A18-A180 Link
Major Scheme Business Case

Local Air Quality & Greenhouse Gas Assessment

Report

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1 Introduction

Purpose

1.1 JMP Consultants Ltd (JMP) has been commissioned by North East Lincolnshire Council (NELC) to provide specialist consultancy support to prepare a Local Air Quality Assessment (AQA) and Greenhouse Gas Assessment (GHGA) report to feed into the Environmental Appraisal component of a Major Scheme Business Case (MSBC) for the proposed new Link Road being coordinated by JMP.

1.2 The MSBC is being prepared in support of the A18-A180 Link Road to the south of Immingham, North East Lincolnshire.

1.3 Site locality and development proposals have only been briefly described as full details can be found in preceding sections of the MSBC report.

Approach

1.4 The AQA and GHGA methodology approach follows guidance set out in the Department for Transport (DfT) WebTAG guidance.

1.5 The AQA assessment has been undertaken to quantify the local air quality impact of the proposed new Link Road by predicting changes in local air quality at sensitive roadside receptors and evaluating the number of people likely to be affected by the changes in local air quality. We have also used a suite of impact and significance criteria to infer the overall significance of the air quality impacts of the proposed new Link Road.

1.6 The GHGA assessment has been undertaken to estimate the change in CO_2 emissions in terms of the equivalent tonnes of carbon released as a result of implementing the proposed Link Road.

1.7 The report also includes all relevant TAG worksheets for air quality and greenhouse gases and the completed Appraisal Summary Table (AST) input for both WebTAG sub-objectives.

Structure

1.8 Following this introductory section, **Section 2** defines the air quality context of the proposed new Link Road and the local area with respect to international, national and local policy and legislation.

1.9 **Section 3** then describes the methodology applied to the AQA, specifically the requirements of WebTAG and the Design Manual for Roads and Bridges (DMRB).

1.10 **Section 4** then presents the findings of the assessment both in terms of the impact experienced at specific receptor locations and the impact along specific routes and the population living along them.

1.11 **Section 5** describes the methodology applied to the GHGA and the requirements of WebTAG guidance.

1.12 **Section 6** then summarises the findings and conclusions of the study and presents the AST.

2 Air Quality Policy Context

General

2.1 This section of the report outlines the policy and legislative context of the link road proposals with respect to local air quality. Relevant national and local policies are presented in turn below with respective legislation summarised at the end of the section together with a review of the air quality situation in and around Immingham.

National Policy

Environment Act 1995

2.2 Part IV of the Environment Act 1995 (the Act) requires UK government and devolved administrations for Scotland and Wales (Northern Ireland has equivalent legislation) to produce a national air quality strategy containing standards, objectives and measures for ameliorating ambient air quality and to continually review these policies.

2.3 The Act also provides a legislative framework for a system of Local Air Quality Management (LAQM). This system is an integral part of delivering the UK's air quality obligations.

2.4 Under the LAQM regime, responsible authorities are required to carry out a regular review and assessment (R&A) of air quality in their area against defined national objectives, which have been prescribed in regulations for the purposes of LAQM. Where it is found these objectives are unlikely to be met, responsible authorities must designate Air Quality Management Areas (AQMAs) and implement Air Quality Action Plans (AQAPs) to tackle the problems.

2.5 Provisions in the Act are largely enabling and allow responsible authorities the power to take forward local policies to suit their own needs. Local circumstance will also determine the content of the local air quality policy, designation of AQMAs and the content of AQAPs.

The National Air Quality Strategies

2.6 Due to the transboundary nature of air pollution, it is appropriate to have an overarching strategy with common aims covering all parts of the UK. For this reason, the National Air Quality Strategy (NAQS) is presented as a joint UK Government and devolved administrations document.

2.7 Air quality in the UK has generally continued to improve since the first NAQS, entitled 'The United Kingdom Air Quality Strategy', was adopted in 1997. This was later superseded by 'The Air Quality Strategy for England, Scotland, Wales and Northern Ireland' published in 2000.

2.8 The 2000 NAQS established a framework for further improvements in ambient air quality in the UK to 2003 and beyond. It identified actions at local, national and international levels to improve air quality. It was followed by an Addendum in February 2003.

2.9 There are a wide range of terms and concepts used in international, national and local air quality policy and legislation and the NAQS discusses air quality in terms of **Standards** and **Objectives**. These terms are defined below:

- **Standards** are the concentrations of pollutants in the atmosphere which can be broadly taken to achieve a certain level of environmental quality. The standards are based on assessment of the effects of each pollutant on human health including the effects on sensitive sub groups and ecosystems.

- **NAQS Objectives** are policy targets often expressed as a maximum ambient concentration not to be exceeded either without exception or with a permitted number of exceedences within a given timescale.

2.10 The main pollutants of concern in the UK and addressed in the NAQS are set out below:

- Particulate Matter (PM_{10} and $PM_{2.5}$);
- Nitrogen Dioxide (NO_2);
- Ozone (O_3);
- Sulphur Dioxide (SO_2);
- Polycyclic aromatic Hydrocarbons (PAHs);
- Benzene;
- 1,3-butadiene;
- Carbon Monoxide;
- Lead (Pb); and
- Ammonia.

The National Air Quality Strategy 2007

2.11 The most recent NAQS was published in July 2007 and established a framework for further air quality improvements across the UK. The NAQS sets out the most recent standards and objectives which have been set in order to measure the improvement of air quality.

2.12 The NAQS is a statement of policy intentions or policy targets and as such there is no legal requirement to meet these objectives except in so far as these mirror any equivalent legally binding 'limit values' in EU legislation.

2.13 This latest strategy does not remove any of the objectives set out in the previous strategy or its addendum, apart from replacing the provisional 2010 PM_{10} objective in England, Wales and Northern Ireland with the exposure reduction approach for $PM_{2.5}$ (except in Scotland).

2.14 With minimal exception, the NAQS Objectives have been met across the UK for all pollutants except particulate matter (PM_{10}) and nitrogen dioxide (NO_2). These pollutants are directly related to road traffic pollution and many of the areas that breach the NAQS Objectives (designated AQMAs) are located close to major road sources.

Legislation

2.15 The NAQS objectives are transposed into legislation by a series of Regulations including the 'Air Quality (England) Regulation 2000' and the 'The Air Quality (England) (Amendment) Regulations 2002'.

2.16 In addition, the UK has a legislative requirement to meet air quality 'limit values' for key pollutants defined at a European level. The Air Quality Framework Directive (96/62/EC) on ambient air quality assessment and management defines the policy framework for twelve air pollutants known to have a harmful effect on human health and the environment.

2.17 The limit values for the specific pollutants are set through a series of Daughter Directives:

- First Daughter Directive (1999/30/EC);
- Second Daughter Directive (2000/69/EC);
- Third Daughter Directive (2002/3/EC); and
- Fourth Daughter Directive (2004/107/EC).

2.18 The Air Quality Standards Regulations 2007 came into force on 15 February 2007, replacing the previous Air Quality Limit Values Regulations 2003. This brings together, in one statutory instrument, the UK Government's requirements to fulfil separate EU Daughter Directives.

2.19 **Table 2.1** below summarises the NAQS Objectives and European 'limit value' obligations for particles (PM_{10}) and nitrogen dioxide (NO_2), the key transport related pollutants of concern at the majority of UK AQMAs.

Table 2.1 Summary of NAQS and EU Obligations

Pollutant	Objective	Measured as	Achieved by	European obligations	Achieved by
Nitrogen Dioxide (NO_2)	**40µgm^{-3}**	Annual mean	31-Dec-05	40µgm^{-3}	01-Jan-10
	200µgm^{-3} not to be exceeded more than 18 times a year	1 hour mean	31-Dec-05	200µgm^{-3} not to be exceeded more than 18 times a year	01-Jan-10
Particles (PM_{10})	**50µgm^{-3}** not to be exceeded more than 35 times a year	24 hour mean	31-Dec-04	50µgm^{-3} not to be exceeded more than 35 times a year	01-Jan-05
	40µgm^{-3}	Annual Mean	31-Dec-04	40µgm^{-3}	01-Jan-05

Local Air Quality – Existing Policies and Strategies

Air Quality Strategy

2.20 North East Lincolnshire Council (NELC) produced an Air Quality Strategy[1] entitled 'Breathing Space' in October 2003. The aim of the Strategy is:

> *To provide the framework with which to enable the maintenance and or improvement of air quality in North East Lincolnshire, in line with both the National Air Quality Standards and the principles of best practice. (*Page 2)

2.21 The Strategy is based on five main objectives. These are as follows

1. *To continually improve the Council's ability to monitor assess and report on air quality in North East Lincolnshire;*
2. *To develop, consult on and implement new initiatives to improve air quality in North East Lincolnshire;*
3. *To incorporate air quality consideration in all relevant Council operations as well as to lead by example in the pursuit of air quality improvements;*
4. *To increase general awareness of air quality, the resultant health implications and how the individual impacts can be reduced; and*
5. *To facilitate the uptake of cleaner alternative fuel powered vehicles and vehicle emission abatement technologies.*(Page 32)

2.22 The Strategy contains a five-year implementation plan, 'which outlines all the key tasks that will be implemented under each of the five objective headings. These range from awareness raising exercises and improving the monitoring resources to promoting the uptake of alternative fuels and cleaner vehicle technologies'[1].

NELC Second Local Transport Plan – LTP2

2.23 NELC has produced its second Local Transport Plan (LTP2) which sets out the Council's strategy for transport from 2006-2022, with both short-term (the first five years) and long-term actions. The LTP2 states that NELC will aim to, 'monitor air quality to ensure that the atmosphere is fit to breathe, and take action if traffic levels cause unacceptable pollution'[2] .

2.24 In addition, the LTP2 indicates that NELC has seen a slowing in the annual growth of traffic over the last four years; this has been consistently running at below 2% per year. The following measures have been identified as having the potential to significantly improve air quality and are measures included in the LTP2.

A18 / A180 Link

2.25 The A18/A180 link is a scheme that would support the Council's objective to redirect traffic from the centre of Immingham, especially from the AQMA on the junction of Kings Road and Pelham Road. Presently, this area is used frequently by HGVs, which are therefore travelling through a residential area. The A18/A180 link development will remove the volume of traffic passing through these residential areas through re-direction of traffic and provide an improved route to Immingham Dock from the south. With the direct influence on the AQMA this is major priority scheme for LTP2.

[1] http://www.nelincs.gov.uk/environment/environmentalhealth/airquality/air+quality+strategy.htm
[2] NELC Local Transport Plan 2, North East Lincolnshire Council 2006

Local Air Quality Management (LAQM)

2.26 NELC published its latest Air Quality Progress Report[3] (APR) in November 2007. The APR is the next stage in the LAQM guidance timetable following on from the conclusion and recommendations of both the Detailed Assessment 2005 (DA) and the Updating and Screening Assessment 2006 (USA). A brief summary of these documents are provided below.

Detailed Assessment 2005

2.27 The first phase of the second round review and assessment (R&A) was the Updating and Screening Assessment (USA) in 2003. The USA concluded that a DA was required for the Kings Road and Pelham Road area and for the port of Immingham.

2.28 According to the APR, 'the recorded measurement for PM_{10} breached the 24-hour mean objective in both 2004 and 2005. It was recommended that the PM_{10} concentrations were at sufficient levels to consider designating an AQMA where residential properties are adjacent to the Kings Road and Pelham Road junction' (page 6).

2.29 The DA predicted that the NO_2 annual mean concentrations would be below the NAQS objective.

Updating and Screening Assessment 2006

2.30 With the recommendations of the DA and the conclusions of the USA 2006 it was confirmed that an AQMA should be declared for PM_{10} for the residential properties adjacent to Kings Road, Immingham. The USA also confirmed that a detailed assessment was not required for NO_2.

Air Quality Progress Report 2007

2.31 The APR stated that NO_2 would continue to be achieved, apart from in the Fryston House area where a Detailed Assessment is required.

2.32 With regard to PM_{10}, the APR noted that, although the AQMA Action Plan is in draft form, progress is being made by NELC and its consultants already to address the air quality issue in the AQMA.

Immingham Air Quality Action Plan 2008

2.33 NELC declared an AQMA in Immingham for PM_{10} on 9 October 2006. The AQMA encompasses properties near the junction of Kings Road and Pelham Road as well as a few properties in Hawthorn Avenue near Kings Road. The DA showed that several sources contributed to the PM_{10} levels in Immingham, amongst which is the road traffic is associated with the operation of the Port of Immingham.

2.34 NELC has drawn up a Draft Local Air Quality Management Action Plan, published April 2008. The Action Plan is required as part of NELC's duties under the LAQM regime. The Action Plan states that 'the reduction of heavy-duty vehicles going through the AQMA could help reduce PM_{10} levels significantly; therefore particular attention will be given to measures focused on reducing HDV flows (or emissions)' (Page 44).

2.35 The list below is a summary of some of the direct measures proposed for the existing AQMA (Page 44) that are relevant for the A18-A180 Link Road:

[3] http://www.nelincs.gov.uk/environment/environmentalhealth/airquality

1. *Implement road signage in Immingham to improve traffic reduction to the East / West dock gates (on the A180) and also further along the A1077 Manby Road / A160 Humber Road (West Gate) and the A1173 (East Gate);*
2. *Investigate potentials to improve speed of vehicles to optimal minimal emission rates for NO_2 and PM_{10} on key strategic routes into and out of the port; and*
3. *New road infrastructure to bypass adjacent residential properties or improve traffic flows within the area.*

3 Assessment Approach

3.1 This section of the report outlines the methodologies applied to assess the impact of the proposed new Link Road in local air quality.

3.2 The Local Air Quality Sub-Objective (WebTAG Unit 3.3.3) within the 'WebTAG' guidance (www.webtag.org.uk) highlights that a variety of accepted methods and models are available for the assessment of air quality from transport. The approach set out in the guidance is based on the methods described in the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 1.

3.3 In accordance with the guidance, we have therefore used the DMRB approach.

Step 1 Methodology

Summary

3.4 Page 3 of the WebTAG guidance states, 'in the first step, pollutant concentrations for the appropriate assessment years for the route(s) affected for both the do-minimum and do-something scenarios should be calculated'.

3.5 JMP has therefore adopted an assessment methodology for Step 1 that is based on the Local Screening Method set out in the DMRB Section 11.3.1 published in May 2007. The methodology is consistent with the requirements for Local Air Quality Management (LAQM) review and assessment (LAQM.TG (03)) published by the Department for Environment, Food and Rural Affairs (Defra) and is recommended by the WebTAG guidance.

3.6 The methodology uses the DMRB Local Screening Method spreadsheet, version 1.03c published in July 2007, which assesses long-term (daily or annual average) pollutant concentrations at specified receptor locations from the roadside. The spreadsheet requires the input of background pollutant concentration data, Average Annual Daily Traffic (AADT) flows, vehicle speed and HGV percentages to evaluate the resulting pollutant concentrations for each receptor during each scenario.

3.7 In accordance with recent guidance published by Air Quality Consultants (AQC) in March 2007, 'Deriving NO_2 from NO_x for the Air Quality Assessment of Roads – Updated to 2006' and as recommended by the Defra for the purposes of LAQM, the DMRB methodology has been adapted to derive road based NO_2 concentrations from the DMRB-derived NO_x by using the function:

$$\textbf{Road-NO}_2 = ((-0.0719 \times \text{Ln}(\text{total-NO}_x) + 0.6248) \times \text{road-NO}_x$$

3.8 This uplift is noted to overcome an underestimation of road-based NO_2 by the DMRB methodology and is therefore a robust, worst case assessment.

Model Inputs

Receptors

3.9 The DMRB approach notes that, for the purpose of an AQA, sensitive receptors can be thought of as areas/properties within 200m of the roadside where people may be subject to change in air quality. Beyond 200m from the roadside, atmospheric dispersion (and chemistry) effects render emissions from road traffic negligible.

3.10 Twelve sensitive receptors have been selected to represent locations that are most likely to be affected by the proposed Link Road. The receptor locations are the same as those used in the 'Air

Quality Assessment of A18-A180 Link Road, North East Lincolnshire' report prepared by AQC in March 2007 and submitted as part of the 'Major transport Scheme: Regional Submission' submitted on behalf of NELC in May 2007. The only exception is that Receptor 9 (closest to then-Option 1, Church Road in Stallingborough) has been dropped from the assessment Option 1 for the Link Road not being progressed.

3.11 It is worth noting at this point that a map contained within the AQC report highlighting the locations of receptors did not match up with the written descriptions contained within report itself. In particular there were discrepancies between the map and table for Receptors 11 and 12. This has since been rectified in the updated Receptor Map included at **Appendix A** for information.

3.12 The twelve receptors are detailed in **Table 3.1** below with their relative distances from the centre of the carriageway (road source). The distances were measured in 'Promap' (www.promap.co.uk) using a 'Detail' level OS map for accuracy. Please note that Receptor Number has been kept consistent with the numbering within the earlier AQC report.

Table 3.1 Receptor location and distance from carriageway

Receptor	Location Description	Distance from Centre of Carriageway	No. Of Links
1	4 Kings Road	15.39m from Kings Rd	1
2	1 Pelham Road	12.79m from Pelham Rd 13.95m from Pelham Rd/A1173 junction	2
3	371 Pelham Road	14.41m from Pelham Rd	1
4	419 Pelham Road	13.28m from Pelham Rd	1
5	20 Stallingborough Road	15.57m from Stallingborough Rd	1
6	Derelict building in front of Gatehouse Cottages Care home	122.60m from Stallingborough Rd	1
7	Top of Keelby road	21.00m from Stallingborough Rd 23.64m from Keelby Rd	2
8	Amon-Sul, B1210 Stallingborough	7.76m from Stallingborough Rd	1
10	3 Antony Way	27.14m from Station Road	1
11	Montessori School, Station Road	5.22m from Station Road	1
12	Ivy Cottage, Healing Road	9.42m from Stallingborough Rd	1
13	110 Great Coates Road	10.96m from Great Coates Rd 15.56m from Great Coates Rd/Aylesby Road	2

Background Concentration

3.13 Local background pollutant concentration data has been obtained from a default map of the NELC area produced by NETCEN on behalf of Defra (and available at www.airquality.co.uk). These maps are provided to assist local authorities with their review and assessment of local air quality. These are the maps referred to in the LAQM.TG (03) and LAQM.TG (08) update and are provided as a single file for each local authority including background concentrations for NO_x, NO_2 and PM_{10}.

3.14 The maps of estimated background annual mean air pollutant concentrations at a 1 km x 1 km grid resolution and co-ordinates are given for the centre of each 1 km x 1 km grid square. The maps provide projected concentrations of NO_x (2005, 2010), NO_2 (2005, 2010), PM_{10} (2005, 2010) amongst others.

3.15 The nearest gridpoint to each receptor has been used to infer background concentrations and these are listed in **Appendix B** for information.

3.16 When projections are required for years for which maps are available, these have been uplifted using recognised year adjustment factors. Guidance notes that projections for other years should always be projected forwards from the nearest available map (e.g. NO_2 projections for 2008 have been calculated from the 2005 map). This is because the maps incorporate spatial variation in the expected emission trends of pollutants, which cannot be incorporated into the year adjustment factors, which are designed to represent typical trends.

3.17 The NETCEN Year Adjustment Calculator, Version 2.2a, published in January 2006 has been used to adjust background concentrations to the future assessment years, including 2008 (baseline), 2012 (year of opening) and 2027 (15-years post development).

3.18 It should be noted that the 2027 concentrations are actually for the year 2020 as this is the furthest future year that the Year Adjustment Calculator can provide at present. However, as engine efficiency and, thus, background air quality are generally improving with time this is noted to be valid as a worst case assessment.

3.19 The NETCEN uplift factors applied are therefore as follows:

- 2008 – Uplifted from 2005;
- 2012 – Uplifted from 2010; and
- 2027 – Uplifted from 2010 to 2020.

3.20 The background pollutant concentrations used in the DMRB assessment for Step 1 are listed in **Appendix B** for information.

3.21 It is also worth noting that the DMRB spreadsheet used only permits assessment of 2025 as the furthest future year. Thus, when assessing the 2027 scenario, this has been entered into the spreadsheet as 2025.

Traffic Data

3.22 JMP was provided with the 2007 AM peak hour (08:00-09:00) baseline traffic flows (hereinafter 'base flows') from a validated SATURN model of the area for each of the following development scenarios:

- 2007 (2008) Base;
- 2012 Do Minimum (DM);
- 2012 Do Something (DS) (with Option 2);
- 2027 DM; and
- 2027 DS (With Option 2).

