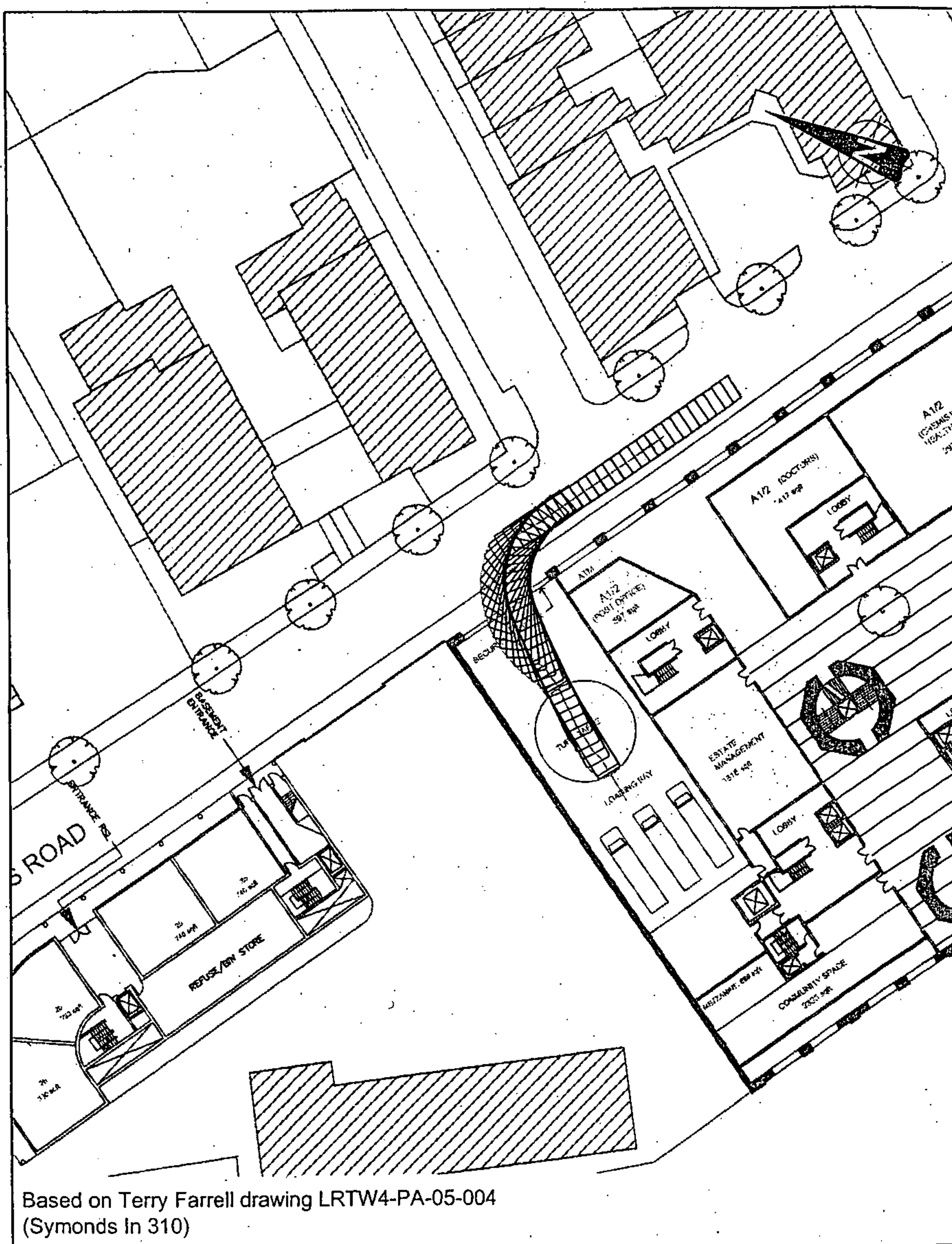
Swept path drawings



1/500 @ A4

BASED ON ORDNANCE SURVEY MAPPING
AND REPRODUCED BY SYMONDS GROUP
LIMITED. LICENCE NO ALDSAMS10001 WITH
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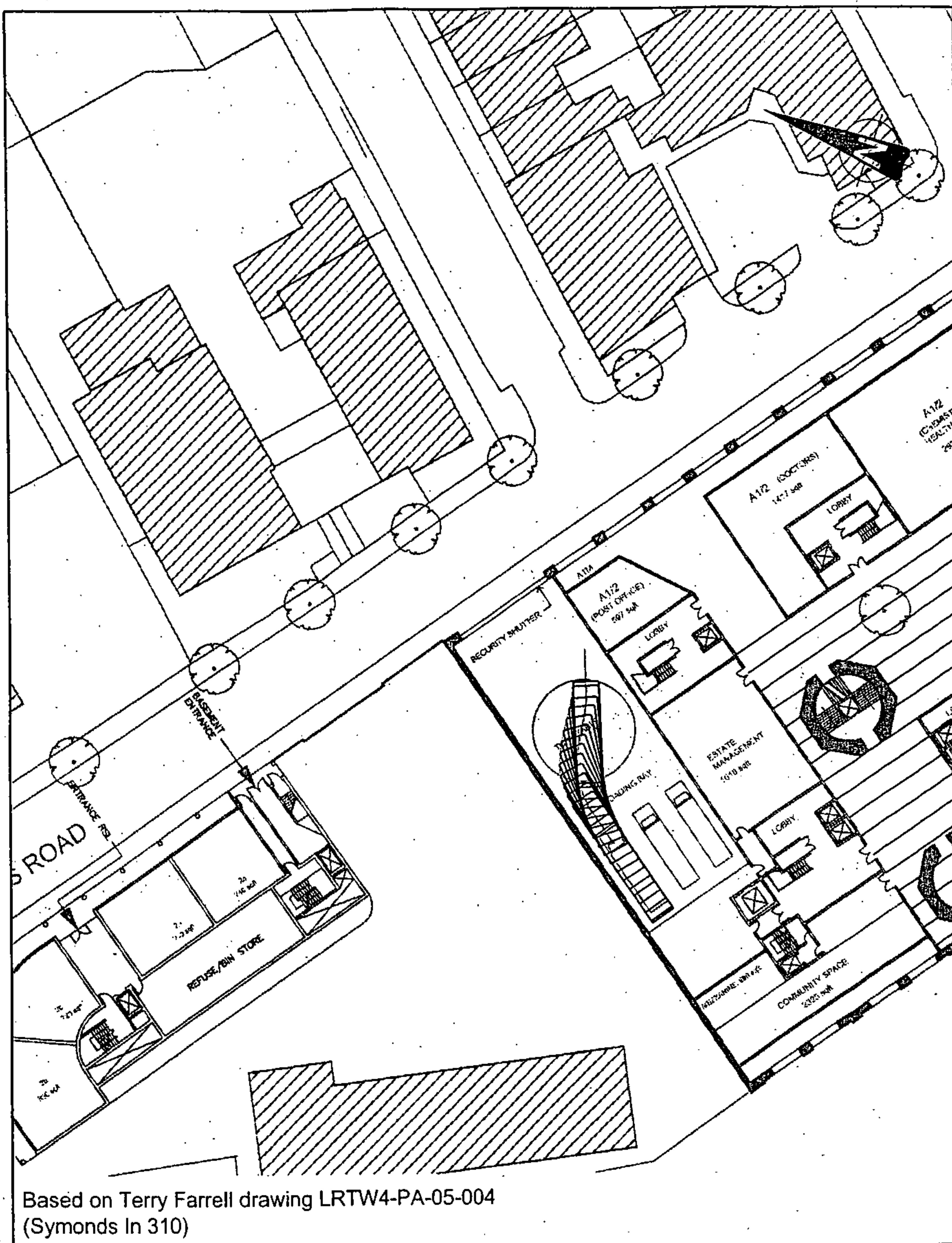
10m rigid entering service area
SWEEP PATH 1