3.23 The validated 2007 base flows have been assumed to be representative of the 2008 base due to the minimal traffic growth that is expected to occur between 2007 and 2008 and the fact that the 2007 base flows have been validated. Also, the main year of interest is the opening year of 2012 and the traffic flows for this year have been uplifted from the 2007 base flows to infer growth.

3.24 Network images of the SATURN model used to provide traffic flows for the DMRB assessment are included at **Appendix C** for information.

3.25 AM peak flows for each of the development scenarios have been uplifted to 12-hour flows using locally derived uplift factors derived from Automatic Traffic Counter (ATC) data. The ATC data used is as follows:

- Stallingborough Road – count undertaken between 18 and 25 August 2005; and
    - The 12-hour uplift factor was calculated from the two-way, seven day average;
- Pelham Road – count undertaken on monthly weekday over 2006; and
    - The 12-hour uplift factor was calculated from the two-way annual seven day average;

3.26 The uplift factors from the closest ATC count were applied to the SATURN flows and these can been seen in the AADT calculation sheets included at **Appendix D** for information.

3.27 Derived 12-hour flows have then been uplifted to 16-hour flows and finally to AADT flows using known expansion factors prescribed in DMRB COBA Manual, Section 13.1.4 published in May 2004.

3.28 Slow average speeds have been assumed at all links in keeping with a worst case analysis approach. The use of low speeds represents a 'worst case' assessment as engine efficiency decreases and pollutant emissions increase as speed decreases.

3.29 All assumptions, including traffic speed (km/h), traffic growth, and calculation steps to AADT are included at **Appendix D** for information.

Step 2 Methodology

3.30 The second stage of the WebTAG guidance is to quantify the exposure to a change in pollutant concentration (if any) using property counts within set distances from the roadside to take account of diminishing effects of pollution over distance.

3.31 According to the WebTAG guidance (page 4) 'the assessment will produce a value that will define the magnitude of exposure due to the addition, or removal, of pollution from a specific number of properties...A *negative* value will indicate that there is reduced exposure and therefore a general improvement in air quality, due to an option. A *positive* value will indicate an increase in exposure and therefore a general detrimental effect upon air quality due to an option'.

3.32 For each *route* affected by the proposed option (or, in this case, the preferred option for the proposed new link road) distance bands are drawn as follows:

- Road centre to 50m from the road centre;
- 50m – 100m from road centre;
- 100m – 150m from road centre; and
- 150m – 200m from road centre.

3.33 The bands relate to the diminishing contribution that vehicle emissions make to local air quality over distance. The numbers of properties within each distance band are then recorded for the DM and DS scenarios. In this instance, the number of properties will not change as a result of the link road.

3.34 An affected *route* is defined 'as the existing route, the new route (if the proposal provides one) and any other local routes on which traffic flow changes are considered to be significant' (Page 4 TAG Unit 3.3.3.).

3.35 The affected *routes* selected are the same as those used in the AQC report and are based on the SATURN model links. However, it is worth noting that Route 14 has been dropped from this assessment as this was the potential Option 1 Link Road and Route 16 and 17 have been dropped due to there being no properties along these routes and their close proximity to Routes 8, 9 and 10. The routes are highlighted in a map included at **Appendix E** for information and traffic flows along each route are summarised in **Appendix F** for information.

3.36 Annual mean concentrations of NO_2 and PM_{10} within each of these bands for all affected routes have been calculated using the DMRB Local Screening Spreadsheet and the methodology outlined previously. Concentrations have been determined at 20m, 70m 115m and 175m from the road centre to represent 'average' concentrations within each band. Also, due to a new road (Route 15,) being assessed, the concentrations with the DM scenario have been assumed to be the same as the background levels, i.e. with no base traffic flows.

3.37 The DMRB assessment has been undertaken for the opening year of 2012 for both the DM and DS scenarios, as stipulated on page 4 of the guidance.

3.38 Following the initial DMRB assessment, the impact is inferred from values calculated using the equation below:

(pollutant concentration at fixed location within band) x (number of properties within that band)

3.39 This has been carried out for each of the four bands for each route and the results added together to give a total for each scenario. The DM value is deducted from the DS value and a negative or positive value produced (as discussed above). The TAG LAQ Excel spreadsheet has been used to carry these calculations.

Significance Criteria

3.40 There is no official guidance in the UK on how to define the magnitude of air quality impacts or their significance.

3.41 However, AQC has developed criteria to define 'impact magnitude' and 'overall impact significance', which have been used again here in lieu of a general or widely accepted approach. In short, the AQC approach defines impact magnitude as solely related to the degree of change in pollutant concentrations and impact significance as taking account of the impact magnitude and of the absolute concentrations and how they relate to the NAQS Objectives.

3.42 The impact magnitude criteria defined by AQC are set out in **Table 3.2** below and the significance criteria are set out in **Table 3.3**, and these relate the magnitude of change to the NAQS Objectives.

Table 3.2 Definition of Impact Magnitude in Ambient Pollutant Concentrations

Magnitude of Change	Annual Mean NO_2 / PM_{10}	Days PM_{10}
Very Large	Increase / decrease >25%	Increase / decrease > 25 days
Large	Increase / decrease 15-25%	Increase / decrease 15-25 days
Medium	Increase / decrease 10-15%	Increase / decrease 10-15 days
Small	Increase / decrease 5-10%	Increase / decrease 5-10 days
Very Small	Increase / decrease 1-5%	Increase / decrease 1-5 days
Extremely Small	Increase / decrease <%	Increase / decrease <1 days

Table 3.3 Air Quality Impact Significance Criteria

Absolute Concentration in Relation to Objective	Change in Concentration					
	Extremely Small	Very Small	Small	Medium	Large	Very Large
Decrease with Scheme						
Above Objective with Scheme	Slight Beneficial	Slight beneficial	Substantial beneficial	Substantial Beneficial	very substantial beneficial	very substantial beneficial
Above Objective in Do-min, Below with Scheme	Slight beneficial	Moderate beneficial	Substantial beneficial	Substantial beneficial	very substantial beneficial	very substantial beneficial
Below Objective in Do-min	Negligible	Slight beneficial	Slight beneficial	Moderate beneficial	Moderate beneficial	Substantial beneficial
Well Below Objective in Do-min	Negligible	Negligible	Slight beneficial	Slight beneficial	Slight beneficial	Moderate beneficial
Increase with Scheme						
Above Objective with Scheme	Slight adverse	Slight adverse	Substantial adverse	Substantial adverse	Very Substantial adverse	Very Substantial adverse
Above Objective in Do-min, Below with Scheme	Slight Adverse	Moderate adverse	Substantial adverse	Substantial adverse	Very Substantial adverse	Very Substantial adverse
Below Objective in Do-min	Negligible	Slight adverse	Slight adverse	Moderate adverse	Moderate adverse	Substantial adverse
Well Below Objective in Do-min	Negligible	Negligible	Slight adverse	Slight adverse	Slight adverse	Moderate adverse

'Do-min' = future baseline condition in the assessment year / 'Below Objective' = 75-100% of the objective level / 'Well Below Objective' = <75% of the objective level.

Summary

3.43 This section has set out the methodology applied to undertake both the Step 1 and Step 2 assessments required by WebTAG. In addition, JMP has undertaken an assessment of the impact at twelve receptor locations in the study area to further bolster Step 1.

3.44 JMP has also adopted AQC's approach to qualifying impact significance and has used these to infer the overall significance of the air quality impact/benefit arising from the proposed link road.

3.45 The following section presents and discusses the findings of the assessments.

4 WebTAG Assessment Results

4.1 This section of the report discusses the findings of the assessments discussed above and seeks to establish the potential impact of the proposed Link Road on local air quality.

WebTAG Step 1 Results

4.2 The findings of the Step 1 assessment of concentrations at each of the twelve receptor locations for the five modelled scenarios are discussed in the tables and text below. Adjusted DMRB spreadsheet output is included at **Appendix G** for information.

4.3 These results should be compared with the NAQS Objectives listed in **Table 2.1** above and summarised as follows:

- NO_2 average annual concentrations not to exceed **40µgm^{-3}** by 31 December 2005;
- PM_{10} average annual concentrations not to exceed **40µgm^{-3}** by 31 December 2004; and
- PM_{10} average daily concentrations not to exceed **50µgm^{-3}** more than 35 times per year by 31 December 2004.

Nitrogen Dioxide (NO_2)

4.4 **Table 4.1** below shows the DMRB-modelled NO_2 concentrations at each of the receptor locations for each of the five development scenarios.

Table 4.1 Modelled Annual Mean Baseline Concentrations of NO_2 (µgm^{-3})

Receptor	2008	2012		2027	
	Baseline	DM	DS	DM	DS
1	23.65	21.27	20.16	19.82	18.80
2	23.54	21.58	19.85	20.32	18.68
3	19.97	18.24	16.30	17.05	15.75
4	20.36	18.33	16.36	17.16	15.77
5	19.24	17.48	18.14	16.41	15.85
6	15.25	12.41	12.37	11.43	11.45
7	16.62	13.12	14.75	12.14	13.30
8	16.81	13.32	13.29	12.18	12.54
10	15.32	12.34	12.28	11.81	11.71
11	15.40	12.74	12.57	12.14	12.02
12	16.00	12.77	11.95	12.05	11.58
13	20.77	19.24	18.81	18.12	18.06

4.5 The DMRB assessment results for the 2008 base scenario show that, in terms of NO_2, the prevailing air quality is generally good at each of the twelve receptor locations assessed. The largest concentrations of 23.65 and 23.54 are at Receptors 1 and 2 respectively (within the existing AQMA) with the lowest concentrations at Receptors 10 and 11. These are highlighted in grey in the table above.

4.6 The DMRB assessment results indicate that the change in traffic volume and composition expected with the construction of the Link Road will not lead to an exceedence of the NAQS NO_2 Objective of 40µgm^{-3} in the 2012 DS (year of opening) and 2027 DS (15-years post development) scenarios

at any of the twelve receptors. In fact, the results indicate that, for most of the receptors there will be an improvement in NO_2 concentrations as a result of the Link Road. **Table 4.2** shows the incremental changes experienced at each receptor location between the DM and DS scenarios for the 2012 opening year.

Table 4.2 Incremental change in predicted NO_2 concentrations for the 2012 opening year

Receptor	DM - DS (actual change)	DM - DS (% change)
1	-1.11	-5.22%
2	-1.73	-8.02%
3	-1.94	-10.64%
4	-1.97	-10.75%
5	0.66	3.78%
6	-0.04	-0.32%
7	1.63	12.42%
8	-0.03	-0.23%
10	-0.06	-0.49%
11	-0.17	-1.33%
12	-0.82	-6.42%
13	-0.43	-2.23%

4.7 Based on the impact magnitude criteria set out in **Table 3.2**, the change in NO_2 pollutant concentrations can be qualified as follows:

- A *small decrease* is predicted at Receptors 1-4 and Receptor 12;
- A *very small decrease* is predicted at Receptors 10, 11 and 13;
- An *extremely small decrease* is predicted at Receptors 6 and 8; and
- A *medium increase* in NO_2 is expected at Receptor 7; and
- A *small increase* at Receptor 5.

4.8 Based on the significance criteria set out in **Table 3.3**, the impacts of the link road scheme are predicted to be:

- *Slightly beneficial* at Receptors 1-4 and Receptor 12;
- *Negligible* at Receptors 5, 6, 8, 10,11 and 12; and
- *Slightly adverse* at Receptor 7.

Particles (PM_{10})

4.9 **Table 4.3** below shows the DMRB-modelled PM_{10} concentrations at each of the receptor locations for each of the five development scenarios.

Table 4.3 Modelled Baseline Concentrations of PM_{10} (μgm^{-3})

Receptor	2008		2012				2027			
	Baseline		DM		DS		DM		DS	
	Annual Mean	No. Days >50(μgm^{-3})	Annual Mean	No. Days >50(μgm^{-3})	Annual Mean	No. Days >50(μgm^{-3})	Annual Mean	No. Days >50(μgm^{-3})	Annual Mean	No. Days >50(μgm^{-3})
1	20.00	3	18.46	2	18.09	1	18.19	2	17.89	1
2	19.92	3	18.57	2	18.08	1	18.42	2	17.96	1
3	19.12	2	18.05	1	17.70	1	17.93	1	17.71	1
4	19.25	3	18.08	1	17.73	1	17.66	1	17.45	1
5	18.89	2	17.82	1	18.02	1	17.67	1	17.75	1
6	16.94	1	16.16	0	16.16	0	16.10	0	16.11	0
7	17.12	1	16.21	0	16.54	1	16.07	0	16.28	0
8	17.14	1	16.23	0	16.14	0	16.06	0	16.05	0
10	16.92	1	16.06	0	16.03	0	16.02	0	15.98	0
11	16.98	1	16.15	0	16.08	0	16.11	0	16.06	0
12	17.65	1	16.81	1	16.59	1	16.70	1	16.58	1
13	19.24	3	18.07	1	17.94	1	17.92	1	17.92	1

4.10 The DMRB assessment results for the 2008 base scenario show that, in terms of PM_{10}, the prevailing air quality is also generally good at each of the twelve receptor locations assessed. The largest concentrations of 20.00 and 19.92 are at Receptors 1 and 2 respectively with the lowest concentrations at Receptors 6 and 10. These are highlighted in grey in the table above.

4.11 The assessment results indicate that the change in traffic volume and composition expected with the construction of the Link Road will not lead to an exceedence of the NAQS PM_{10} Objectives of $40\mu gm^{-3}$ in the 2012 DS (year of opening) and 2027 DS (15-years post development) scenarios at any of the twelve receptor locations.

4.12 In fact, the results indicate that for most of the receptors there will be an improvement in PM_{10} concentrations as a result of the Link Road. **Table 4.4** shows the incremental changes experienced at each receptor location between the DM and DS scenarios for the 2012 opening year.

4.13 Based on the impact magnitude criteria set out in **Table 3.2**, the change in annual mean PM_{10} pollutant concentrations can be qualified as follows:

- A *very small decrease* is predicted at Receptors 1-4 and Receptor 12;
- An *extremely small decrease* is predicted at Receptors 8,10,11 and 13;
- No change is expected at Receptor 6;
- A *very small increase* is predicted at Receptor 7; and
- An *extremely small increase* is predicted at Receptor 8.

Table 4.4 Incremental change in predicted PM_{10} concentrations for the 2012 opening year

Receptor	DM – DS Annual Mean (actual change)	DM – DS Annual Mean (% change)	DM – DS change in no. days >50(μgm^{-3})
1	-0.37	-2.00%	-1
2	-0.49	-2.64%	-1
3	-0.35	-1.94%	0
4	-0.35	-1.94%	0
5	0.20	1.12%	0
6	0.00	0.00%	0
7	0.33	2.04%	1
8	-0.09	-0.55%	0
10	-0.03	-0.19%	0
11	-0.07	-0.43%	0
12	-0.22	-1.31%	0
13	-0.13	-0.72%	0

4.14 For the number of days exceeding the 24-hour PM_{1O} objective the changes can be qualified as follows:

- An *extremely small increase* is predicted at Receptor 7; and
- An *extremely small decrease* is predicted at Receptors 1 and 2.

4.15 Based on the significance criteria set out in **Table 3.3**, the impacts of the link road scheme are predicted to be:

- *Negligible* at all receptors.

WebTAG Step 2 Results

4.16 Adjusted DMRB spreadsheet output for each route is included at **Appendix H** for information. The complete TAG.LAQ spreadsheet results of the Step 2 assessment for the Link Road are then included at **Appendix I** for information.

4.17 A summary of the Step 2 findings is provided in **Table 4.5** below.

Table 4.5 Results for Step 2 assessment of the Link Road

	Number of Properties Better	Number of Properties Worse	Overall Assessment Score
Nitrogen Dioxide	2,529	0	-946.50
PM_{10}	2,529	0	--197.34

4.18 The WebTAG assessment produces a negative score for both pollutants, which indicates that the scheme will lead to an overall improvement in local air quality.

4.19 In addition to calculating the above assessment score, the WebTAG guidance suggests a qualitative comment may be provided if the proposals affect air quality within an AQMA to state what the effect is or if either of the following situations apply:

- The proposal leads to an increase in annual mean PM_{10} levels at 20m from the road centre of at least $1\mu gm^{-3}$; or
- The proposal leads to an increase in annual mean NO_2 levels at 20m from the road centre of at least $2\mu gm^{-3}$ and where concentrations are above the NAQS Objective of $40\mu gm^{-3}$.

4.20 Routes 1 and 4 (**Appendix E**) pass through the existing AQMA on Kings Road / Pelham Road. According to the results from the Step 2 assessment, in the DS scenario for each average point within property bands there is a *reduction* in pollutant concentrations of both NO_2 and PM_{10}. As noted above, the results of the Step 2 assessment are included in **Appendix I** but, for ease of reference, the findings for these routes have been summarised in the tables below.

Table 4.6 Step 2 PM_{10} Summary for Route 1

Distance	20m	70m	115m	175m
PM_{10} concentration at average point within band for do-minimum	17.94	17.34	17.17	17.12
PM_{10} concentration at average point within band for do-something	17.56	17.23	17.14	17.11

Table 4.7 Step 2 NO_2 Summary for Route 1

Distance	20m	70m	115m	175m
NO_2 concentration at average point within band for do-minimum	18.47	16.38	15.78	15.59
NO_2 concentration at average point within band for do-something	16.64	15.82	15.59	15.51

Table 4.8 Step 2 PM_{10} Summary for Route 4

Distance	20m	70m	115m	175m
PM_{10} concentration at average point within band for do-minimum	18.25	17.15	16.85	16.76
PM_{10} concentration at average point within band for do-something	17.93	17.06	16.82	16.74

Table 4.9 Step 2 NO_2 Summary for Route 4

Distance	20m	70m	115m	175m
NO_2 concentration at average point within band for do-minimum	20.57	16.61	15.42	15.03
NO_2 concentration at average point within band for do-something	19.57	16.28	15.30	14.99

4.21 Outside the existing AQMA, the assessment results indicate that the proposed new Link Road would lead to an increase in NO_2 greater than $2\mu gm^{-3}$ at 20m from the road centre along Route 15, i.e. the Link Road itself. As noted above, there is currently no traffic along this route (as the road does not exist) and, for the purposes of the assessment, the DM pollutant concentrations were assumed to be the same as the background concentrations. Therefore, the introduction of traffic

along this route is expected to increase pollutant concentrations. Nevertheless, the pollutant concentrations experienced along this route are below the NAQS Objective.

4.22 The proposed new Link Road is not expected to lead to an increase in annual mean PM_{10} levels at 20m from the road centre of at least $1\mu gm^{-3}$ along any of the fifteen routes assessed.

5 Greenhouse Gases

Introduction

5.1 The Greenhouse Gases Sub-Objective (WebTAG 3.3.5) states that 'CO_2 is considered to the most important greenhouse gas and therefore, has been used as the key indicator for the purposes of assessing the impacts of transport options on climate change. Unlike the assessment of local air quality impacts, the assessment of CO_2 is relatively straightforward' (page 3).

5.2 CO_2 emissions will be considered in terms of the change in equivalent tonnes of carbon released as a result of implementing a transport scheme, in this case the A18-A180 Link Road. Carbon emissions are estimated for the 'with scheme' (DS) and 'without scheme' (DM) options for each year of the appraisal period (2012 to 2071). The monetary value for the change in carbon emissions has also been calculated.

Use of TUBA

5.3 For the Greenhouse Gas Sub-Objective the proposed road scheme has been appraised using the TUBA program (version 1.7a). According to the WebTAG guidance, '(T)he net present value of the change in road-based carbon emissions in the Department's standard base year prices and values for the whole appraisal period will be presented as an automatic output of the program'(page 7).

5.4 It is worth noting that the guidance identifies that if TUBA is being used to estimate the change in carbon emissions it is important that all 8,760 hours of the year are represented in the analysis. For this assessment there is no traffic model for the weekend or the 7pm – 7am periods and therefore no reliable data to base these periods on. According to the DfT TUBA Guidance (October 2006) this is appropriate methodology as periods can be ignored if it can be assumed that their contributions to overall benefit / disbenefit are negligible (page 12). Therefore we have not considered these periods in the TUBA analysis.

Assessment and Reporting

5.5 Part of the WebTAG guidance involves the completion of the 'TAG global emissions excel spreadsheet'. This outlines the Department's expected requirements for this sub-objective. The guidance states that 'promoters who are using TUBA or COBA programs should extract suitable information from the program outputs in completing the worksheet' (page 8).

5.6 The completed WebTAG spreadsheet has been included at **Appendix J** for information and the AST showing the results of the assessment is contained within the next section.

6 Summary & Conclusions

Main Findings

6.1 In accordance with the WebTAG guidance, an assessment has been undertaken to quantify the local air quality impact of the proposed new Link Road using a suite of five development scenarios including scenarios with ('do something' or DS) and without ('do minimum' or DM) the proposed new Link Road.

6.2 In addition, and to bolster the Step 1 part of the WebTAG assessment, pollutant concentrations at twelve sensitive receptor locations have been assessed for each of the scenarios. We have also sought to qualify the change in exposure at these receptor locations to infer the significance of the impacts.

6.3 The WebTAG assessment has been limited to transport-related pollutants nitrogen dioxide (NO_2) and particles (PM_{10}) as these are noted to be of greatest concern throughout the UK and any issues would be likely to be exacerbated by an increase in traffic arising from the proposed Link Road.

6.4 The baseline scenario assessments indicated that NAQS Objectives for the key pollutants have been met at all twelve receptor locations. The DS scenarios results indicate that change in traffic volume and composition arising from the proposed Link Road will not lead to a breach in the NAQS Objectives (or EU limit values) at any of the twelve key sensitive receptor locations modelled. Indeed, the assessment results indicate that most of the receptors will experience an improvement in local air quality as a result of the proposed new Link Road.

6.5 The assessment indicates that the proposed new Link Road generates an improvement in air quality as it indicates a negative appraisal value for both pollutants.

6.6 The GHGA indicates that the proposed new Link Road will lead to a reduction in carbon emissions in the DS scenario compared to the DM over the whole appraisal period and generate an overall net benefit.

Appraisal Summary Table

6.7 **Table 6.1** below provides the relevant air quality and greenhouse gas input required for the Appraisal Summary Table (AST).

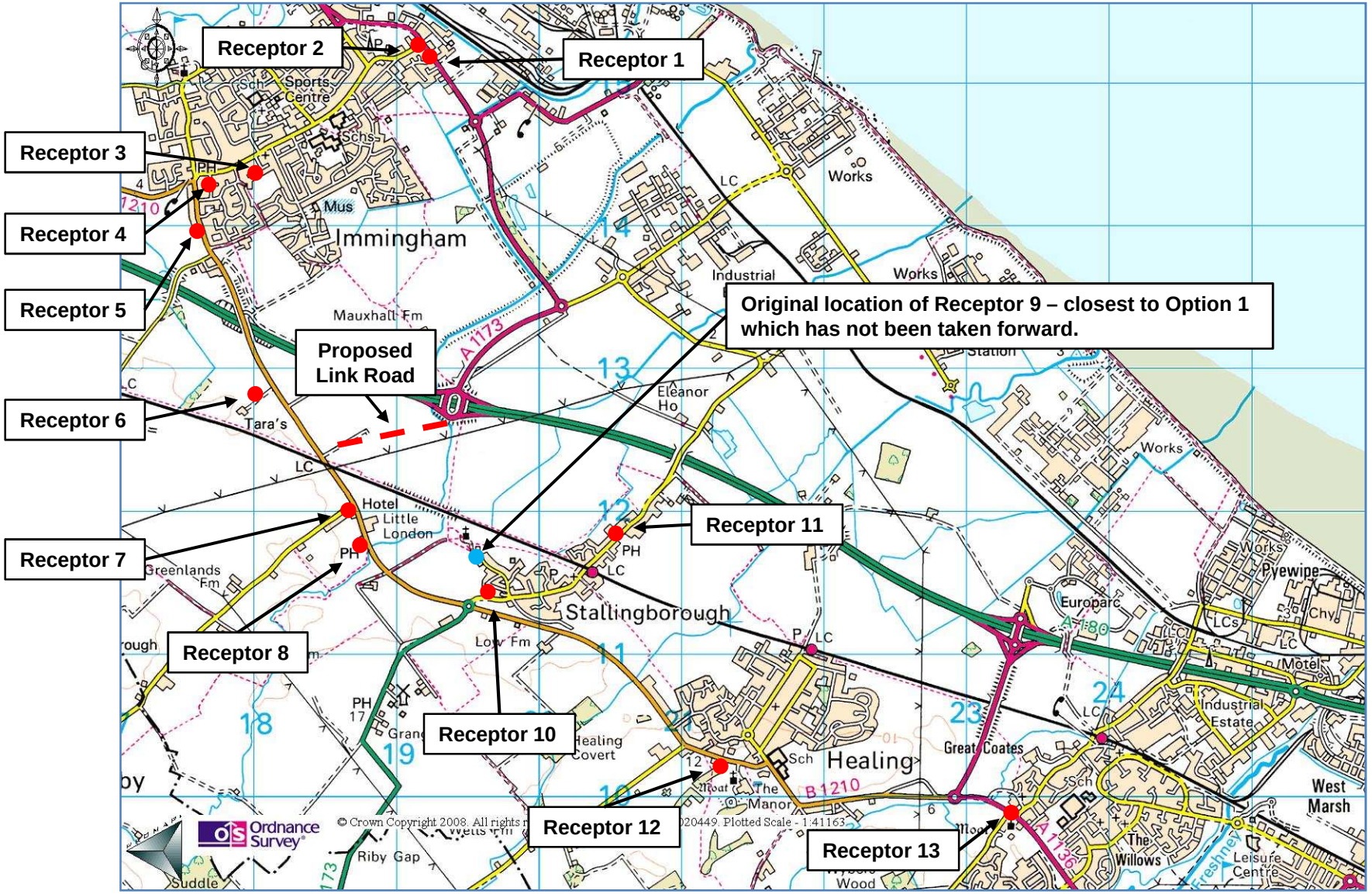
Table 6.1 Air Quality & Greenhouse Gas Input to AST

OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT	ASSESSMENT
Environment	Local Air Quality	Benefits are due to improved traffic flow and movement of through traffic away from areas with high numbers of relevant receptors. Improvement expected at the AQMA on Kings Road / Pelham Road junction	Air quality improvements at 2,529 properties for NO_2 and 2,529 for PM_{10}. No worsening of air quality at any properties.	A significant overall improvement in air quality NO_2 = -946.50 PM_{10} = -197.34
Environment	Greenhouse Gases	Benefits are due to improved traffic flows and journey times and reduction in total fuel consumption.	Total change in tonnes of carbon emitted between 'with scheme' and 'without scheme' for the whole appraisal period is -1,947 and for the opening year is -3.	The net present value of the total change in carbon emissions over the whole appraisal period is: £55,926.

Appendix A

Receptor Map

Map to show the locations of the sensitive receptors



Appendix B

Pollutant Background Concentrations

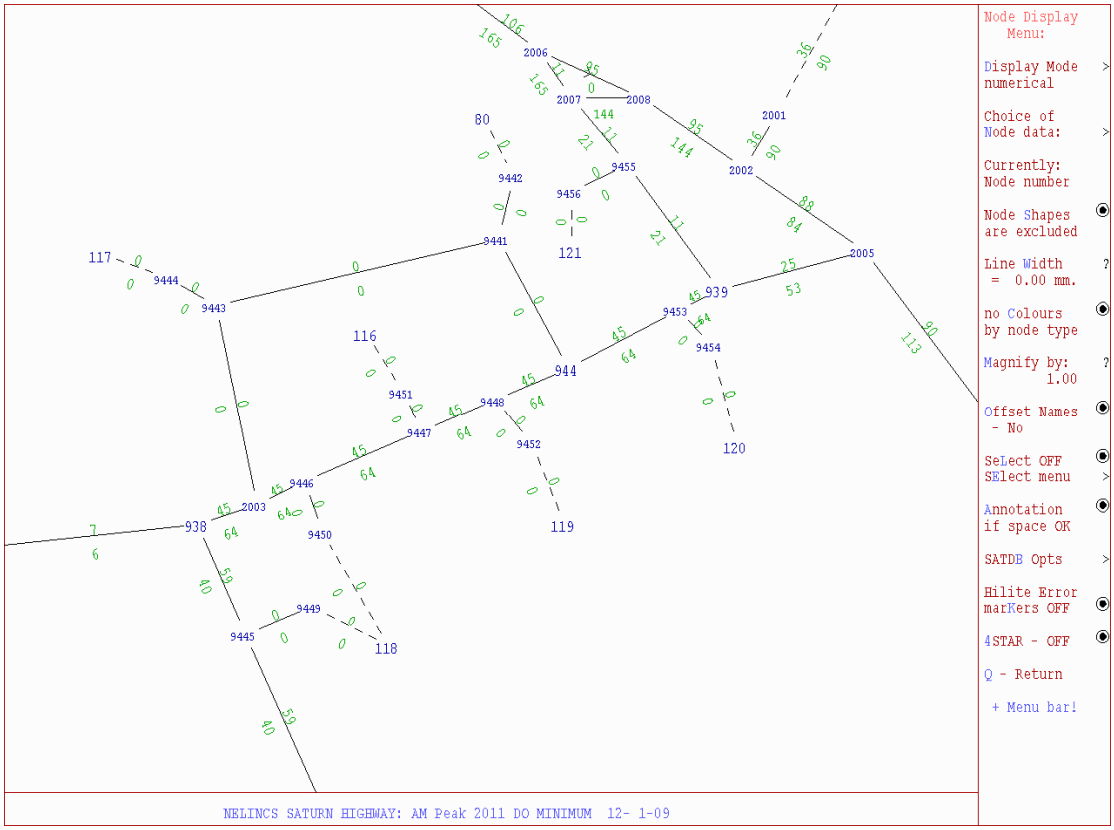
Background Pollutant Concentrations

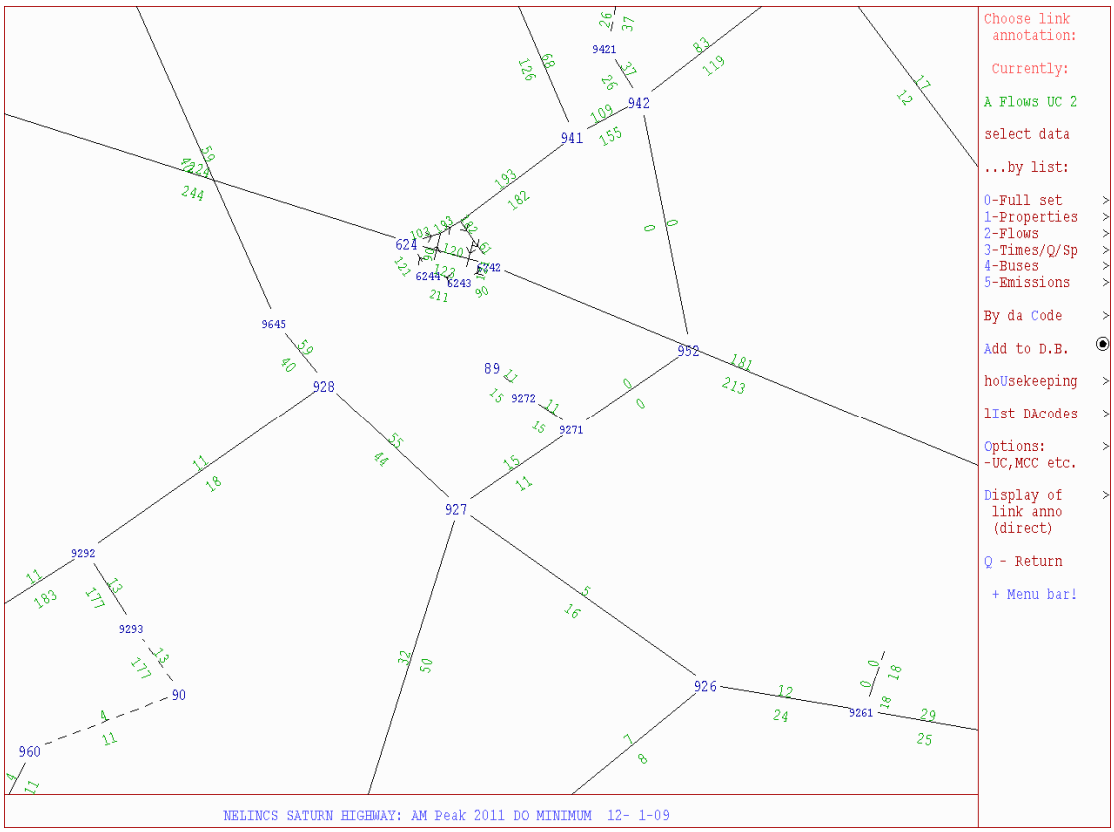
Receptor	Route	X	Y	NOx 2005 ugm-3	2008	NOx 2010 ugm-3	2012	2027	NO2 2005 ugm-3	2008	NO2 2010 ugm-3	2012	2027	PM10 2005 ugm-3	2008	PM10 2010 ugm-3	2012	2027
3,4,5	2	517500	414500	21.40	18.90	17.20	16.24	14.71	16.70	15.46	15.00	14.51	13.88	18.80	17.75	17.40	16.99	16.96
7,8	3	518500	411500	17.70	15.63	14.30	13.50	12.23	15.00	13.88	11.20	10.83	10.36	17.30	16.34	16.00	15.62	15.60
6	15	518500	412500	20.40	18.02	16.30	15.39	13.94	16.30	15.08	12.70	12.28	11.36	17.90	16.90	16.50	16.13	16.08
	1	518500	414500	23.60	20.84	19.40	18.31	16.60	17.70	16.38	16.00	15.47	14.81	18.90	17.85	17.50	17.09	17.06
10	8	519500	411500	19.00	16.78	15.30	14.44	13.09	15.60	14.44	12.00	11.61	11.10	17.60	16.62	16.20	15.82	15.79
	6	519500	413500	21.90	19.34	17.50	16.52	14.97	16.90	15.64	15.10	14.60	13.97	18.40	17.38	17.00	16.60	16.57
	5	519500	414500	22.50	19.87	18.70	17.65	16.00	17.20	15.92	15.70	15.18	14.53	18.70	17.66	17.30	16.89	16.86
1,2	4	519500	415500	21.30	18.81	17.80	16.80	15.23	16.70	15.46	15.30	14.80	14.16	18.50	17.47	17.10	16.70	16.67
11	7	520500	411500	20.30	17.93	16.40	15.48	14.03	16.20	14.99	12.80	12.38	11.84	17.80	16.81	16.40	16.01	15.99
12	9,10	521500	410500	17.70	15.63	14.50	13.69	12.40	15.00	13.88	11.40	11.03	10.55	18.00	17.00	16.70	16.31	16.28
13	11,12	523500	409500	22.50	19.87	18.70	17.65	16.00	17.20	15.92	15.70	15.18	14.53	18.40	17.38	17.00	16.60	16.57
	13	523500	410500	31.70	28.00	26.90	25.39	23.01	21.40	19.80	19.50	18.86	18.04	19.80	18.70	18.30	17.87	17.84

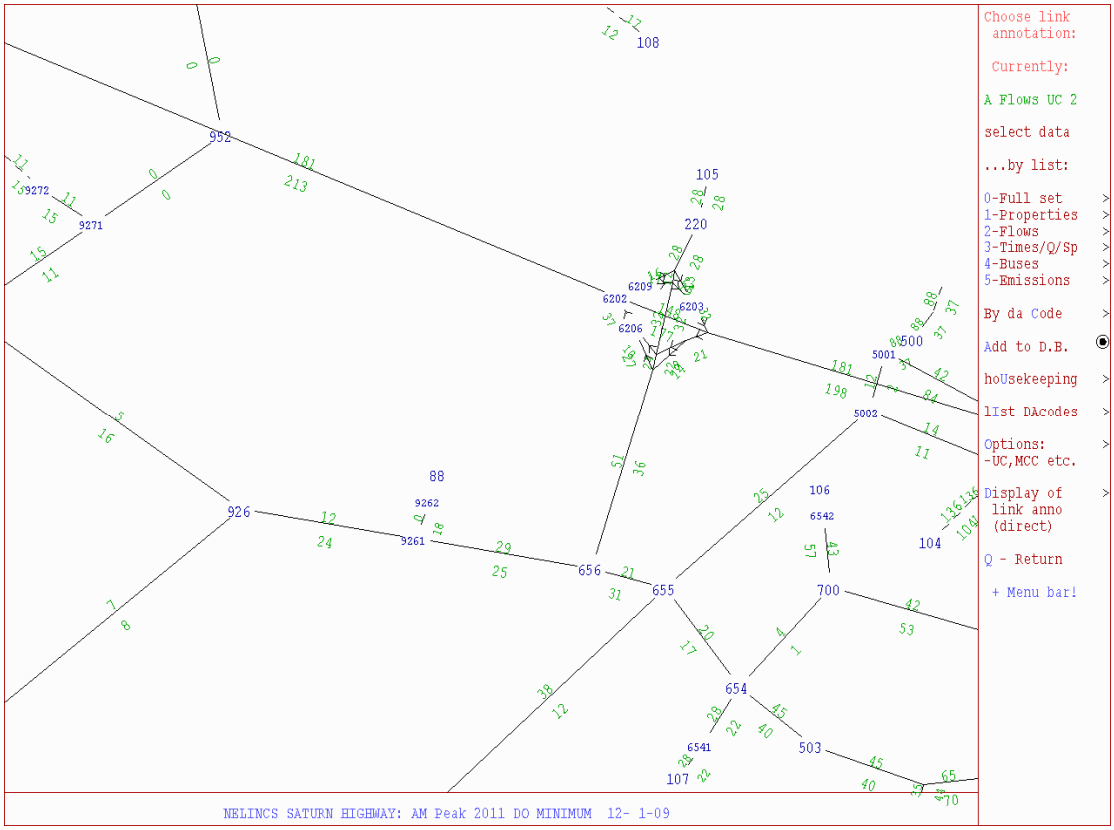
Appendix C

SATURN Model Links

HGV 2012 Do-min AM



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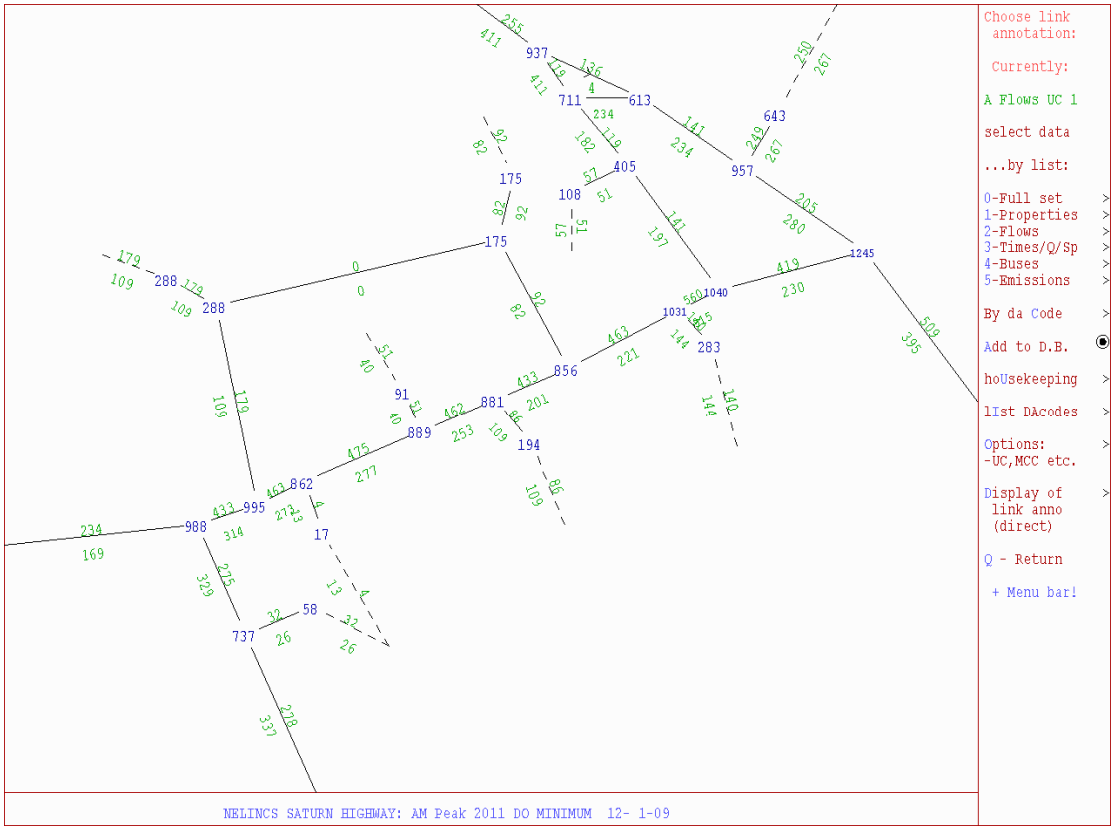