1/500 @ A4

BASED ON ORDNANCE SURVEY MAPPING
AND REPRODUCED BY EYMONDS GROUP
LIMITED, LICENCE NO ALD5498510001 WITH
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10m rigid entering service area
SWEPT PATH 2

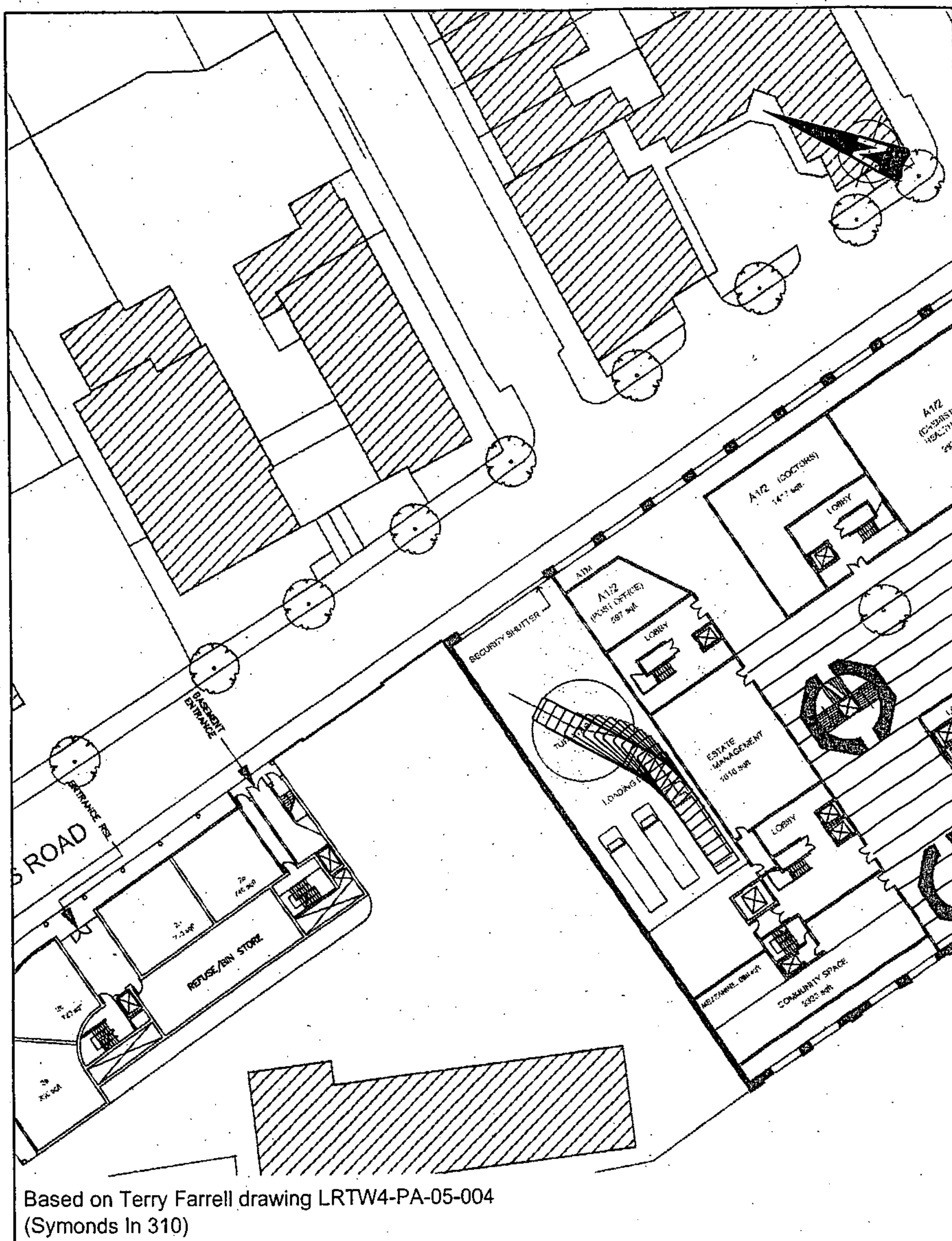


Based on Terry Farrell drawing LRTW4-PA-05-004
(Symonds In 310)

1/500 @ A4

BASED ON ORDNANCE SURVEY MAPPING
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10m rigid reversing into bay
SWEPT PATH 3

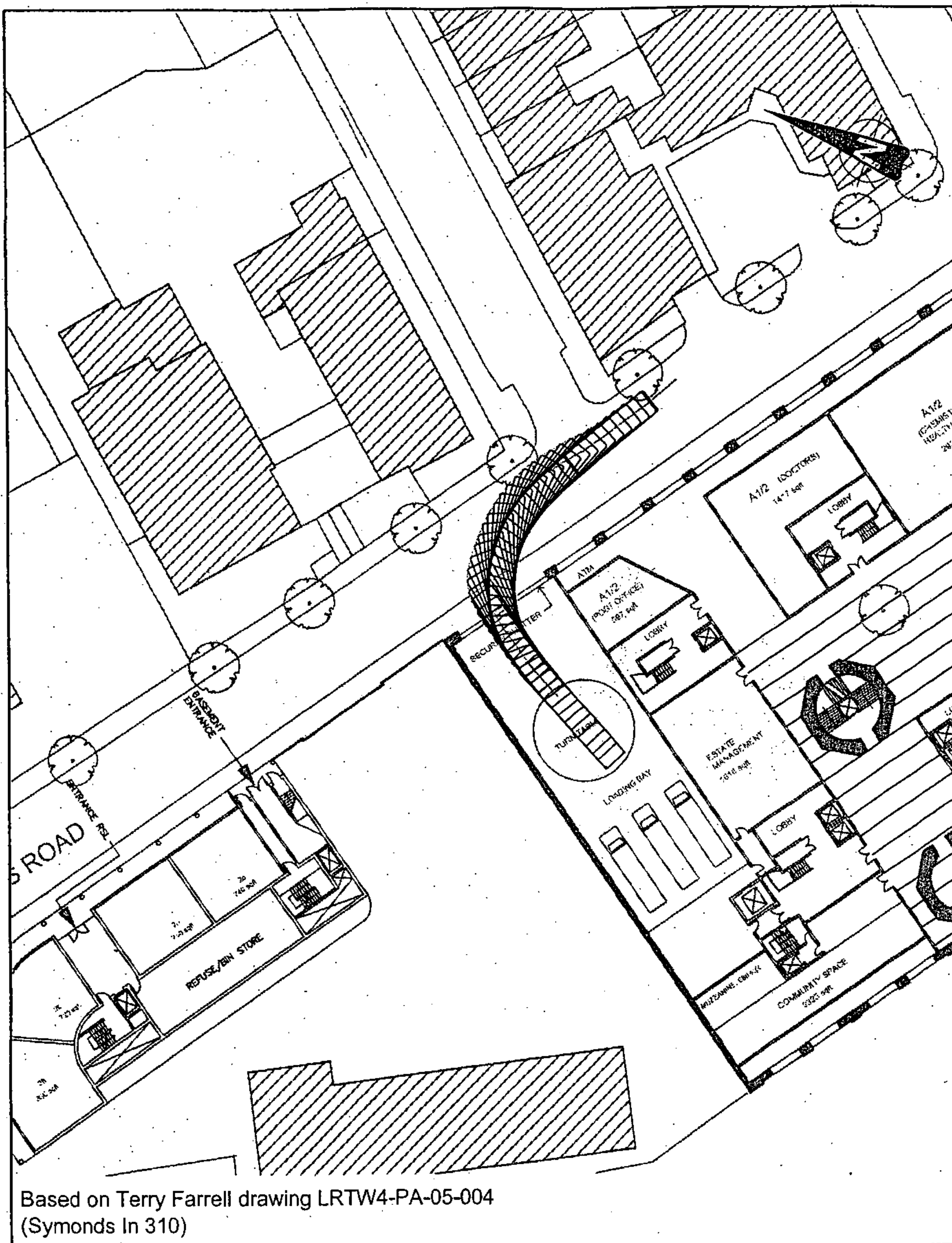


Based on Terry Farrell drawing LRTW4-PA-05-004
(Symonds In 310)

1/500 @ A4

BASED ON ORDNANCE SURVEY MAPPING
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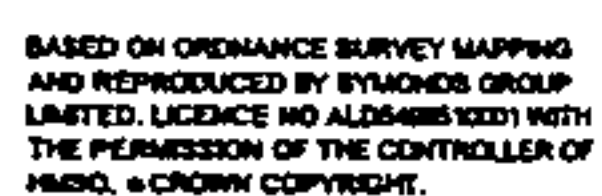
10m rigid reversing into bay
SWEPT PATH 4