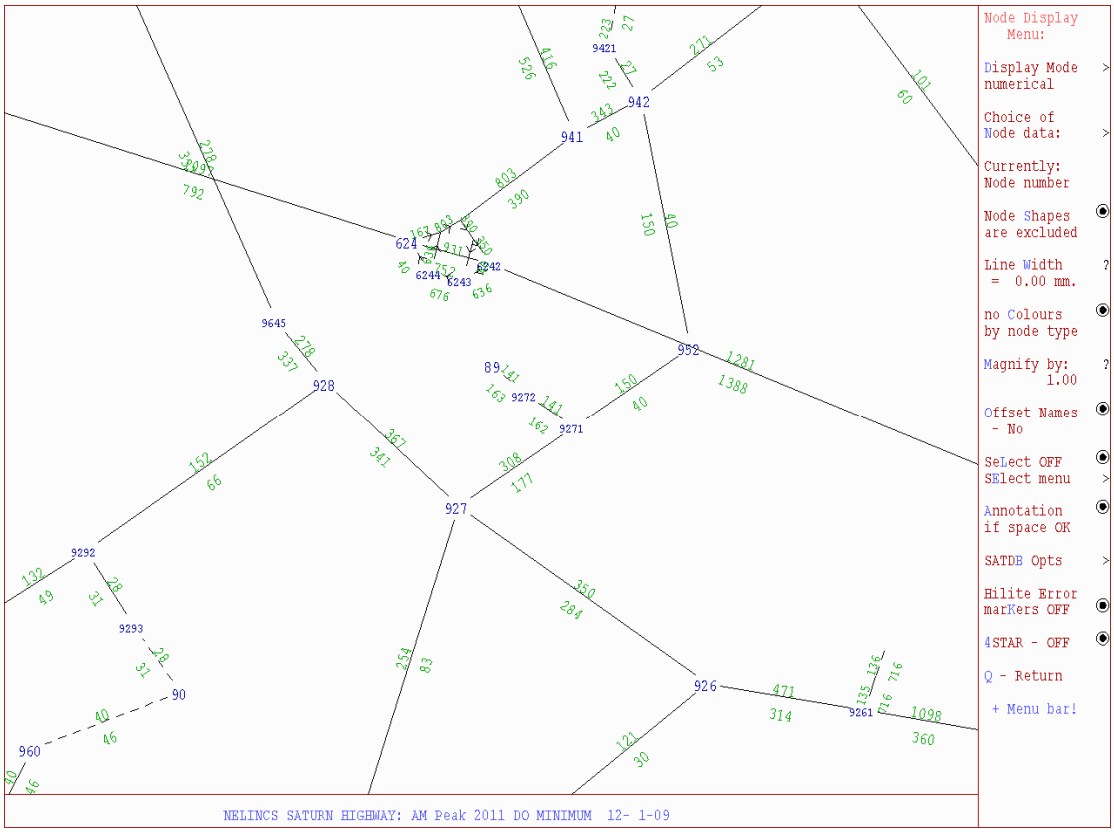

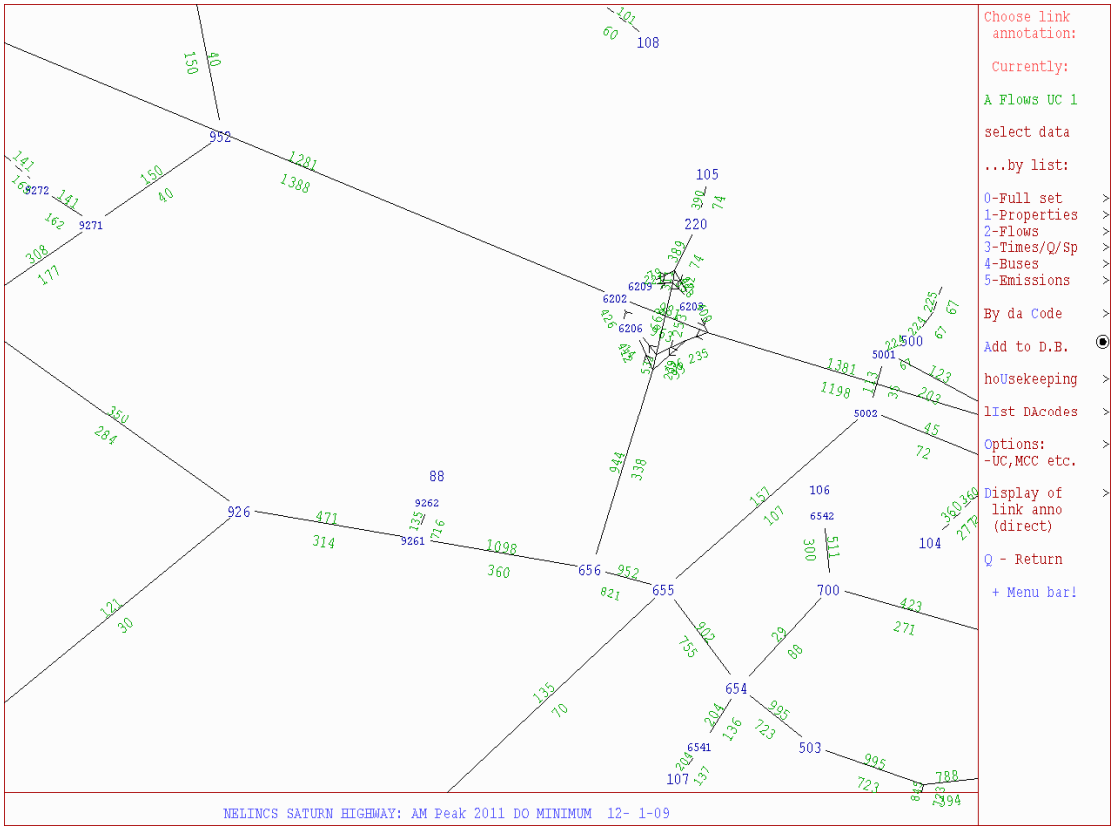
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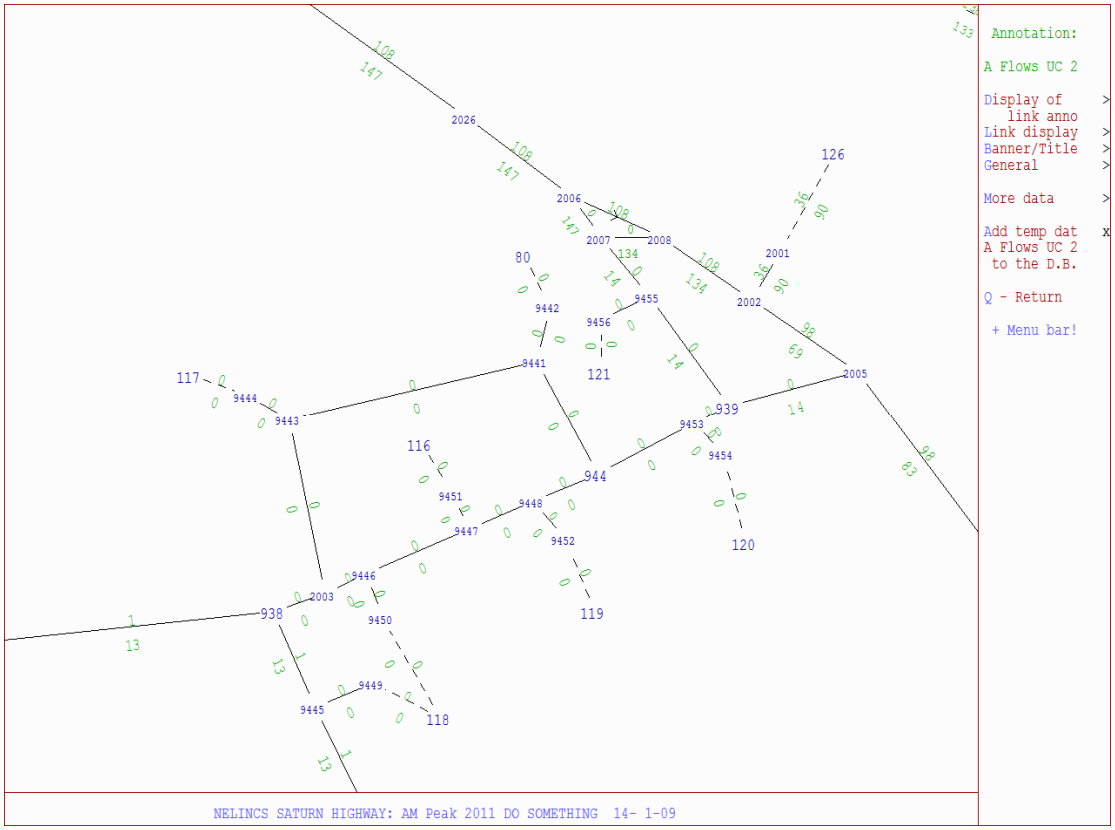

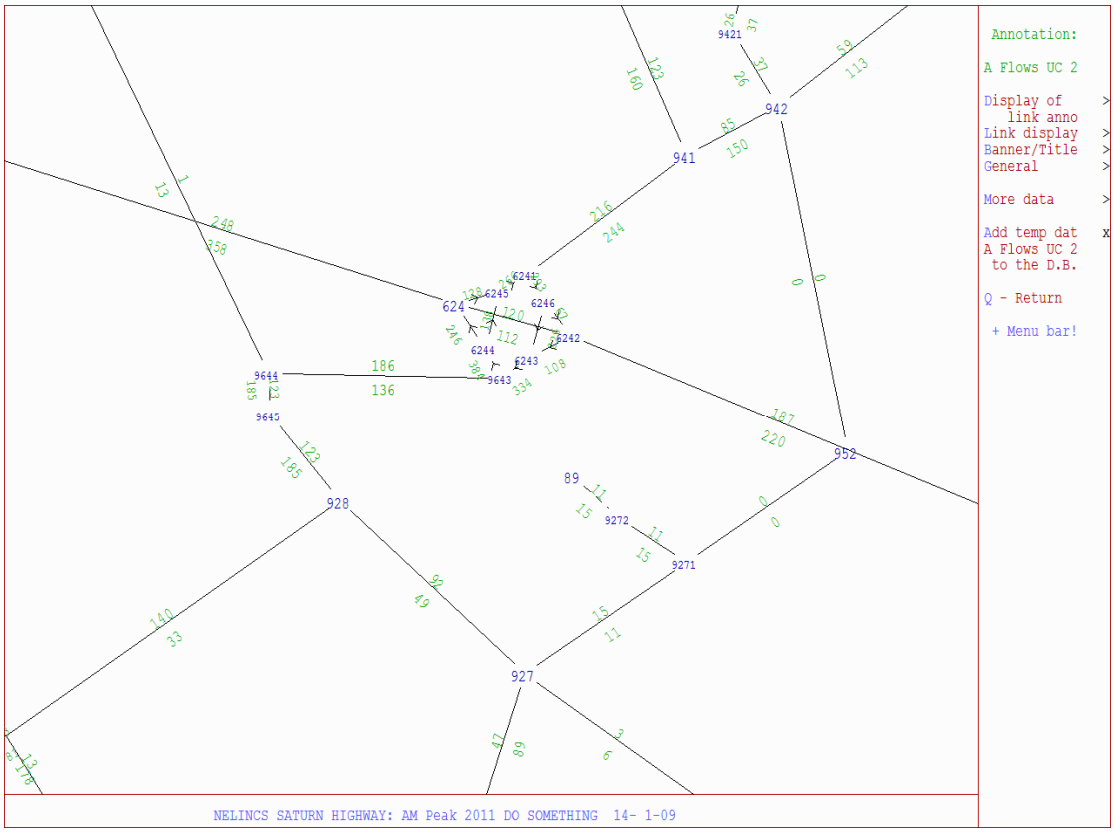

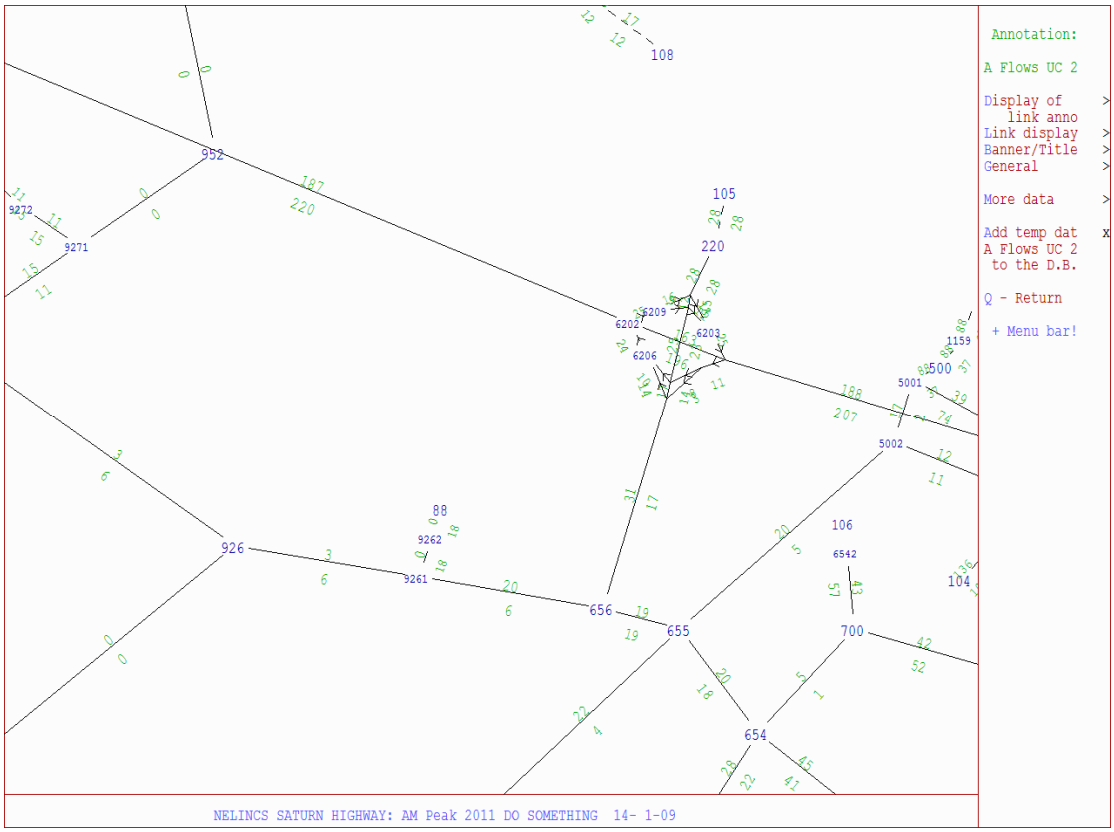
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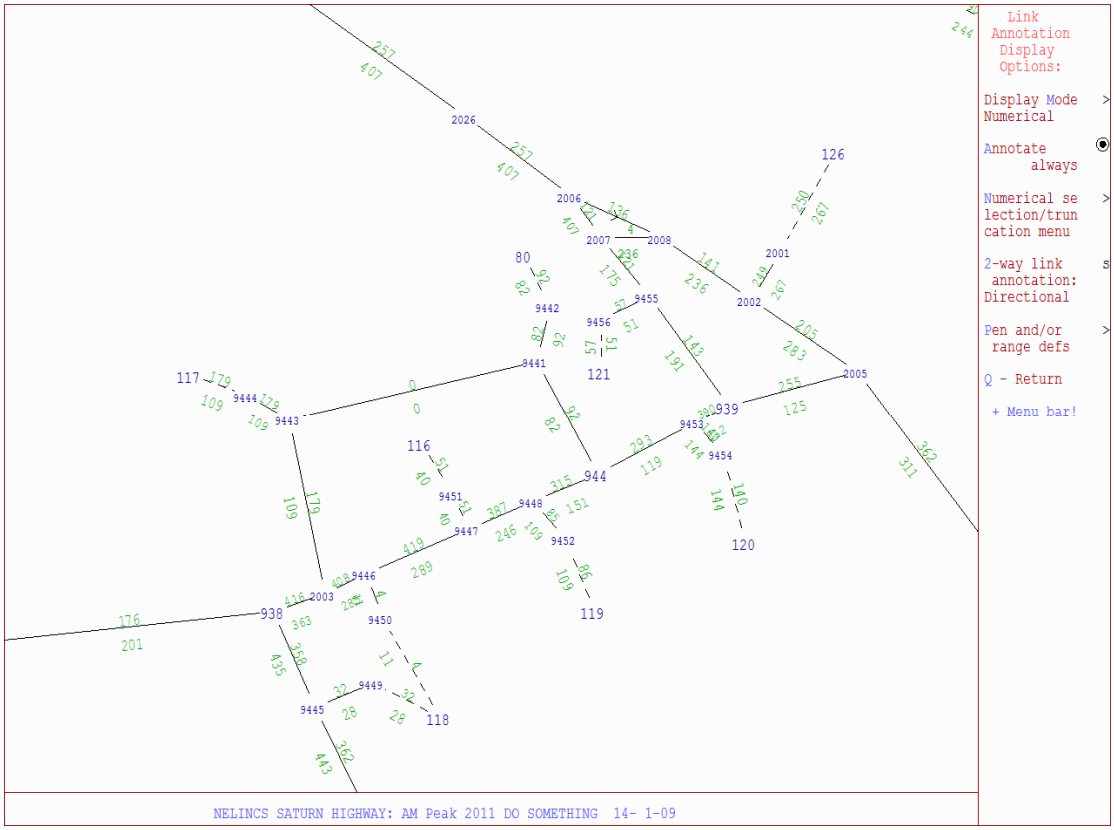