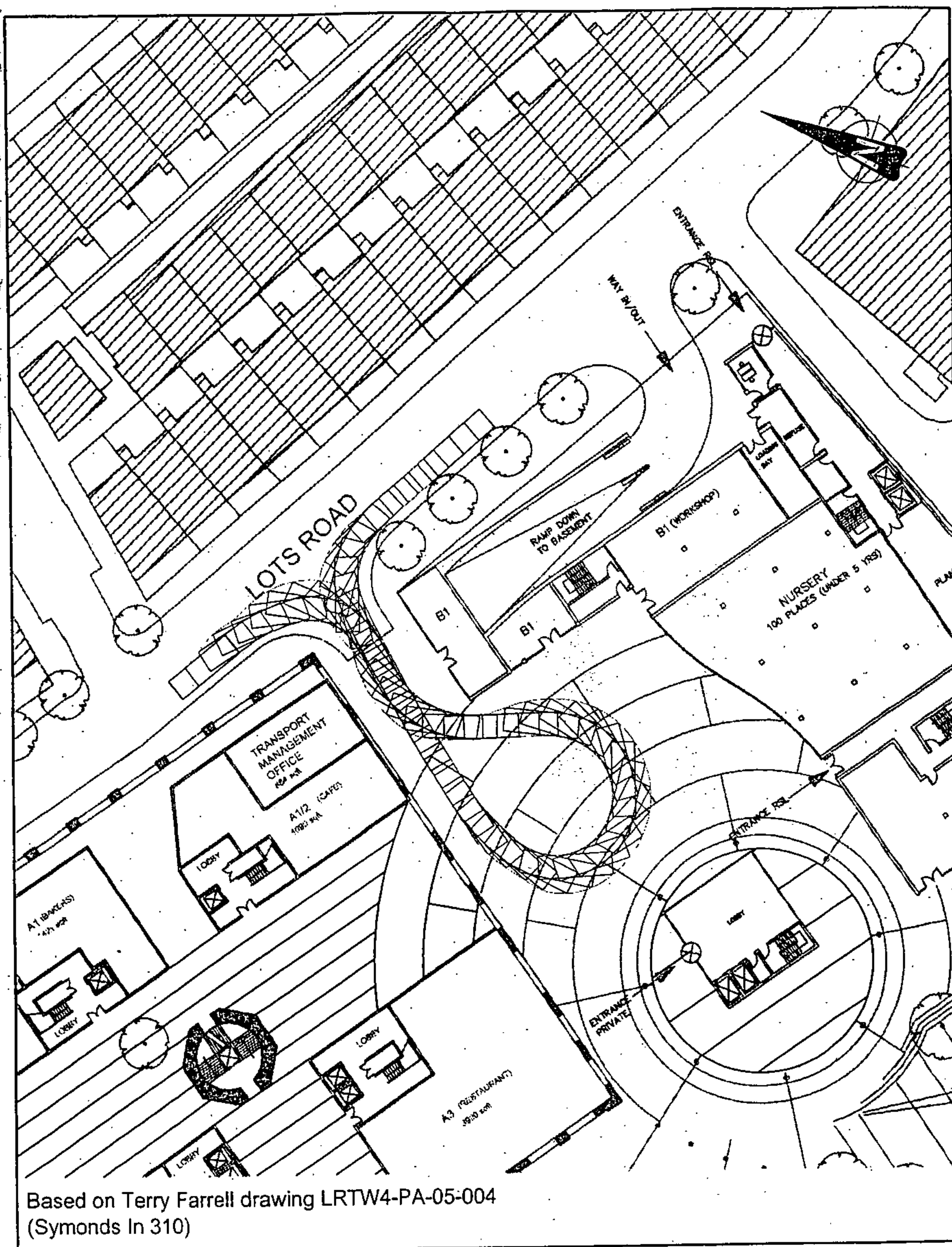
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10m rigid exiting service area
SWEPT PATH 5



10m rigid exiting service area
SWEPT PATH 6

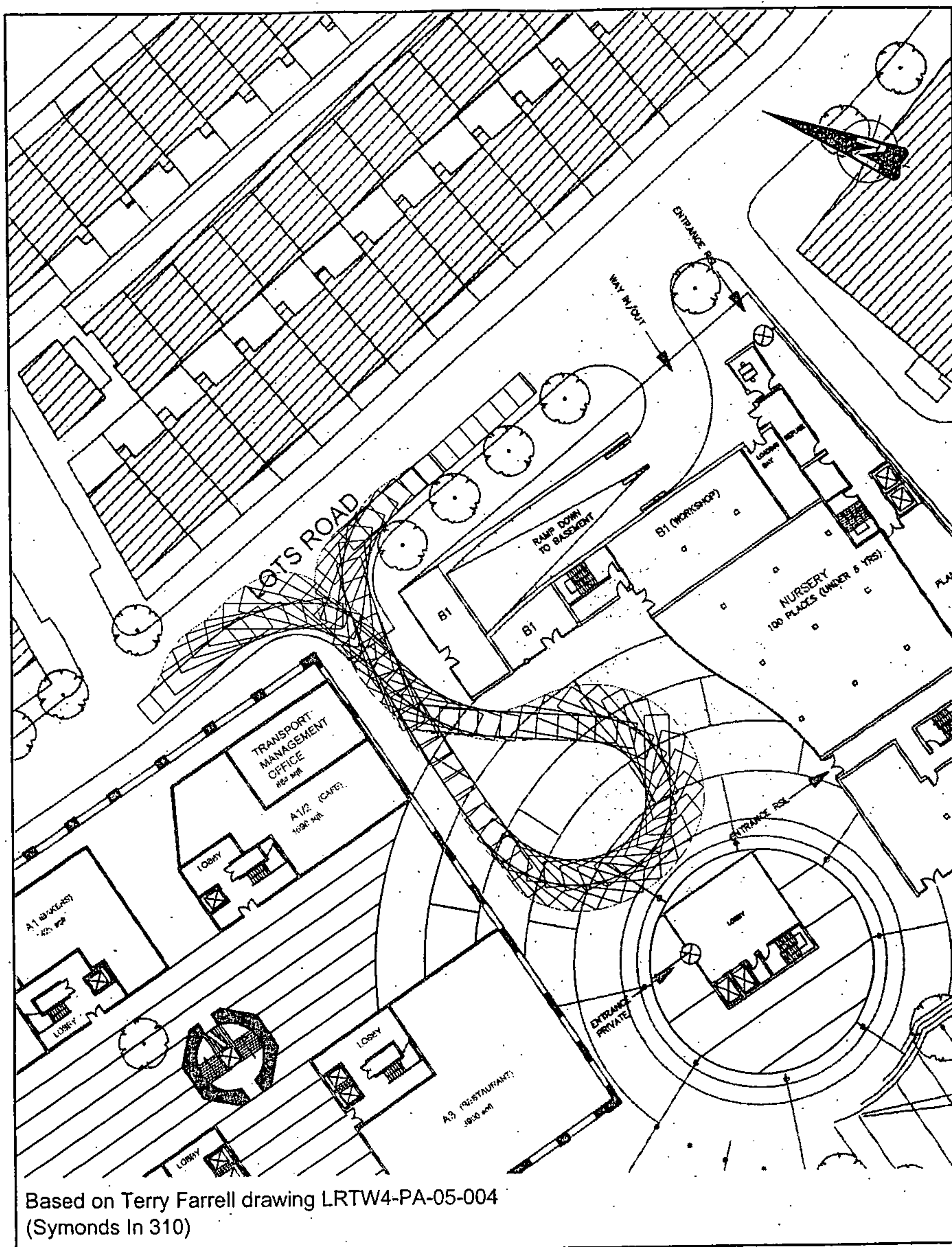


Based on Terry Farrell drawing LRTW4-PA-05-004
(Symonds In 310)

1/500 @ A4

BASED ON ORDNANCE SURVEY MAPPING
AND REPRODUCED BY BYMOMDS GROUP
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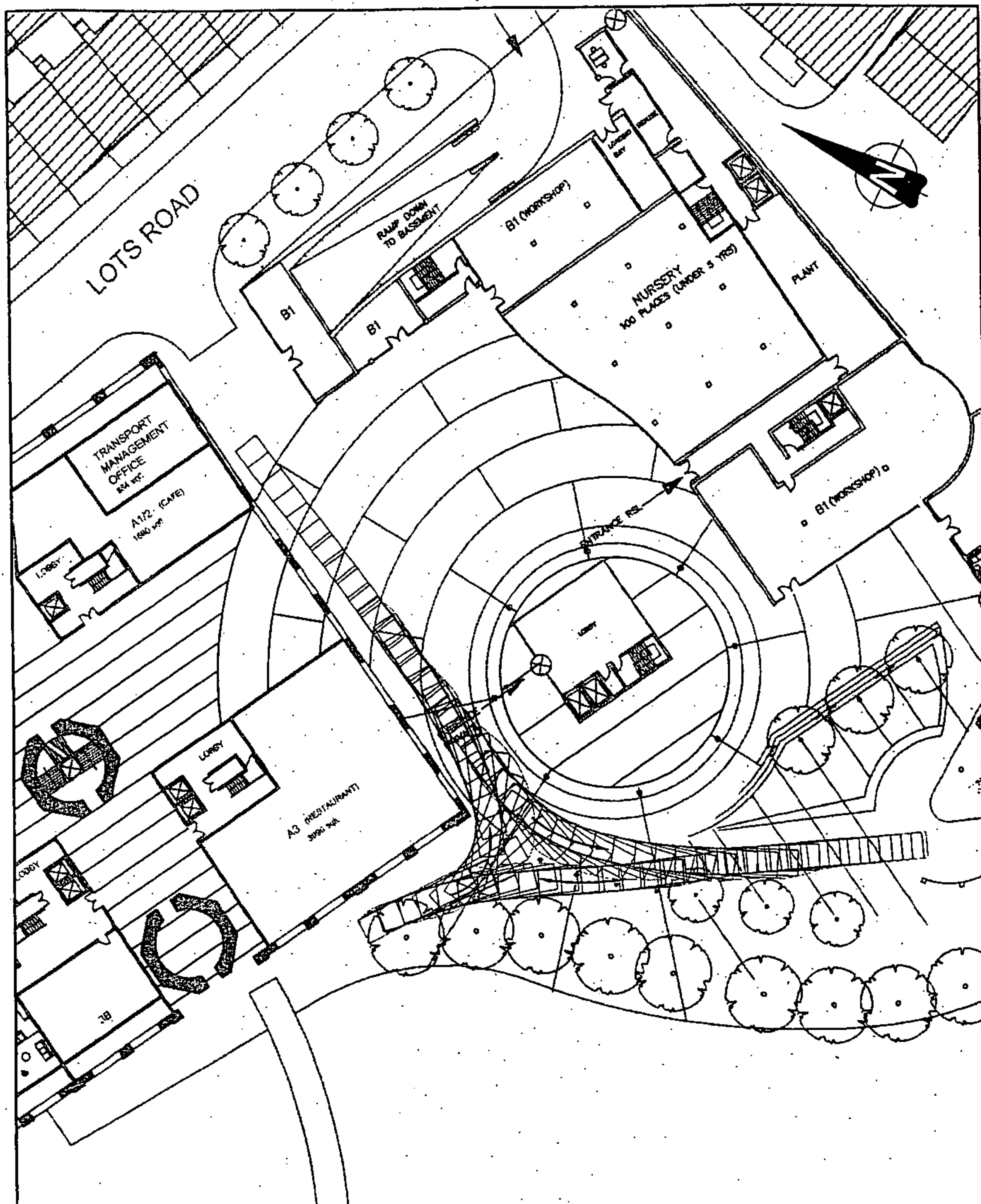
Fire tender turning around
SWEPT PATH 7



1/500 @ A4

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AND REPRODUCED BY SYMONDS GROUP
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Inspection platform turning around
SWEPT PATH 8



Based on Terry Farrell drawing LRTW4-PA-05-004
(Symonds In 310)

1/500 @ A4

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Inspection platform accessing Tower
SWEPT PATH 9

APPENDIX C

River Transport Report

Lots Road Power Station & Land at Thames Avenue Development

Additional information, to support the data provided in the Lots Road Power Station and Land at Thames Avenue Environmental Statement (ES) submitted in December 2002 to both the Royal Borough of Kensington and Chelsea and the London Borough of Hammersmith and Fulham.

Pages 48 to 50 of that document suggests how there could be a reduction of up to approximately 50% of MGV and HGV movements during the construction period through the use of the river for transporting waste and materials onto and out of the site.

Taylor Woodrow Construction Limited (TWCL) have been providing contractors and programming information during the planning process and advising on the feasibility and practicality of using river transport during construction. Working with Cory Environmental, river transport experts, they have assessed the many factors that affect river transport.

ASSESSMENT OF VEHICLE MOVEMENTS

In response to questions raised regarding the background for the graph provided on page 49 of the ES, showing MGV and HGV trips to and from the project, this document explains the methodology behind the information.

The basic technique involved estimating the volumes of materials to be used on site or removed from site, and estimating the average and practical capacity of MGV's and HGV's for a construction project, so determining the total number of MGV and HGV movements on the project. These were then related to the programme (page 45 of the Dec 2002 Environmental Statement (ES)) to determine hourly vehicle movements.

The calculations for material volumes have been based on geometrical estimates from drawings and surveys carried out up to December 2002.

In general this document aims to show how Circadian could, by using the river, reduce the estimated number of HGV and MGV movements for the development of Lots Road to approximately 40,000.

METHODOLOGY FOR CALCULATIONS

An estimate of the quantities of materials required on the project was carried out using drawings (included in the Planning Application) and surveys of the existing site. The average or practical capacity of HGV's and MGV's for each type of material was then estimated.