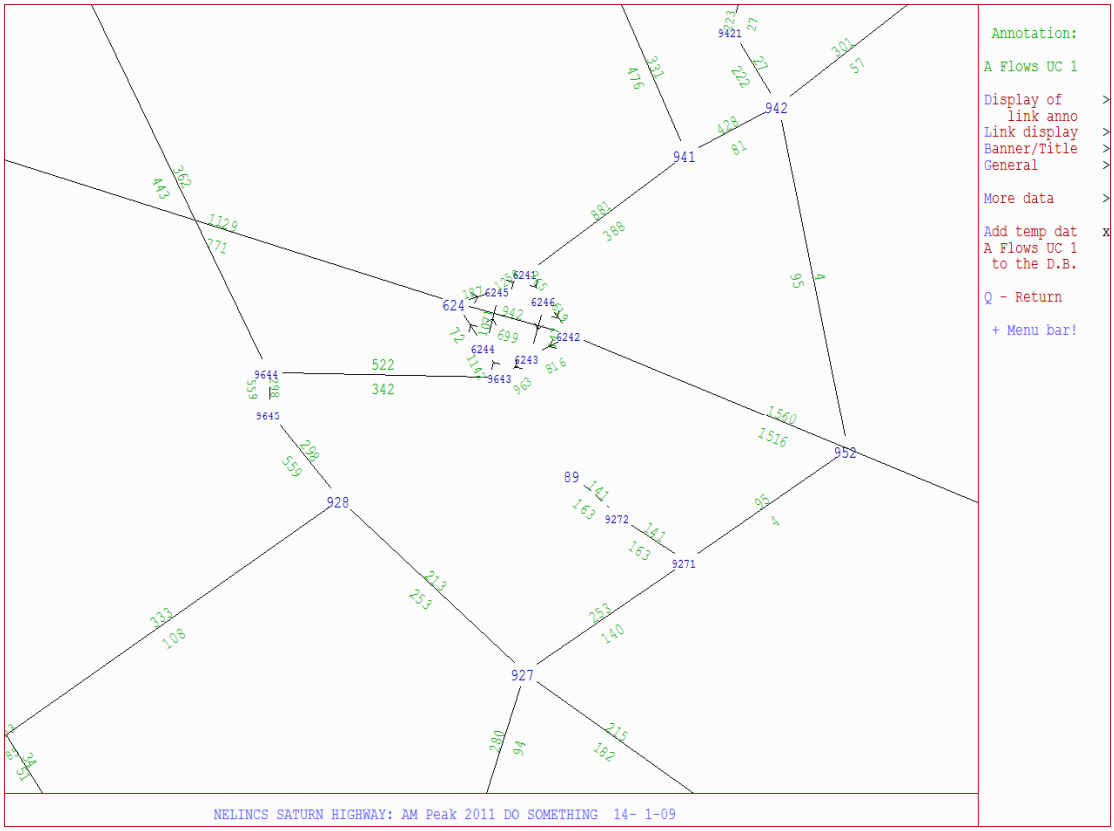

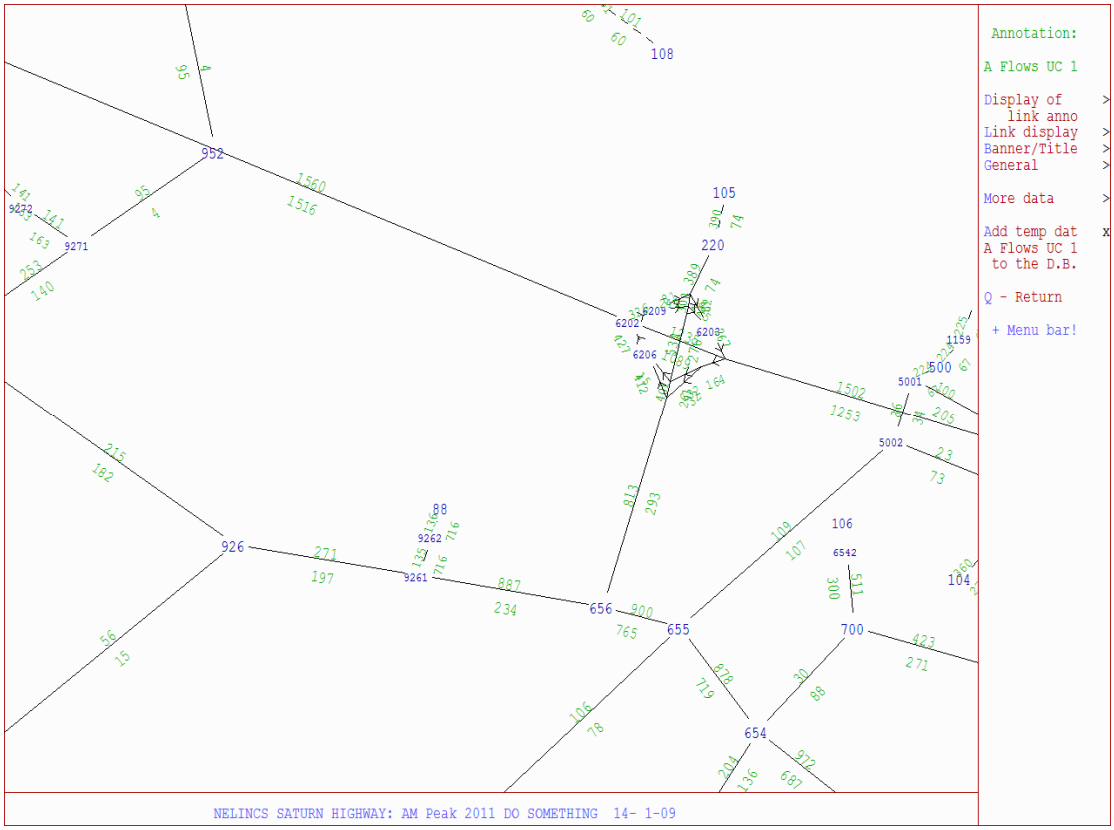
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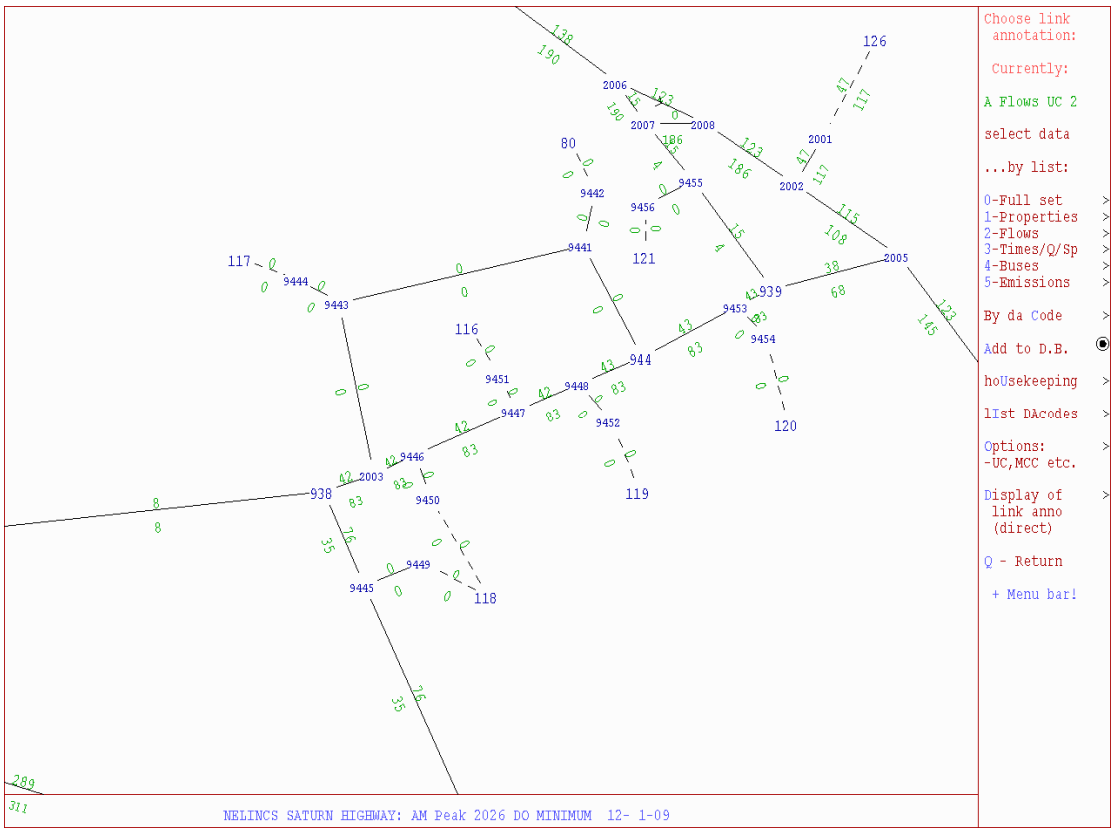
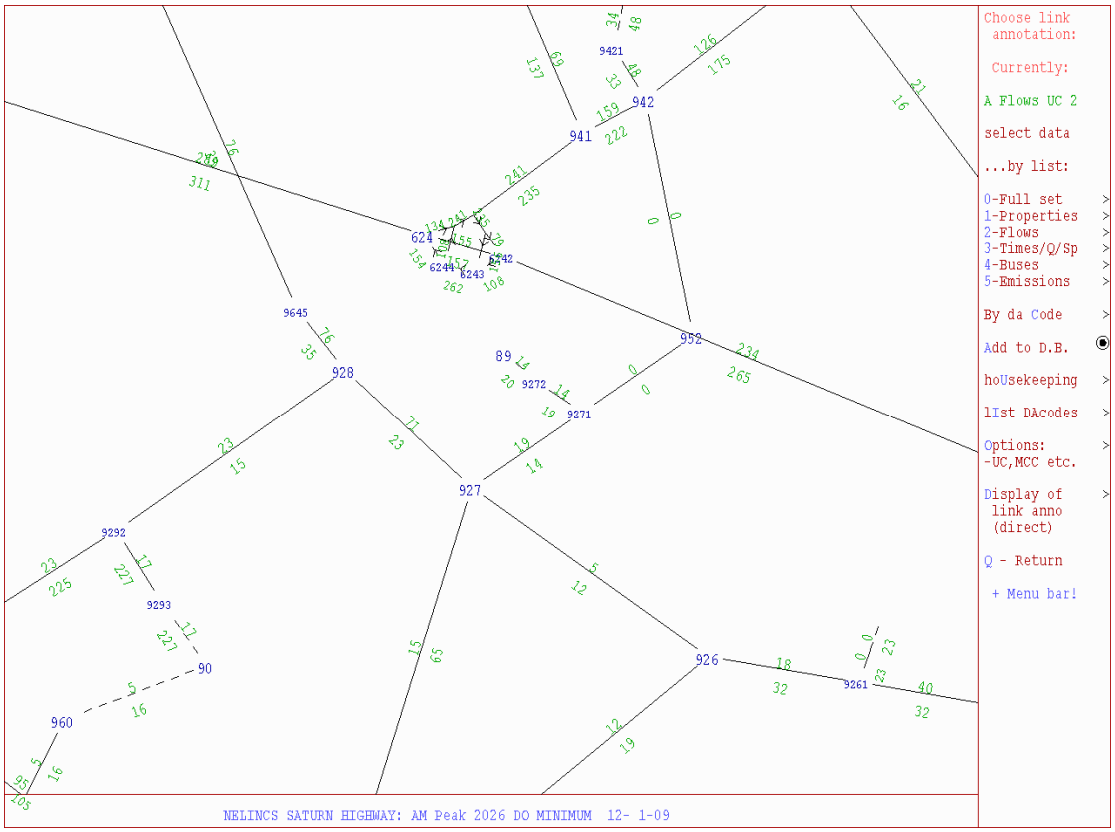
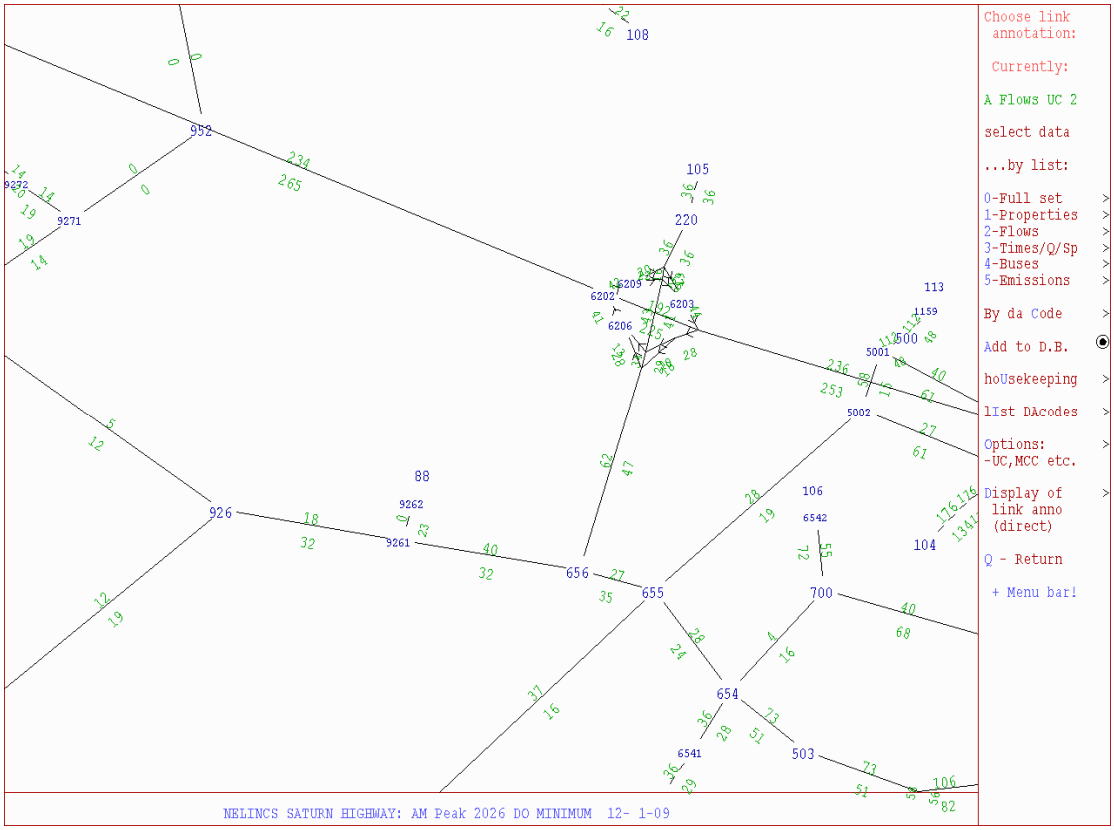
NELINCS SATURN HIGHWAY: AM Peak 2011 DO SOMETHING 14- 1-09

HGV 2027 Do-min AM



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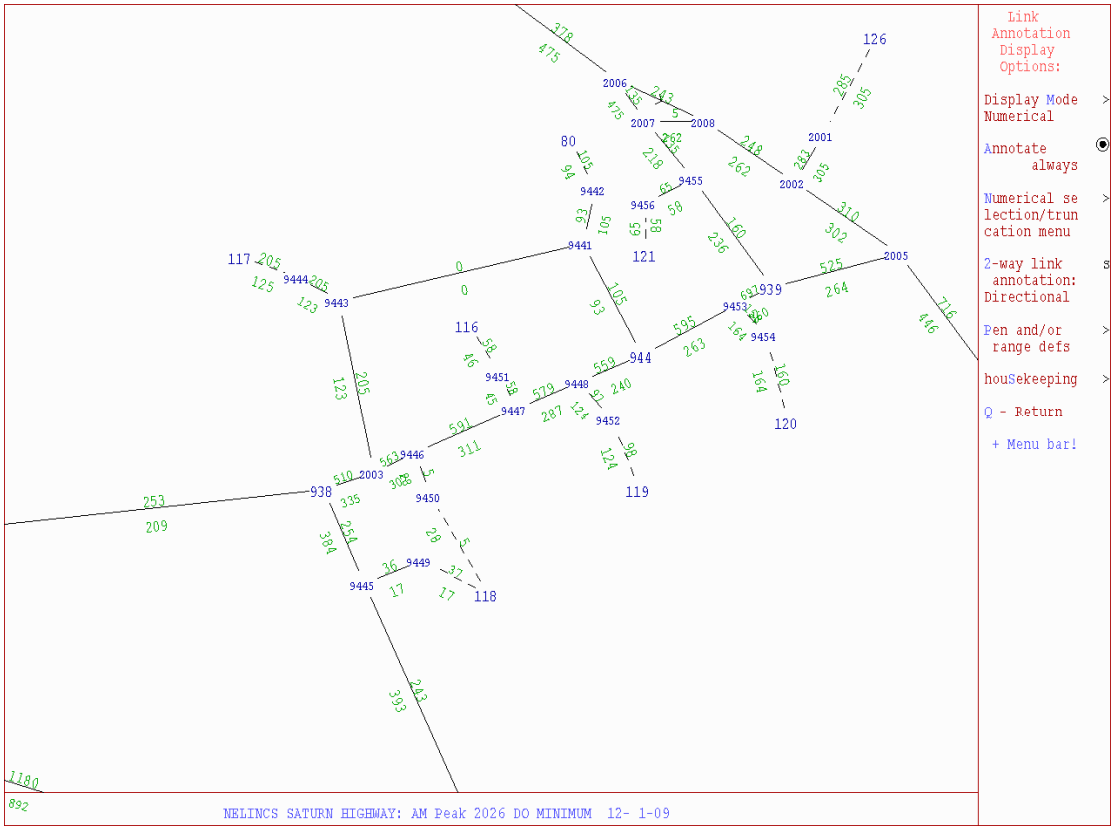
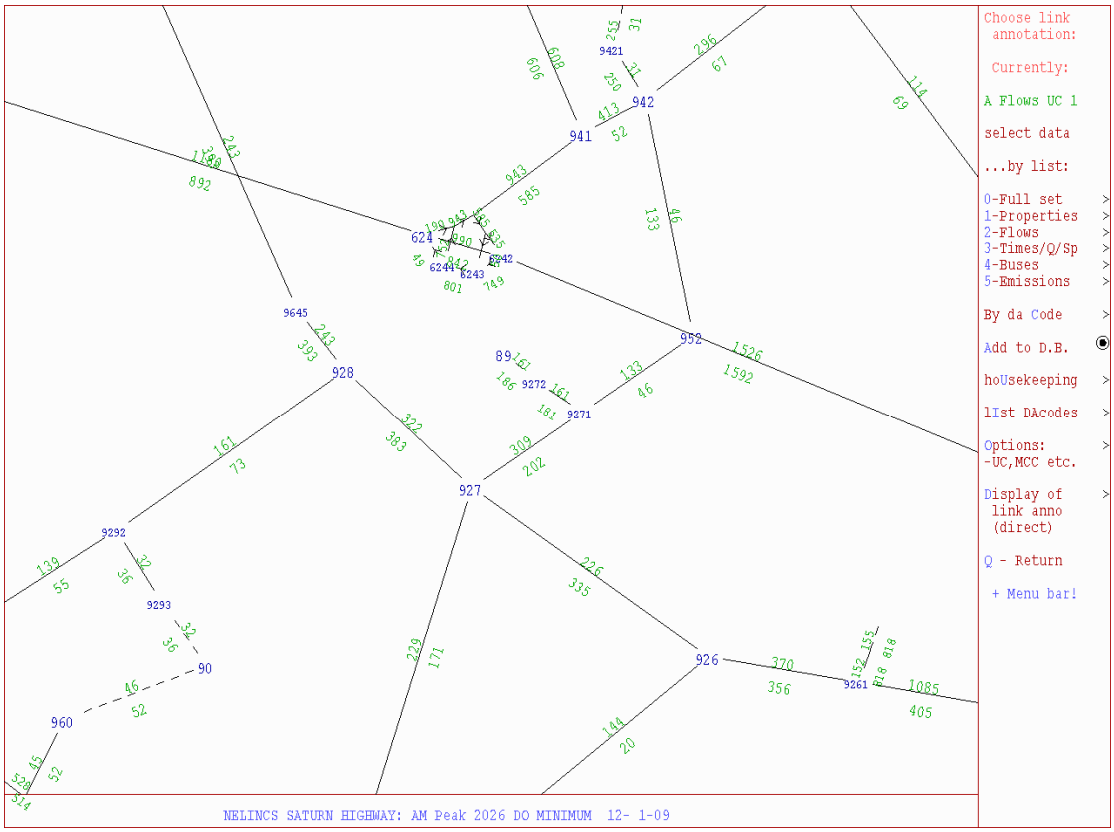
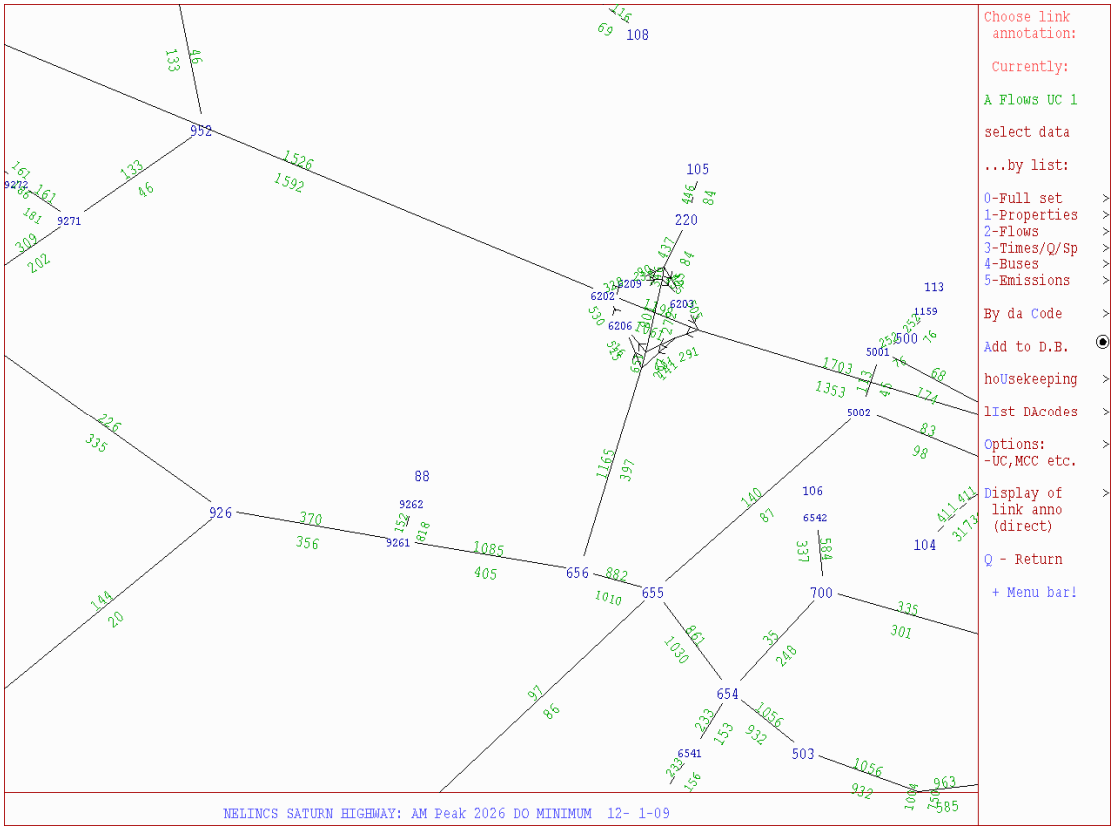
NELINCS SATURN HIGHWAY: AM Peak 2026 DO MINIMUM 12- 1-09