This type of calculation was carried out for over 40 of the more common materials used on site or removed from site, which gave us an estimated number of HGV and MGV movements for each material. These were combined to give the total number of HGV and MGV movements associated with each building and then for the project.

IMPORT AND EXPORT MATERIALS

Cory Environmental gave advice on which materials could possibly be removed by river, which corresponded to the types of materials generated in larger volumes on the site, the bulk material. Taking account of the practicalities of river transport and the scale of the project, it is only viable to transport bulk material by barge.

A) DEMOLITION MATERIALS

Rubble can be crushed on site and transported by barge to various riparian facilities. Scrap steel can be segregated and transported from site by river.

ASBESTOS

The safe handling and transportation requirements necessary for asbestos do not lend themselves to export by river. For asbestos to be transported by river it would need to be in sealed containers, which require both specialist barges and container handling equipment to both load and unload the barge at each end of

its journey. Furthermore, the relatively low rate of asbestos generation, coupled with the fact that none of the riparian landfill sites are able to accept it, would require material to be transhipped at a third party riparian facility for onward road transport to a suitable disposal site. Consequently, the use of the river for the transportation of asbestos is not considered viable and will not be considered further in this report.

B) EXCAVATION

The most recent information estimates the overall volume of material to be excavated as approximately 100,000 m³. This comprises of special (10%), hazardous (40%) and non-hazardous (50%) material under the current Waste Acceptance Criteria.

C) AGGREGATES AND SUB-BASE

Concrete would normally be supplied via existing ready mix operations near the development site. Two of these operations exist less than 2 miles from Lots Road.

An alternative for this project is for on-site batching of concrete, which means aggregate could be brought to site by barge, thus reducing MGV and HGV movements. Concrete manufacturers have suggested that a batching plant could be used on site, and that the operational costs for concrete production would be relatively competitive during 2005 and 2006. A significant premium would be paid for the installation of the batching plant and the infrastructure for the river transport.

Sub-base is likely to be used in a relatively small number of large applications during the construction period.

D) WASTE

It is estimated that 40,000 m³ of low density waste materials, such as wood, cardboard and plasterboard, will be generated from the construction activities. The inconsistent and light weight nature of this material makes it unsuitable for transport in open top barges. Furthermore, export in this manner would only be suitable for the residual waste after recycling has taken place, as material is only containerised when no further opportunity exists to recycle it.

RIVER TRANSPORT STRATEGY

From an assessment of the vehicle movements associated with individual materials, and the analysis of the practicalities of river transport, it is clear that the most significant and practicable reduction in road vehicle movements could be achieved by utilising the river to remove materials from site and utilising road transport to deliver materials to site. The exception would be the delivery of aggregates by river, if a concrete batching plant is utilised on site.

The number of MGV and HGV movements was calculated on the basis that demolition material, non-hazardous excavation, aggregates and sub-base are transported to and from site by river, until Dec 2005.

Total vehicle movements (assuming no river transport)	73, 800
--	----------------

Materials to be removed by barge		Equivalent Road Vehicle Movements
Demolition Material	118,000 m3	15,300
Non-hazardous Excavated Material	55,000 m3	6,600
Concrete and Sub-base	96,000 m3	19,300
TOTAL		41,200

As the current river transport strategy includes transporting material to and from site by river until Dec 2005, this means 27,000m3 of aggregates/ sub-base would be transported by road after 2005. (5,400 vehicle movements)

Equivalent road vehicle movements for materials to be removed by river	35,800
Vehicle movements by road	38,000

Therefore the total reduction in vehicle movements is approximately 50%.

(Note: Figures are approximate.)

GRAPHICAL INFORMATION

To create the graph within the ES (page 49) the material volumes were analysed on a building by building basis, or for the demolition/ excavation material, by area. Using this information correlated to the programme (ES, page 45) the material volumes have been broken down, assuming a constant rate of use/ extraction of materials, into monthly figures. The monthly figures show both the total MGV and HGV road movements, assuming no river transport, and that assuming the river is used as described.

The graph was created using total MGV/ HGV movements per month and dividing these figures by 200, assuming a 20-day working month and a 10-hour working day.

It is clear from these theoretical calculations approximately 40,000 HGV and MGV movements will be made over the lifetime of the project, assuming we can use the river as described. This is based on the current estimate of material volumes, the programme within the ES and is subject to licences, consents and practicalities of river usage.

It is important to note that re-use of materials on site and any changes in material volumes may affect the percentage reduction in HGV's and MGV's, however they are less likely to affect the total number of HGV and MGV road movements.

LOTS ROAD POWER STATION AND LAND AT THAMES AVENUE DEVELOPEMENT

PRACTICALITIES OF USING RIVER TRANSPORT THROUGH THE CONSTRUCTION PERIOD

This summary set out the licences and consents that will be required to set up the river transport strategy for the site. It also analyses the practicalities of lighterage and infrastructure requirements on the site.

1. THE SITE

The Site benefits from approximately 210 metres of river frontage with a little over two thirds of this lying south of the Creek.

Deliveries of fuel to the power station have been undertaken by barge since its construction in the early 1900s. Initially this would have been large quantities of coal and then oil, but following the station's conversion to natural gas, fuel imports by barge have been limited to gas oil. Coal deliveries were unloaded in a dock, now the site of the power station's car park. Gas oil deliveries were usually made twice a year, and barges are moored at the entrance to the Creek. This has ceased following closure of the power station in November 2002.

2. LIGHTERAGE REQUIREMENTS

The Port of London Authority ("PLA") is the principal authority regulating commercial traffic on the River Thames. The PLA have been contacted as part of this study. Their feedback was positive and discussions lead us to believe that it will offer its full support, and the benefit of its experience, to the project.

A) LICENCES AND CONSENTS

In order to utilise the Thames for material import and export, an assessment of the current structures and consents was undertaken. The Site has the benefit of certain long-standing consents regarding permitted structures. This includes, for example, two 100ft. long jetties and an intake pipe into the River. These consents relate to its historical use as a power station. It is currently unclear as to the precise status of these consents and so for the purpose of evaluation, and following discussions with the PLA, the project is likely to be taken forward on the basis of a 'new' development.