Lights 2027 Do-min AM



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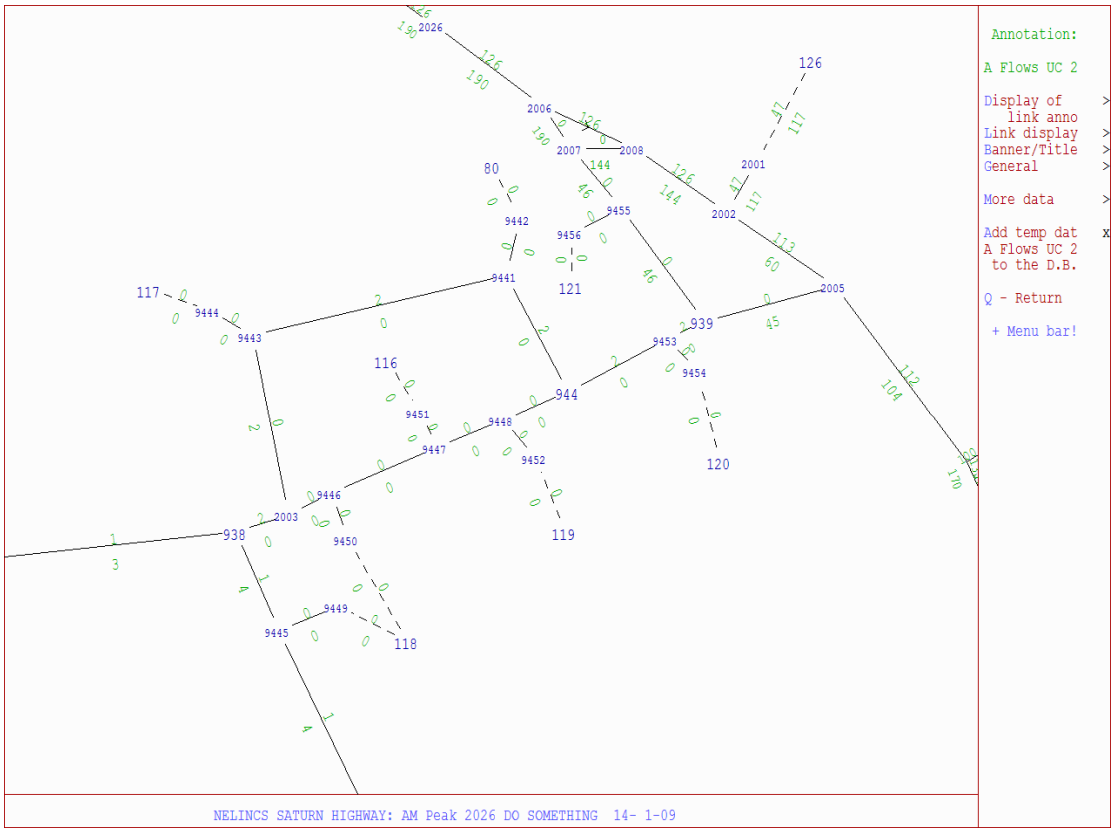
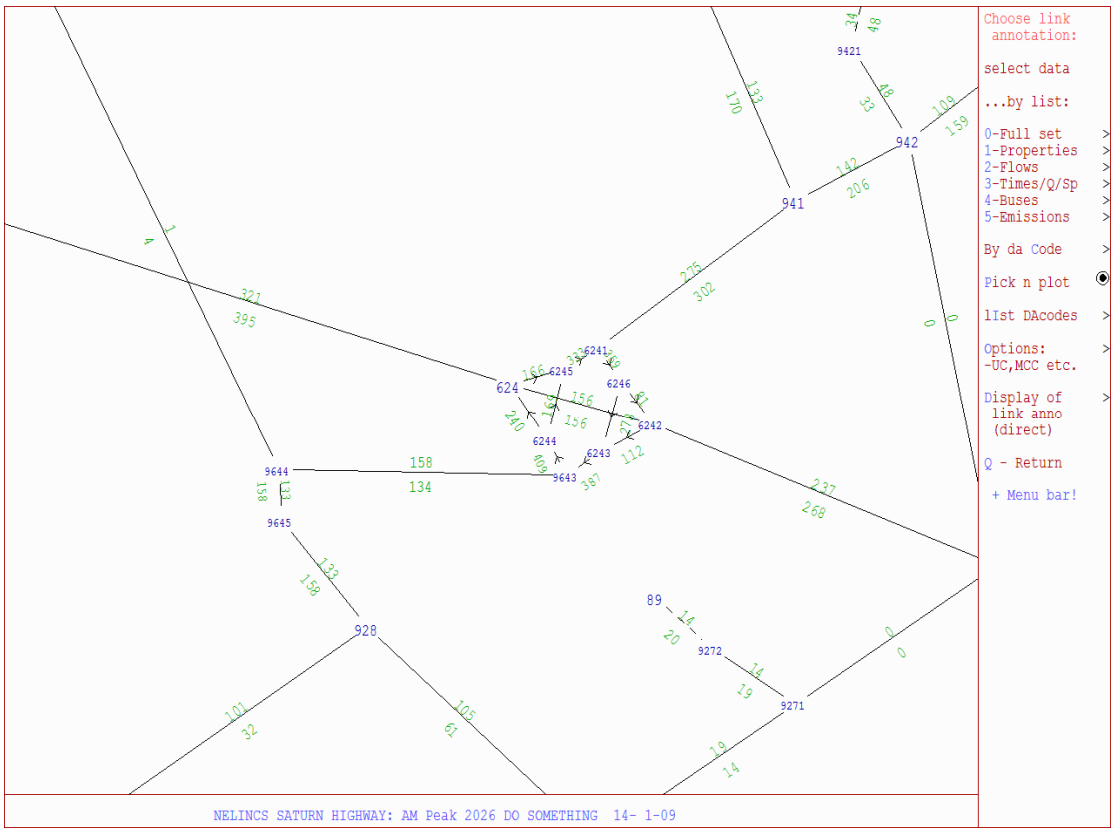
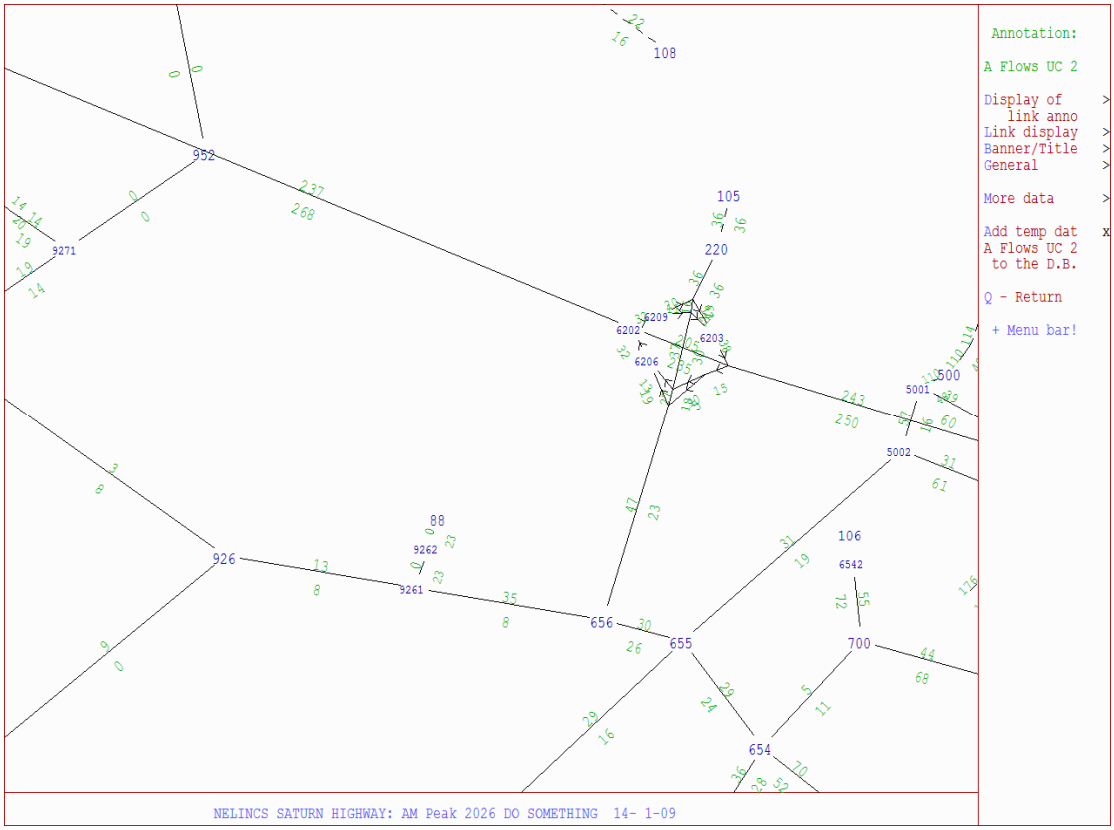
NELINCS SATURN HIGHWAY: AM Peak 2026 DO MINIMUM 12- 1-09

HGV 2027 Do-some AM



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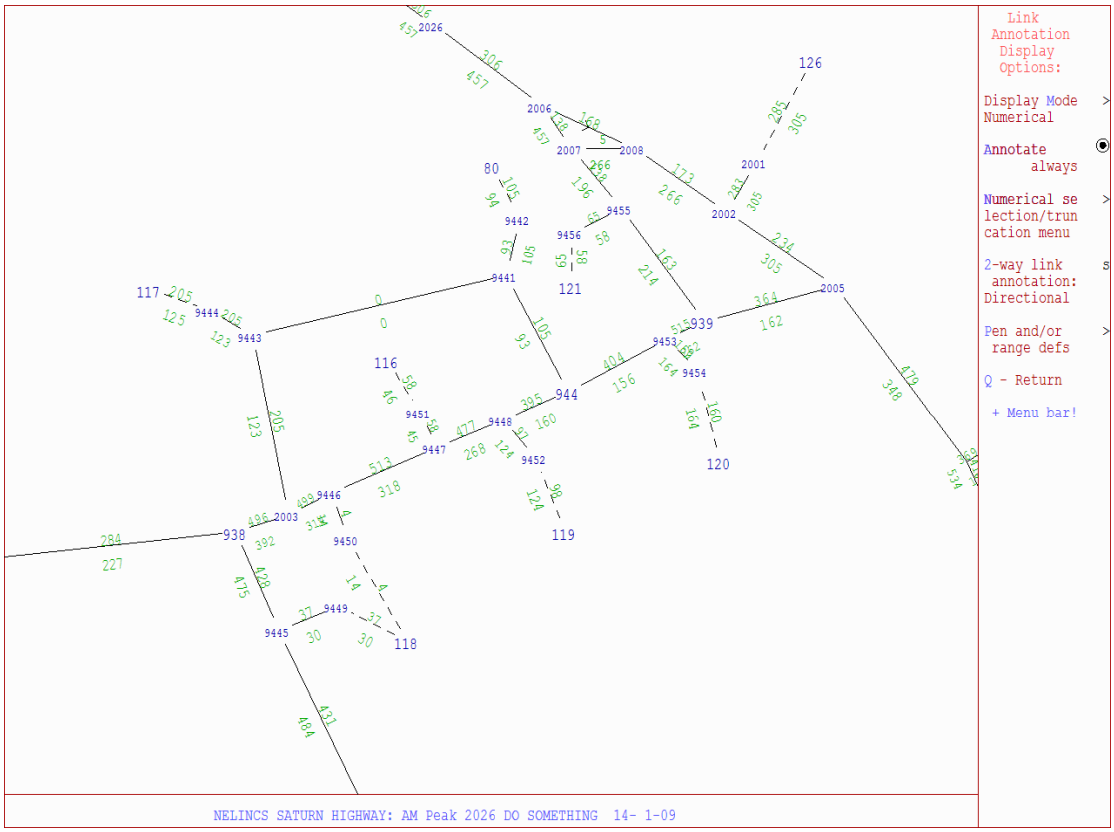
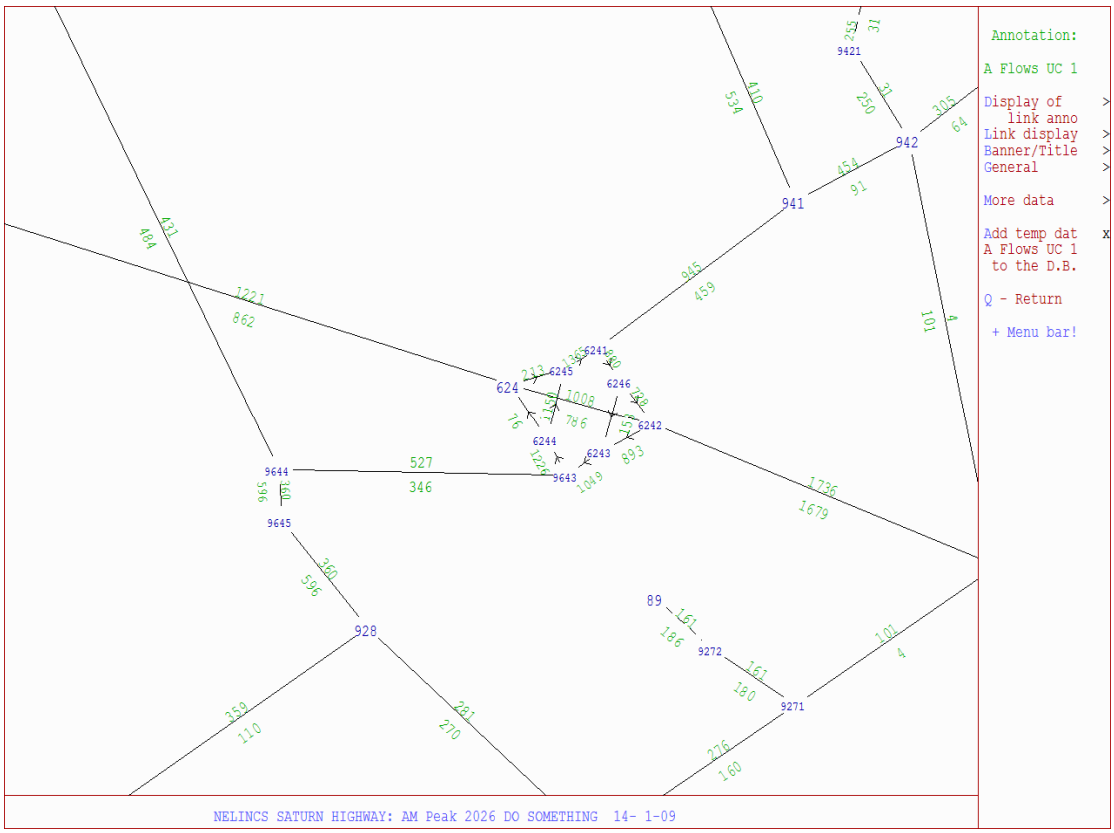
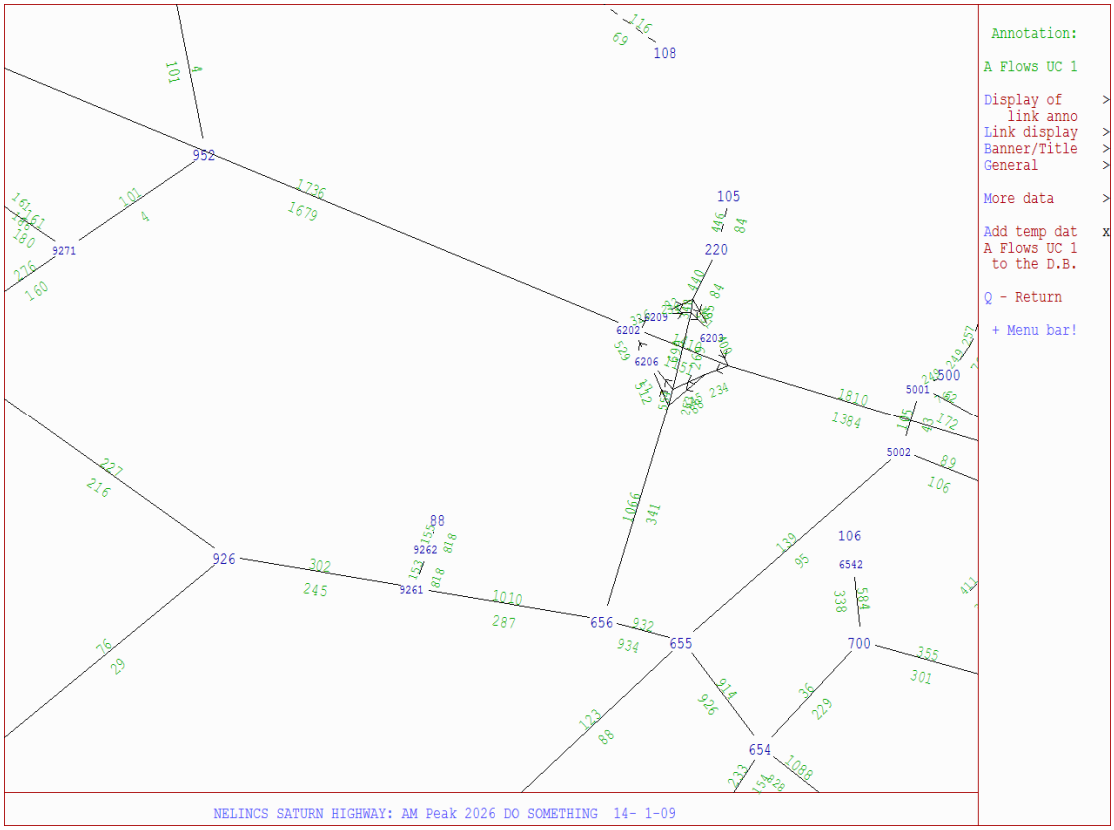
NELINCS SATURN HIGHWAY: AM Peak 2026 DO SOMETHING 14- 1-09

Lights 2027 Do-some AM



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NELINCS SATURN HIGHWAY: AM Peak 2026 DO SOMETHING 14- 1-09

Appendix D

AADT for Receptors

Traffic Data :

AADT used for Receptor 1

32km/h

A1173 - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	2005	940
2012 DM	2005	940
2012 DS	2005	940
2012 DM	2005	940
2027 DS	2005	940

2008 AM Base

Pelham Road ATC

AM Peak	836
12 Hour	10308
Uplift	12.3

ATC is annual summary	
AAAT	**365**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	376	104	480	**419**	43	10%	5170	5946	2170292	5946
South	458	84	542	**493**	35	7%	6079	6991	2551560	6991
						9%				**12937**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	395	113	508	**442**	47	11%	5451	6269	2288037	6269
South	509	90	599	**547**	38	7%	6738	7749	2828453	7749
						9%				**14018**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	311	83	394	**346**	35	10%	4261	4900	1788593	4900
South	362	98	460	**403**	41	10%	4967	5712	2084895	5712
						10%				**10612**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	446	145	591	**506**	60	12%	6244	7181	2620999	7181
South	716	123	839	**767**	51	7%	9460	10879	3970962	10879
						9%				**18060**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	348	104	452	**391**	43	11%	4825	5549	2025376	5549
South	479	112	591	**526**	47	9%	6482	7454	2720629	7454
						10%				**13003**

Traffic Data :

AADT used for Receptor 2
Link 1

32 km/h

PELHAM ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	939	2005
2012 DM	939	2005
2012 DS	939	2005
2012 DM	939	2005
2027 DS	939	2005