B) INFRASTRUCTURE REQUIREMENTS AT THE SITE

For the purposes of evaluating barge requirements and associated movements, 400 tonne capacity barges have been assumed. These barges are approximately 45m in length and can adequately be accommodated within the 150m frontage south of the Creek. Further evaluation may result in a review of barge size to maximise efficiencies.

Due to the relatively low number of barge movements at the Site derived from the projections made from our estimates of material volumes it is unlikely that any structures beyond the construction of a temporary camp-shed will be required. However, if the development timetable changes and the rate of export is to be significantly increased, it could be necessary to review this. The

construction of facilities within the river, which would be necessary if the rate of export has to be significantly increased as a result of programme changes, would provide additional capacity and overcome any tidal constraints.

Whilst no detailed assessment of the river wall has been undertaken at the Site, it is possible that a small amount of dredging alongside the river frontage will be necessary to allow the movement of the size of barges anticipated during the contract programme. The creek wall has been surveyed adjacent to the Oil Store, which gives us an indication of its loading capacity. Further surveys will be carried out once the most appropriate location for the loading and unloading of barges has been identified. Additional protection for the wall may be necessary to prevent damage by moored barges. This would likely take the form of sacrificial timbers and tyres. Any temporary structural changes to the river and creek wall, required during the construction phase, will need to be agreed with the Environment Agency ("EA"). This would not change the final design as within the Planning Application.

The discussion with the PLA indicated that due to the nature of the work, there would be a requirement for a River Works Licence(s) dependant on whether the loading/offloading operations take place in a single or multiple points on the river frontage. The number of barge movements currently envisaged could be accommodated on the frontage south of the Creek, but operationally it may be more appropriate to utilise both sides of the Creek, as well as the Creek itself, for operation or logistical reason.

The PLA confirms that there are no statutory external consultees within the river licence approval system and it is highly likely that consent will be granted for all reasonable works. The requirement for a camp-shed is well within the scope of "reasonable works".

The EA, whilst not part of the formal PLA licence consultation process, is a statutory consultee in the principal planning application for the development. There are substantial works being proposed for the creek and river walls as part of the redevelopment, which the Environment Agency is already aware of. Any temporary works to accommodate barges will also need to be agreed with the Environment Agency.

c) OPERATIONAL CONSTRAINTS

The probability of restrictions due to tidal windows at the site have been considered and an assessment of likely constraints made. The projected barge movements at the site would not pose any abnormal operating issues, and it is therefore not envisaged that any substantial constraints exist at the location. Selection of down stream facilities to support the project may have some impact due to distance between them and the Site. Given the variety of options for demolition waste and aggregates, this is not considered restrictive at this stage. The maximum anticipated barge requirements at the Site suggest a peak demand of 14 per working week - well within any tidal operating window.

The closure of the Thames Flood Barrier must be considered when preparing the method statement and operational plan, but it is not considered to have any significant implications for export or import of materials to and from the Site.

The method statement and operational plan will also consider adverse weather conditions – principally fog. Whilst contingency plans will be considered, fog prohibits operations on only rare occasions.

D) METHODS OF LOADING AND UNLOADING

There are three possible methods of loading and unloading barges with excavated material or demolition waste, each with its own advantages and disadvantages:

LOADING

- a) Load material into open top containers, which remain in the barge whilst at the Site. The barge is transported down river and then the containers unloaded at the destination using an existing container crane. The benefits of this method are that it allows the importation of material into the riparian landfill sites using existing planning permissions and consents, and avoids the requirement for additional infrastructure. However, this method does not allow the carrying capacity of the barges to be fully utilised, as each container could only be loaded to a weight within the safe working load of the container crane at the reception site. This method also requires specialist barges and containers, which is likely to be costly, and would not be suitable for demolition waste, as the sites likely to receive this material are not equipped with container handling cranes.
- b) Load material into conventional open barges, which are unloaded at the destination using an excavator. This gives greater flexibility for sourcing barges; allows the full capacity of a barge to be used; can be utilised for demolition and excavation material; and is simple. However, transporting material in this way will require investment in infrastructure at the reception facility and incurs increased costs through double-handling.
- c) Load the excavated material into conventional open barges. At the destination, water is added to the material allowing it to be pumped as slurry. We are informed by Canary Wharf Contractors that this is the cheapest method of discharge. However, it is not a suitable method for the made ground that will be encountered at the Site; under the Landfill Directive liquid wastes can no longer be disposed of to landfill; and it would only be relevant for clean materials with a relatively small particle size such as silts and clays.

The second option would certainly be utilised to transport the demolition material. Evaluation of the a) and b) is being undertaken to determine which is most advantageous for transporting the excavation material. The third option is not suitable for material generated at the Site.

UNLOADING

- a) Material is delivered in barges direct from a river served aggregate terminal. These are more likely to be self-discharging and larger than conventional open top barges. These barges would need to be unloaded on arrival, with material either stored on the quay side or in open top barges moored at the quay side.
-

- b) Material is delivered in conventional open top barges and is unloaded at the Site using an excavator. This method would allow material to remain in the barges and only be drawn upon when needed, thus avoiding on-site storage. Material delivered in this way is likely to have been transshipped at a down stream wharf and so may be more expensive than that which is delivered direct.

The relative merits of the two delivery methods will need to be considered following more detailed conversation with aggregate suppliers and taking into account cost, delivery volume, on-site storage capacity, and navigation constraints.

Assessment has also been made of how to prevent spillage into the river when loading and unloading barges. The Environment Agency and the PLA will assess the final proposal and work will only go ahead on site if they are satisfied that adequate precautions have been taken.

3. POTENTIAL SERVICE PROVIDERS

A desk study has been carried out to define likely service providers for each service element. This list is not considered exhaustive and further work would be undertaken to ensure the widest choice of service providers is canvassed. However, at this stage, a base Order Qualifying Criteria (OQC) was adopted in order to satisfy basic service levels and capabilities. Responses were received from a selection of preferred organisations. The OQC covered issues such as organisation size, facilities, experience and capacity.