2008 AM Base

Pelham Road ATC	
AM Peak	836
12 Hour	10308
Uplift	12.3

ATC is annual summary	
AAAT	**365**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	372	25	397	**382**	10	3%	4715	5423	1979227	5423
West	218	49	267	**238**	20	9%	2940	3381	1233944	3381
						5%				**8803**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	419	25	444	**429**	10	2%	5295	6089	2222479	6089
West	230	53	283	**252**	22	9%	3108	3574	1304677	3574
						5%				**9663**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	255	0	255	**255**	0	0%	3144	3616	1319772	3616
West	125	14	139	**131**	6	4%	1613	1855	677138	1855
						2%				**5471**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	525	38	563	**541**	16	3%	6669	7669	2799125	7669
West	264	68	332	**292**	28	10%	3605	4145	1512994	4145
						5%				**11814**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	364	0	364	**364**	0	0%	4488	5161	1883910	5161
West	162	45	207	**181**	19	10%	2229	2563	935486	2563
						3%				**7724**

Traffic Data :

AADT used for Receptor 2
Link 2

32 km/h

PELHAM ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	2002	2005
2012 DM	2002	2005
2012 DS	2002	2005
2012 DM	2002	2005
2027 DS	2002	2005

2008 AM Base

Pelham Road ATC	
AM Peak	836
12 Hour	10308
Uplift	12.3

ATC is annual summary	
AAAT	**365**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	267	76	343	**299**	32	11%	3683	4235	1545773	4235
South	195	80	275	**228**	33	15%	2815	3238	1181757	3238
						12%				**7473**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	280	84	364	**315**	35	11%	3884	4467	1630307	4467
South	205	88	293	**242**	37	15%	2980	3427	1250765	3427
						13%				**7893**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	283	69	352	**312**	29	9%	3844	4421	1613486	4421
South	205	98	303	**246**	41	17%	3031	3486	1272330	3486
						12%				**7906**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	301	108	409	**346**	45	13%	4266	4906	1790750	4906
South	310	115	425	**358**	48	13%	4413	5075	1852426	5075
						13%				**9981**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	305	60	365	**330**	25	8%	4069	4679	1707941	4679
South	234	113	347	**281**	47	17%	3466	3986	1454769	3986
						12%				**8665**

Traffic Data :

AADT used for Receptor 3

32 km/h

PELHAM ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	9446	9447
2012 DM	9446	9447
2012 DS	9446	9447
2012 DM	9446	9447
2027 DS	9446	9447

2008 AM Base

Pelham Road ATC	
AM Peak	836
12 Hour	10308
Uplift	12.3

ATC is annual summary	
AAAT	**365**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	430	44	474	**448**	18	4%	5528	6357	2320384	6357
West	269	60	329	**294**	25	9%	3625	4169	1521620	4169
						6%				**10526**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	475	45	520	**494**	19	4%	6088	7001	2555442	7001
West	277	64	341	**304**	27	9%	3744	4306	1571650	4306
						6%				**11307**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	419	0	419	**419**	0	0%	5166	5941	2168567	5941
West	289	0	289	**289**	0	0%	3563	4098	1495742	4098
						0%				**10039**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	591	42	633	**609**	18	3%	7503	8628	3149339	8628
West	311	83	394	**346**	35	10%	4261	4900	1788593	4900
						5%				**13529**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	513	0	513	**513**	0	0%	6325	7274	2655071	7274
West	318	0	318	**318**	0	0%	3921	4509	1645834	4509
						0%				**11783**

Traffic Data :

AADT used for Receptor 4

32 km/h

PELHAM ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	938	2003
2012 DM	938	2003
2012 DS	938	2003
2012 DM	938	2003
2026 DS	938	2003

Pelham Road ATC	
AM Peak	836
12 Hour	10308
Uplift	12.3

ATC is annual summary	
AAAT	**365**

2008 AM Base

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	414	44	458	**432**	18	4%	5331	6130	2237575	6130
West	328	60	388	**353**	25	7%	4353	5005	1826979	5005
						6%				**11136**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	433	45	478	**452**	19	4%	5570	6406	2338067	6406
West	314	64	378	**341**	27	8%	4200	4831	1763147	4831
						6%				**11236**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	419	0	419	**419**	0	0%	5166	5941	2168567	5941
West	289	0	289	**289**	0	0%	3563	4098	1495742	4098
						0%				**10039**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	510	42	552	**528**	18	3%	6504	7480	2730117	7480
West	335	83	418	**370**	35	9%	4557	5241	1912807	5241
						6%				**12720**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	499	0	499	**499**	0	0%	6153	7076	2582613	7076
West	314	0	314	**314**	0	0%	3872	4452	1625131	4452
						0%				**11528**

Traffic Data :

AADT used for Receptor 5

32 km/h

B1210 STALLINGBOROUGH ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2007 Base	9445	938
2012 DM	9445	938
2012 DS	9445	938
2012 DM	9445	938
2026 DS	9445	938

Pelham Road ATC	
AM Peak	836
12 Hour	10308
Uplift	12.3

ATC is annual summary	
AAAT	**365**

2008 AM Base

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	317	39	356	**333**	16	5%	4109	4725	1724761	4725
South	278	55	333	**301**	23	8%	3710	4267	1557418	4267
						6%				**8992**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	329	40	369	**346**	17	5%	4262	4901	1789025	4901
South	275	59	334	**300**	25	8%	3694	4248	1550517	4248
						6%				**9149**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	435	13	448	**440**	5	1%	5430	6245	2279411	6245
South	358	1	359	**358**	0	0%	4419	5082	1855013	5082
						1%				**11327**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	384	35	419	**399**	15	4%	4915	5652	2062899	5652
South	254	76	330	**286**	32	11%	3522	4051	1478490	4051
						7%				**9702**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	475	4	479	**477**	2	0%	5877	6759	2467025	6759
South	428	1	429	**428**	0	0%	5282	6075	2217304	6075
						0%				**12834**

Traffic Data :

AADT used for Receptor 6

48 km/h

B1210 STALLINGBOROUGH ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2007 Base	9445	9645
2012 DM	9445	9645
2012 DS	9445	9644
2012 DM	9445	9645
2026 DS	9445	9644

Stallingborough Road ATC	
AM Peak	194
12 Hour	1401
Uplift	7.22

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

2008 AM Base

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	325	39	364	**341**	16	5%	2464	2834	997584	2733
South	280	55	335	**303**	23	8%	2188	2516	885523	2426
						6%				**5159**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	337	40	377	**354**	17	5%	2554	2937	1033882	2833
South	278	59	337	**303**	25	8%	2185	2513	884549	2423
						6%				**5256**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	443	13	456	**448**	5	1%	3238	3724	1310867	3591
South	362	1	363	**362**	0	0%	2617	3010	1059461	2903
						1%				**6494**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	393	35	428	**408**	15	4%	2943	3385	1191498	3264
South	243	76	319	**275**	32	12%	1984	2281	802940	2200
						7%				**5464**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	484	4	488	**486**	2	0%	3507	4033	1419761	3890
South	431	1	432	**431**	0	0%	3116	3583	1261171	3455
						0%				**7345**

Traffic Data :

AADT used for Receptor 7
Link 1
AADT used for Receptor 8

48 km/h

B1210 STALLINGBOROUGH ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2007 Base	928	927
2012 DM	928	927
2012 DS	928	927
2012 DM	928	927
2026 DS	928	927

2008 AM Base

Stallingborough Road ATC

AM Peak	194
12 Hour	1401
Uplift	7.22

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	329	43	372	**347**	18	5%	2505	2881	1014150	2778
South	362	52	414	**384**	22	6%	2771	3186	1121582	3073
						5%				**5851**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	341	44	385	**359**	18	5%	2595	2984	1050448	2878
South	367	57	424	**391**	24	6%	2822	3245	1142289	3130
						6%				**6007**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	253	49	302	**273**	20	7%	1975	2271	799285	2190
South	213	92	305	**251**	38	15%	1815	2087	734729	2013
						11%				**4203**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	383	23	406	**393**	10	2%	2835	3260	1147648	3144
South	322	71	393	**352**	30	8%	2539	2920	1027792	2816
						5%				**5960**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	270	61	331	**295**	25	9%	2133	2453	863599	2366
South	281	105	386	**325**	44	13%	2345	2697	949349	2601
						11%				**4967**

Traffic Data :

AADT used for Receptor 7
Link 2

24 km/h

KEELBY ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2007 Base	928	9292
2012 DM	928	9292
2012 DS	928	9292
2012 DM	928	9292
2026 DS	928	9292

2008 AM Base

Stallingborough Road ATC

AM Peak	194
12 Hour	1401
Uplift	7.22

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	143	10	153	**147**	4	3%	1063	1222	430216	1179
West	64	17	81	**71**	7	10%	513	590	207800	569
						5%				**1748**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	152	11	163	**157**	5	3%	1131	1300	457744	1254
West	66	18	84	**74**	8	10%	531	610	214864	589
						5%				**1843**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	333	140	473	**391**	58	15%	2826	3250	1143994	3134
West	108	33	141	**122**	14	11%	879	1011	355915	975
						14%				**4109**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	161	23	184	**171**	10	6%	1232	1417	498670	1366
West	73	15	88	**79**	6	8%	572	658	231673	635
						6%				**2001**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	359	101	460	**401**	42	10%	2896	3331	1172496	3212
West	110	32	142	**123**	13	11%	891	1024	360543	988
						11%				**4200**

Traffic Data :

AADT used for Receptor 10

32 km/h

STATION ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	927	9271
2012 DM	927	9271
2012 DS	927	9271
2012 DM	927	9271
2026 DS	927	9271

2008 AM Base

Stallingborough Road ATC

AM Peak	194
12 Hour	1401
Uplift	7.22

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	295	14	309	**301**	6	2%	2173	2498	879433	2409
South	169	10	179	**173**	4	2%	1251	1438	506222	1387
						2%				**3796**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	308	15	323	**314**	6	2%	2269	2610	918654	2517
South	177	11	188	**182**	5	3%	1311	1508	530827	1454
						2%				**3971**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	253	15	268	**259**	6	2%	1872	2153	757872	2076
South	140	11	151	**145**	5	3%	1044	1201	422664	1158
						3%				**3234**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	309	19	328	**317**	8	2%	2289	2632	926450	2538
South	202	14	216	**208**	6	3%	1501	1726	607564	1665
						3%				**4203**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	276	19	295	**284**	8	3%	2050	2358	829980	2274
South	160	14	174	**166**	6	4%	1198	1377	484785	1328
						3%				**3602**

Traffic Data :

AADT used for Receptor 11

32 km/h

STATION ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	9271	952
2012 DM	9271	952
2012 DS	9271	952
2012 DM	9271	952
2026 DS	9271	952

2008 AM Base

Stallingborough Road ATC

AM Peak	194
12 Hour	1401
Uplift	7.22

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	144	0	144	**144**	0	0%	1040	1196	420959	1153
South	38	0	38	**38**	0	0%	274	316	111086	304
						0%				**1458**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	150	0	150	**150**	0	0%	1083	1246	438499	1201
South	40	0	40	**40**	0	0%	289	332	116933	320
						0%				**1522**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	95	0	95	**95**	0	0%	686	789	277716	761
South	4	0	4	**4**	0	0%	29	33	11693	32
						0%				**793**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	133	0	133	**133**	0	0%	960	1105	388802	1065
South	46	0	46	**46**	0	0%	332	382	134473	368
						0%				**1434**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	101	0	101	**101**	0	0%	729	839	295256	809
South	4	0	4	**4**	0	0%	29	33	11693	32
						0%				**841**

Traffic Data :

AADT used for Receptor 12

48 km/h

B1210 STALLINGBOROUGH ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	926	9261
2012 DM	926	9261
2012 DS	926	9261
2012 DM	926	9261
2026 DS	926	9261

2008 AM Base

Stallingborough Road ATC	
AM Peak	194
12 Hour	1401
Uplift	7.22

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	463	11	474	**468**	5	1%	3377	3883	1366897	3745
West	299	20	319	**307**	8	3%	2219	2552	898435	2461
						2%				**6206**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	471	12	483	**476**	5	1%	3438	3953	1391502	3812
South	314	24	338	**324**	10	3%	2340	2691	947157	2595
						2%				**6407**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	271	3	274	**272**	1	0%	1966	2261	795875	2180
South	197	6	203	**200**	3	1%	1441	1657	583203	1598
						1%				**3778**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	370	18	388	**378**	8	2%	2726	3135	1103555	3023
South	356	32	388	**369**	13	4%	2667	3067	1079681	2958
						3%				**5981**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	302	13	315	**307**	5	2%	2220	2553	898678	2462
South	245	8	253	**248**	3	1%	1793	2062	725959	1989
						2%				**4451**

Traffic Data :

AADT used for Receptor 13
Link 1

32 km/h

A1136 (GREAT COATES ROAD) - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	656	655
2012 DM	656	655
2012 DS	656	655
2012 DM	656	655
2026 DS	656	655

2008 AM Base

Stallingborough Road ATC

AM Peak	194
12 Hour	1401
Uplift	7.22

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	939	18	957	**947**	8	1%	6835	7861	2766926	7581
West	775	23	798	**785**	10	1%	5666	6516	2293591	6284
						1%				**13864**

2012 AM Base - Do Minimum

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	952	21	973	**961**	9	1%	6938	7979	2808583	7695
West	821	31	852	**834**	13	2%	6022	6926	2437808	6679
						1%				**14374**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	900	19	919	**908**	8	1%	6557	7540	2654134	7272
West	765	19	784	**773**	8	1%	5582	6419	2259486	6190
						1%				**13462**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	882	27	909	**893**	11	1%	6451	7418	2611259	7154
West	1010	35	1045	**1025**	15	1%	7399	8509	2995189	8206
						1%				**15360**

2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	932	30	962	**945**	13	1%	6821	7844	2761079	7565
West	934	26	960	**945**	11	1%	6823	7847	2762054	7567
						1%				**15132**

Traffic Data :

AADT used for Receptor 13
Link 2

32 km/h

A1136 (GREAT COATES ROAD) & AYLESBY ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	655	
2012 DM	655	
2012 DS	655	
2012 DM	655	
2026 DS	655	

2008 AM Base

Stallingborough Road ATC

AM Peak	194
12 Hour	1401
Uplift	7.22

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	126	29	155	**138**	12	9%	997	1147	403662	1106
South	69	11	80	**74**	5	6%	531	611	215108	589
						8%				**1695**

2012 AM Base - Do Minimum

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	135	38	173	**151**	16	10%	1089	1253	440935	1208
South	70	12	82	**75**	5	7%	542	623	219249	601
						9%				**1809**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	106	22	128	**115**	9	8%	832	956	336669	922
South	78	4	82	**80**	2	2%	575	662	232891	638
						6%				**1560**

2027 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	97	37	134	**112**	15	14%	812	934	328630	900
South	86	16	102	**93**	7	7%	669	770	270895	742
						11%				**1643**

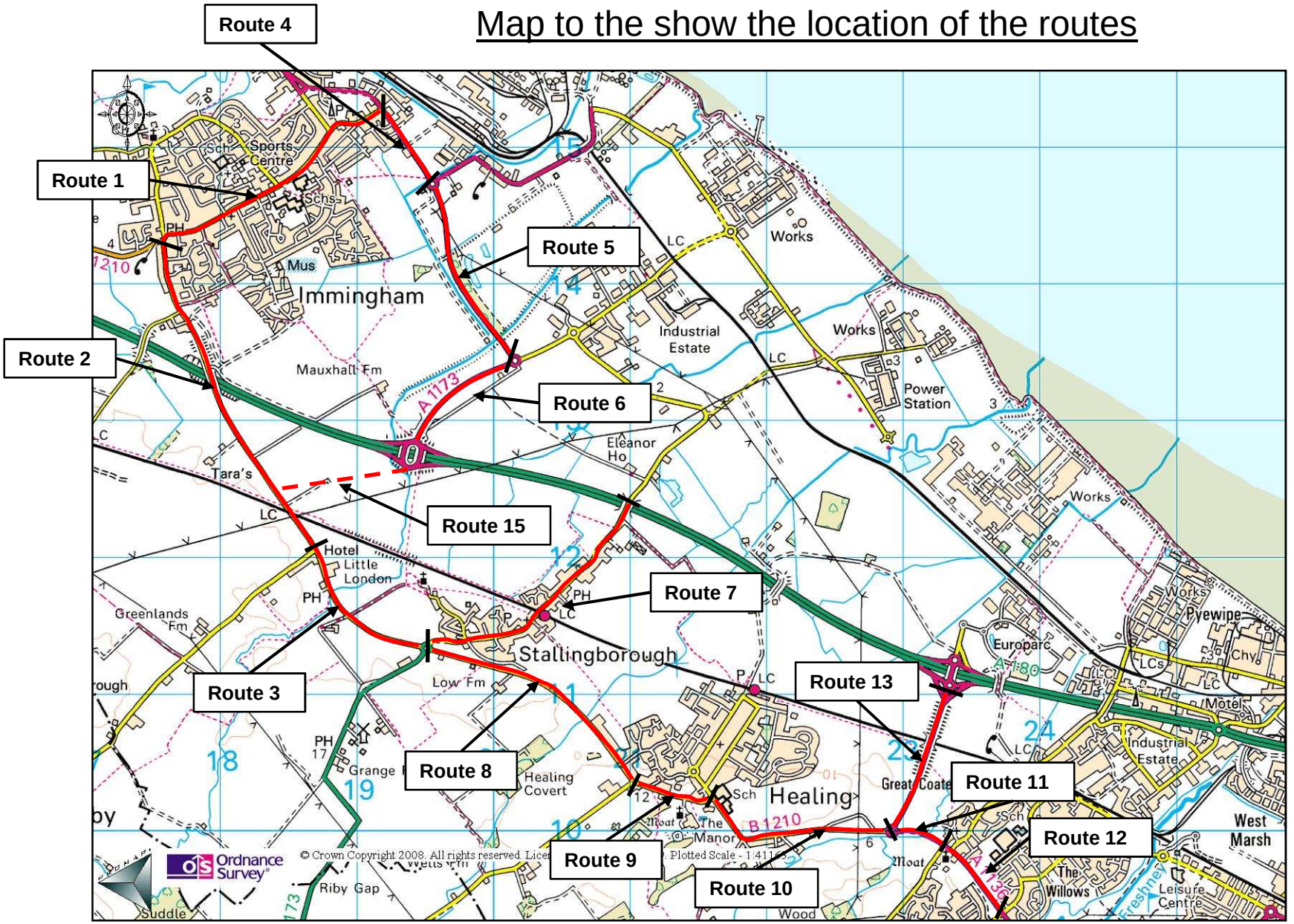
2027 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	123	26	149	**134**	11	8%	966	1111	391238	1072
South	88	16	104	**95**	7	7%	684	786	276741	758
						8%				**1830**

Appendix E

Route Map

Map to the show the location of the routes



Appendix F

AADT for Routes

Traffic Data :

ROUTE 1

32 km/h

PELHAM ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	2003	2005
2012 DM	2003	2005
2012 DS	2003	2005

Pelham Road ATC	
AM Peak	836
12 Hour	10308
Uplift	12.3

ATC is annual summary	
AAAT	**365**

2008 AM Base

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	421	41	462	**438**	17	4%	5402	6212	2267334	6212
West	243	58	301	**267**	24	9%	3294	3788	1382742	3788
						6%				**10000**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	468	42	510	**485**	18	4%	5985	6883	2512312	6883
West	239	62	301	**265**	26	10%	3262	3752	1369372	3752
						6%				**10635**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	352	0	352	**352**	0	0%	4345	4997	1824021	4997
West	190	2	192	**190**	1	0%	2348	2700	985455	2700
						0%				**7697**

Traffic Data :

ROUTE 2

48 km/h

B1210 STALLINGBOROUGH ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	9445	9645
2012 DM	9445	9645
2012 DS	9445	9644

2008 AM Base

Stallingborough Road ATC	
AM Peak	194
12 Hour	1401
Uplift	7.22

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	317	39	356	**333**	16	5%	2407	2768	974198	2669
South	278	55	333	**301**	23	8%	2173	2499	879677	2410
						6%				**5079**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	329	40	369	**346**	17	5%	2496	2871	1010496	2768
South	275	59	334	**300**	25	8%	2163	2488	875779	2399
						6%				**5168**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	443	13	456	**448**	5	1%	3238	3724	1310867	3591
South	362	1	363	**362**	0	0%	2617	3010	1059461	2903
						1%				**6494**

Traffic Data :

ROUTE 3

48 km/h

B1210 STALLINGBOROUGH ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	928	927
2012 DM	928	927
2012 DS	9664	927