A) DEMOLITION

A number of potential riparian service providers responded with indicative interest when contacted via telephone and questionnaire. Respondents are aware that the preference is for the material to be exported from the Site by river. Many of these are national or strong regional organisations with track records of handling and processing demolition materials.

An important point of note is that all responses to the questionnaire considered that the feasibility of handling demolition waste from the Site was on the basis that down-sizing would take place prior to loading, i.e. on-site crushing. The likelihood also, is that it will be difficult to secure lighterage services for the transportation of this material unless the material is reduced to an appropriate size in order to minimise barge damage. The estimated optimum aggregate size is considered to be between 75mm and 100mm.

Whilst detailed assessment will be required it is considered that very little, if any, capital expenditure will be required to facilitate the unloading of this material at these sites, as they are operational wharves.

B) EXCAVATION

LANDFILL SITE CLASSIFICATION

Under the Landfill Directive, since July of this year sites have been restricted, on a site-specific basis, in respect of the nature of the materials they can accept. Sites are classified as inert, non-hazardous or hazardous. There can be further

limitations for the site and license restrictions. The restrictions are not uniform for sites with the same Landfill Directive classification.

As described previously, the various excavated materials fall into three specific categories, which are determined by the degree or nature of their contamination. These are:

- > Hazardous waste;
- > Special Waste; and
- > Non Hazardous materials.

Special Waste is a sub-category of hazardous waste. Sites that can receive Special Waste are classified as hazardous, but not all sites that are hazardous can receive Special Waste.

HAZARDOUS WASTE

The Landfill Directive classifications restricting waste types came into force in July 2002. However, until July 2004 hazardous sites will be able to accept hazardous and non-hazardous wastes; thereafter hazardous sites will only be able to accept hazardous waste and non-hazardous sites will only be able to accept non-hazardous waste. Most operators of hazardous waste landfills have declared that they will revert to a non-hazardous classification in July 2004.

The options for final disposal of the hazardous material at Lots Road are already limited, of the 4 sites currently accepting hazardous solid waste in the London area, it is probable that none will be capable of accepting this material beyond mid 2003 (Source: Environment Agency, Thames Region).

Hazardous waste will either have to be removed from the Site by road or removed from the Site by barge and transhipped at one of the wharves on the Thames for onward road transport to a suitable disposal site. Whilst there are some potential wharves that could handle the excavated material, these have not been pursued at this stage as this option is not economically viable. It is therefore assumed, throughout this report and the Environmental Statement, that hazardous waste will be transported by road.

If material is exported by road, the most likely destination for it will be sites in Bedfordshire or the West Midlands.

SPECIAL WASTE

The disposal options for Special Waste excavated at the Site are even more limited than those for Hazardous Waste. It is therefore prudent to assume that this material will be exported by road.

NON HAZARDOUS WASTE

Two riparian disposal sites are capable of accepting this material although this could be subject to certain approvals by the respective planning authorities, EA and PLA. If material is not exported using the Thames, there are a number of suitable disposal sites in counties including Bedfordshire, Essex and Bucks.

RIPARIAN DISPOSAL SITES

Cory - Mucking Landfill - is the only remaining lighterage operator within the Thames handling non-hazardous waste materials. The Mucking site also handles containerised waste only and would require consent for an additional temporary jetty at the site to accommodate material from Lots Road. Cory has previously handled similar materials. The site would require planning approval for any jetty structure, together with appropriate amendments to the Working Plan.

Cleanaway - Rainham Landfill - operates four landfill sites in the UK, including one at Ferry Lane, Rainham in the London Borough of Havering. A large percentage of the river frontage is restricted due to ecological and planning designations. The current jetty is only capable of handling containerised waste with the majority of waste brought in by road. Cleanaway has recently completed its last contract for the transport of waste on the river, and appears no longer to be operating a lighterage fleet.

C) AGGREGATES

Substantial volumes of construction materials arrive in London from river served aggregate suppliers. Almost all of the national and regional players have facilities for offloading and processing of aggregates on the Thames and can supply both land won and dredged aggregates. It is known that most if not all of these facilities have the capabilities of exporting, as well as importing, by river.

D) STEEL

There are a number of sites capable of receiving scrap metal by barge from the Site.

4. RISKS

The work that has been undertaken to compile this report has identified three areas of risk.

VOLUMES

Changes in volumes would influence the design of the infrastructure; change the basis for calculating the cost base; and in extreme cases could affect the viability of transporting material by river.

CONTAMINATION LEVELS OF EXCAVATED MATERIAL

The degree and nature of the contamination will determine which landfill sites are able to accept the material and the rate at which it can be received. We are monitoring this situation carefully.

The current power station mothball period means it has not been possible to undertake a meaningful ground investigation under this building. This work will be undertaken at the earliest opportunity, as it will influence the decisions that need to be made, particularly if higher than anticipated quantities of Special Waste are identified.

CONSENTS

Additional consents are likely to be required if the river is to be utilised for the transport of materials to and / or from the Site.

- Planning consents for infrastructure at the Site and potentially at the riparian landfill sites.
- Waste Management Licence modifications.
- Port of London Authority consent for the construction works necessary in the river.
- Environment Agency consent for construction works

Whilst it is considered that the requisite consents are likely to be granted, this will need to be factored into the decision process as will the time to implement the licences and consents, and to undertake any necessary infrastructure construction.

5. CONCLUSION

Following significant research into the possible use of the river, the current response is positive.

It is clear that the removal of demolition material and scrap steel from the Site by barge, and the import of aggregates to the Site, can practically be achieved. However, there remains a question as to how much excavated material we can feasibly transport by river. Once planning permission has been received and Circadian has vacant possession of the power station, further surveys of the power station can be carried out.

At this current time we are assuming we can transport, by river:

- Demolition Material (including rubble, iron and steel)
- Non- hazardous Excavated material
- Aggregates

The practical assessment of river transport requirements indicates that the service can be provided within the operational constraints of the Site and its physical capabilities. The maximum demand is in 2004 and 2005, when up to 14 barges per week, based on the current timetable and volume projections may be required to satisfy programme demands.