2008 AM Base

Stallingborough Road ATC	
AM Peak	194
12 Hour	1401
Uplift	7.22

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	329	43	372	**347**	18	5%	2505	2881	1014150	2778
South	362	52	414	**384**	22	6%	2771	3186	1121582	3073
						5%				**5851**

2012 AM Base - Do Minimum

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	341	44	385	**359**	18	5%	2595	2984	1050448	2878
South	367	57	424	**391**	24	6%	2822	3245	1142289	3130
						6%				**6007**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	253	49	302	**273**	20	7%	1975	2271	799285	2190
South	213	92	305	**251**	38	15%	1815	2087	734729	2013
						11%				**4203**

Traffic Data :

ROUTE 4

32 km/h

A1173 - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	2005	940
2012 DM	2005	940
2012 DS	2005	940

2008 AM Base

Pelham Road ATC

AM Peak	836
12 Hour	10308
Uplift	12.3

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	376	104	480	**419**	43	10%	5170	5946	2170292	5946
South	458	84	542	**493**	35	7%	6079	6991	2551560	6991
						9%				**12937**

2012 AM Base - Do Minimum

ATC is annual summary

AAAT	**365**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	395	113	508	**442**	47	11%	5451	6269	2288037	6269
South	509	90	599	**547**	38	7%	6738	7749	2828453	7749
						9%				**14018**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	311	83	394	**346**	35	10%	4261	4900	1788593	4900
South	362	98	460	**403**	41	10%	4967	5712	2084895	5712
						10%				**10612**

Traffic Data :

ROUTE 5

48 km/h

A1173 - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	940	941
2012 DM	940	941
2012 DS	940	941

2008 AM Base

Pelham Road ATC

AM Peak	836
12 Hour	10308
Uplift	12.3

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	506	112	618	**553**	47	8%	6814	7837	2860369	7837
South	370	67	437	**398**	28	7%	4906	5642	2059449	5642
						8%				**13479**

2012 AM Base - Do Minimum

ATC is annual summary

AAAT	**365**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	526	126	652	**579**	53	9%	7133	8203	2994072	8203
South	416	68	484	**444**	28	6%	5479	6300	2299682	6300
						8%				**14503**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	476	160	636	**543**	67	12%	6691	7695	2808614	7695
South	331	123	454	**382**	51	13%	4713	5420	1978365	5420
						13%				**13115**

Traffic Data :

ROUTE 6

48 km/h

A1173 - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	941	6241
2012 DM	941	6241
2012 DS	941	6241

2008 AM Base

Pelham Road ATC

AM Peak	836
12 Hour	10308
Uplift	12.3

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	765	171	936	**836**	71	9%	10311	11858	4328077	11858
West	344	162	506	**412**	68	16%	5074	5835	2129750	5835
						11%				**17693**

2012 AM Base - Do Minimum

ATC is annual summary

AAAT	**365**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	803	193	996	**883**	80	9%	10893	12527	4572192	12527
West	390	182	572	**466**	76	16%	5744	6605	2410957	6605
						12%				**19132**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	881	216	1097	**971**	90	9%	11973	13768	5025486	13768
West	388	244	632	**490**	102	21%	6038	6943	2534308	6943
						13%				**20712**

Traffic Data :

ROUTE 7

32 km/h

STATION ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	927	952
2012 DM	927	952
2012 DS	927	952

2008 AM Base

Stallingborough Road ATC

AM Peak	194
12 Hour	1401
Uplift	7.22

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	220	7	227	**223**	3	1%	1610	1851	651658	1785
West	104	5	109	**106**	2	2%	766	881	310116	850
						2%				**2635**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	229	8	236.5	**232**	3	1%	1676	1928	678577	1859
West	109	6	114	**111**	2	2%	800	920	323880	887
						2%				**2746**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	174	8	182	**177**	3	2%	1281	1473	518403	1420
West	72	6	78	**75**	3	3%	538	619	217788	597
						2%				**2017**

Traffic Data :

ROUTE 8

48 km/h

B1210 STALLINGBOROUGH ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	927	926
2012 DM	927	926
2012 DS	927	926

2008 AM Base

Stallingborough Road ATC	
AM Peak	194
12 Hour	1401
Uplift	7.22

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	352	4	356	**354**	2	0%	2554	2937	1033882	2833
West	273	15	288	**279**	6	2%	2017	2319	816338	2237
						1%				**5069**

2012 AM Base - Do Minimum

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	350	5	355	**352**	2	1%	2543	2924	1029254	2820
West	284	16	300	**291**	7	2%	2099	2414	849713	2328
						1%				**5148**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	215	3	218	**216**	1	1%	1562	1796	632169	1732
West	182	6	188	**185**	3	1%	1332	1532	539353	1478
						1%				**3210**

Traffic Data :

ROUTE 9

48 km/h

B1210 STALLINGBOROUGH ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	926	9261
2012 DM	926	9261
2012 DS	926	9261

2008 AM Base

Stallingborough Road ATC	
AM Peak	194
12 Hour	1401
Uplift	7.22

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	463	11	474	**468**	5	1%	3377	3883	1366897	3745
West	299	20	319	**307**	8	3%	2219	2552	898435	2461
						2%				**6206**

2012 AM Base - Do Minimum

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	471	12	483	**476**	5	1%	3438	3953	1391502	3812
South	314	24	338	**324**	10	3%	2340	2691	947157	2595
						2%				**6407**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	271	3	274	**272**	1	0%	1966	2261	795875	2180
South	197	6	203	**200**	3	1%	1441	1657	583203	1598
						1%				**3778**

Traffic Data :

ROUTE 10

48 km/h

B1210 STALLINGBOROUGH ROAD - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	9261	656
2012 DM	9261	656
2012 DS	9261	656

2008 AM Base

Stallingborough Road ATC	
AM Peak	194
12 Hour	1401
Uplift	7.22

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	1060	27	1087	**1071**	11	1%	7736	8897	3131611	8580
West	343	20	363	**351**	8	2%	2537	2918	1027061	2814
						1%				**11394**

2012 AM Base - Do Minimum

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	1098	29	1127	**1110**	12	1%	8017	9219	3245133	8891
West	360	25	385	**370**	10	3%	2675	3076	1082848	2967
						2%				**11857**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	887	20	907	**895**	8	1%	6466	7436	2617349	7171
West	234	6	240	**237**	3	1%	1708	1964	691366	1894
						1%				**9065**

Traffic Data :

ROUTE 11

48 km/h

A1136 - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	656	655
2012 DM	656	655
2012 DS	656	655

2008 AM Base

Stallingborough Road ATC	
AM Peak	194
12 Hour	1401
Uplift	7.22

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	939	18	957	**947**	8	1%	6835	7861	2766926	7581
West	775	23	798	**785**	10	1%	5666	6516	2293591	6284
						1%				**13864**

2012 AM Base - Do Minimum

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	952	21	973	**961**	9	1%	6938	7979	2808583	7695
West	821	31	852	**834**	13	2%	6022	6926	2437808	6679
						1%				**14374**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	900	19	919	**908**	8	1%	6557	7540	2654134	7272
West	765	19	784	**773**	8	1%	5582	6419	2259486	6190
						1%				**13462**

Traffic Data :

ROUTE 12

32 km/h

A1136 - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	655	654
2012 DM	655	654
2012 DS	655	654

2008 AM Base

Stallingborough Road ATC	
AM Peak	194
12 Hour	1401
Uplift	7.22

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	722	16	738	**729**	7	1%	5262	6052	2130129	5836
South	870	18	888	**878**	8	1%	6337	7288	2565217	7028
						1%				**12864**

2012 AM Base - Do Minimum

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	755	17	772	**762**	7	1%	5503	6329	2227816	6104
South	902	20	922	**910**	8	1%	6574	7560	2661199	7291
						1%				**13395**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	719	18	737	**727**	8	1%	5247	6034	2123795	5819
South	878	20	898	**886**	8	1%	6401	7361	2591039	7099
						1%				**12917**

Traffic Data :

ROUTE 13

48 km/h

A1136 - BETWEEN SATURN NODES:

Year	To/From	To/From
2008 Base	656	6205
2012 DM	656	6205
2012 DS	656	6205

2008 AM Base

Stallingborough Road ATC	
AM Peak	194
12 Hour	1401
Uplift	7.22

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	882	42	924	**900**	18	2%	6496	7470	2629530	7204
South	328	30	358	**341**	13	4%	2459	2828	995392	2727
						2%				**9931**

2012 AM Base - Do Minimum

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	944	51	995	**965**	21	2%	6971	8016	2821738	7731
South	338	36	374	**353**	15	4%	2549	2932	1031933	2827
						3%				**10558**

2012 AM Base - Do Something

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
North	813	31	844	**826**	13	2%	5964	6859	2414422	6615
South	293	17	310	**300**	7	2%	2167	2492	877241	2403
						2%				**9018**

Traffic Data :

OPTION 2 - BETWEEN SATURN NODES:

Year	To/From	To/From
2012 DS	9644	9643

ROUTE 15

48 km/h

Stallingborough Road ATC

2012 AM Base - Do Something

AM Peak	194
12 Hour	1401
Uplift	7.22

Direction	Lights PCUs	HGV PCUs	Check Total PCUs	Total Vehicles	Total HGVs	% HGVs	uplift to 12-Hour	16-Hour	AAAT	AADT
East	522	186	708	**600**	78	13%	4329	4979	1752533	4801
West	342	136	478	**399**	57	14%	2879	3311	1165432	3193
						13%				**7994**

survey month	August
a	639
b	-287
SI	1
M-Factor	**352**

Appendix G

Adjusted DMRB results for Receptors

NETCEN Background Data

Year	NOx	NO2	PM10
2008*	18.81	15.46	17.47
2012**	16.80	14.80	16.70
2027***	15.23	14.16	16.67

*uplifted from 2005 using NETCEN Year Adjustment Calculator
**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator
***uplifted from 2010 to 2020 using NETCEN year Adjustment Calculator

Receptor 1

Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
			Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	R1 BASE	2008	0.07	0.07	0.10	41.79	21.77	**20.00**	**3**	18.81	22.98	8.19	15.46	**23.65**
2	R1 DM	2012	0.07	0.07	0.09	34.27	19.83	**18.46**	**2**	16.80	17.47	6.47	14.80	**21.27**
3	R1 DS	2012	0.05	0.05	0.07	30.98	18.98	**18.09**	**1**	16.80	14.18	5.36	14.80	**20.16**
4	R1 DM	2025	0.08	0.09	0.11	30.12	18.58	**18.19**	**2**	15.23	14.89	5.66	14.16	**19.82**
5	R1 DS	2025	0.06	0.06	0.08	27.21	17.80	**17.89**	**1**	15.23	11.98	4.64	14.16	**18.80**

NETCEN Background Data

Year	NOx	NO2	PM10
2008*	18.81	15.46	17.47
2012**	16.80	14.80	16.70
2027***	15.23	14.16	16.67

*uplifted from 2005 using NETCEN Year Adjustment Calculator
**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator
***uplifted from 2010 to 2020 using NETCEN year Adjustment Calculator

Receptor 2

Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
			Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	R2 BASE	2008	0.09	0.10	0.09	41.44	21.69	**19.92**	**3**	18.81	22.63	8.08	15.46	**23.54**
2	R2 DM	2012	0.09	0.10	0.09	35.19	20.07	**18.57**	**2**	16.80	18.39	6.78	14.80	**21.58**
3	R2 DS	2012	0.07	0.07	0.07	30.10	18.75	**18.08**	**1**	16.80	13.30	5.05	14.80	**19.85**
4	R2 DM	2025	0.11	0.12	0.10	31.58	18.96	**18.42**	**2**	15.23	16.35	6.16	14.16	**20.32**
5	R2 DS	2025	0.08	0.09	0.07	26.89	17.71	**17.96**	**1**	15.23	11.66	4.52	14.16	**18.68**

NETCEN Background Data

Year	NOx	NO2	PM10
2008*	18.90	15.46	17.75
2012**	16.24	14.51	16.99
2027***	14.71	13.88	16.96

*uplifted from 2005 using NETCEN Year Adjustment Calculator
**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator
***uplifted from 2010 to 2020 using NETCEN year Adjustment Calculator

Receptor 3

Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
			Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	R3 BASE	2008	0.06	0.06	0.05	30.83	18.98	**19.12**	**2**	18.90	11.93	4.51	15.46	**19.97**
2	R3 DM	2012	0.06	0.06	0.05	25.79	17.45	**18.05**	**1**	16.24	9.55	3.73	14.51	**18.24**
3	R3 DS	2012	0.05	0.06	0.03	20.65	15.93	**17.70**	**1**	16.24	4.41	1.79	14.51	**16.30**
4	R3 DM	2025	0.06	0.07	0.05	22.62	16.38	**17.93**	**1**	14.71	7.91	3.17	13.88	**17.05**
5	R3 DS	2025	0.06	0.07	0.03	19.25	15.37	**17.71**	**1**	14.71	4.54	1.87	13.88	**15.75**

NETCEN Background Data

Year	NOx	NO2	PM10
2008*	18.90	15.46	17.75
2012**	16.24	14.51	16.99
2027***	14.71	13.88	16.96

*uplifted from 2005 using NETCEN Year Adjustment Calculator
**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator
***uplifted from 2010 to 2020 using NETCEN year Adjustment Calculator

Receptor 4

Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
			Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	R4 BASE	2008	0.06	0.07	0.06	31.93	19.28	**19.25**	**3**	18.90	13.03	4.90	15.46	**20.36**
2	R4 DM	2012	0.06	0.06	0.05	26.03	17.52	**18.08**	**1**	16.24	9.79	3.82	14.51	**18.33**
3	R4 DS	2012	0.05	0.06	0.03	20.79	15.98	**17.73**	**1**	16.24	4.55	1.85	14.51	**16.36**
4	R4 DM	2025	0.06	0.07	0.05	22.91	16.47	**17.66**	**1**	14.71	8.20	3.28	13.88	**17.16**
5	R4 DS	2025	0.06	0.07	0.03	19.30	15.38	**17.45**	**1**	14.71	4.59	1.89	13.88	**15.77**

NETCEN Background Data

Year	NOx	NO2	PM10
2008*	18.90	15.46	17.75
2012**	16.24	14.51	16.99
2027***	14.71	13.88	16.96

*uplifted from 2005 using NETCEN Year Adjustment Calculator
**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator
***uplifted from 2010 to 2020 using NETCEN year Adjustment Calculator

Receptor 5

Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
			Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	R5 BASE	2008	0.05	0.05	0.04	28.76	18.42	**18.89**	**2**	18.90	9.86	3.78	15.46	**19.24**
2	R5 DM	2012	0.04	0.05	0.04	23.72	16.85	**17.82**	**1**	16.24	7.48	2.97	14.51	**17.48**
3	R5 DS	2012	0.06	0.06	0.05	25.50	17.36	**18.02**	**1**	16.24	9.26	3.63	14.51	**18.14**
4	R5 DM	2025	0.04	0.05	0.04	20.94	15.89	**17.67**	**1**	14.71	6.23	2.53	13.88	**16.41**
5	R5 DS	2025	0.06	0.07	0.03	19.50	15.44	**17.75**	**1**	14.71	4.79	1.97	13.88	**15.85**

NETCEN Background Data

Year	NOx	NO2	PM10
2008*	18.02	15.08	16.90
2012**	15.39	12.28	16.13
2027***	13.94	11.36	16.08

*uplifted from 2005 using NETCEN Year Adjustment Calculator
**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator
***uplifted from 2010 to 2020 using NETCEN year Adjustment Calculator

Receptor 6

Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
			Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	R6 BASE	2008	0.00	0.00	0.00	18.43	15.21	**16.94**	**1**	18.02	0.41	0.17	15.08	**15.25**
2	R6 DM	2012	0.00	0.00	0.00	15.69	12.38	**16.16**	**0**	15.39	0.30	0.13	12.28	**12.41**
3	R6 DS	2012	0.00	0.00	0.00	15.61	12.36	**16.16**	**0**	15.39	0.22	0.09	12.28	**12.37**
4	R6 DM	2025	0.00	0.00	0.00	14.10	11.42	**16.10**	**0**	13.94	0.16	0.07	11.36	**11.43**
5	R6 DS	2025	0.00	0.00	0.00	14.15	11.43	**16.11**	**0**	13.94	0.21	0.09	11.36	**11.45**

NETCEN Background Data

Year	NOx	NO2	PM10
2008*	15.63	13.88	16.34
2012**	13.50	10.83	15.62
2027***	12.23	10.36	15.60

*uplifted from 2005 using NETCEN Year Adjustment Calculator
**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator
***uplifted from 2010 to 2020 using NETCEN year Adjustment Calculator

Receptor 7

Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
			Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	R7 BASE	2008	0.03	0.03	0.03	22.47	16.05	**17.12**	**1**	15.63	6.84	2.74	13.88	**16.62**
2	R7 DM	2012	0.03	0.03	0.03	19.06	12.65	**16.21**	**0**	13.50	5.56	2.29	10.83	**13.12**
3	R7 DS	2012	0.03	0.03	0.05	23.35	13.92	**16.54**	**1**	13.50	9.85	3.92	10.83	**14.75**
4	R7 DM	2025	0.03	0.03	0.03	16.43	11.78	**16.07**	**0**	12.23	4.20	1.78	10.36	**12.14**
5	R7 DS	2025	0.03	0.04	0.05	19.37	12.70	**16.28**	**0**	12.23	7.14	2.94	10.36	**13.30**

NETCEN Background Data

Year	NOx	NO2	PM10
2008*	15.63	13.88	16.34
2012**	13.50	10.83	15.62
2027***	12.23	10.36	15.60

*uplifted from 2005 using NETCEN Year Adjustment Calculator
**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator
***uplifted from 2010 to 2020 using NETCEN year Adjustment Calculator

Receptor 8

Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
			Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	R8 BASE	2008	0.03	0.03	0.03	22.96	16.19	**17.14**	**1**	15.63	7.33	2.93	13.88	**16.81**
2	R8 DM	2012	0.03	0.03	0.03	19.56	12.81	**16.23**	**0**	13.50	6.06	2.49	10.83	**13.32**
3	R8 DS	2012	0.02	0.02	0.03	19.49	12.79	**16.14**	**0**	13.50	5.99	2.46	10.83	**13.29**
4	R8 DM	2025	0.03	0.03	0.02	16.53	11.81	**16.06**	**0**	12.23	4.30	1.82	10.36	**12.18**
5	R8 DS	2025	0.02	0.02	0.03	17.42	12.10	**16.05**	**0**	12.23	5.19	2.18	10.36	**12.54**

NETCEN Background Data

Year	NOx	NO2	PM10
2008*	16.78	14.44	16.62
2012**	14.44	11.61	15.82
2027***	13.09	11.10	15.79

*uplifted from 2005 using NETCEN Year Adjustment Calculator
**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator
***uplifted from 2010 to 2020 using NETCEN year Adjustment Calculator

Receptor 10

Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
			Annual mean mg/m^3	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Days $>50\mu g/m^3$	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	R10 BASE	2008	0.01	0.02	0.01	18.91	15.14	**16.92**	**1**	16.78	2.13	0.88	14.44	**15.32**
2	R10 DM	2012	0.01	0.02	0.01	16.15	12.19	**16.06**	**0**	14.44	1.71	0.73	11.61	**12.34**
3	R10 DS	2012	0.01	0.01	0.01	16.02	12.15	**16.03**	**0**	14.44	1.58	0.67	11.61	**12.28**
4	R10 DM	2025	0.01	0.02	0.01	14.73	11.67	**16.02**	**0**	13.09	1.64	0.71	11.10	**11.81**
5	R10 DS	2025	0.01	0.01	0.01	14.50	11.59	**15.98**	**0**	13.09	1.41	0.61	11.10	**11.71**

NETCEN Background Data

Year	NOx	NO2	PM10
2008*	17.93	14.99	16.81
2012**	15.48	12.38	16.01
2027***	14.03	11.84	15.99

*uplifted from 2005 using NETCEN Year Adjustment Calculator
**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator
***uplifted from 2010 to 2020 using NETCEN year Adjustment Calculator

Receptor 11

Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
			Annual mean mg/m^3	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Days $>50\mu g/m^3$	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	R11 BASE	2008	0.01	0.01	0.01	18.93	15.32	**16.98**	**1**	17.93	1.00	0.41	14.99	**15.40**
2	R11 DM	2012	0.01	0.01	0.01	16.33	12.67	**16.15**	**0**	15.48	0.85	0.36	12.38	**12.74**
3	R11 DS	2012	0.00	0.01	0.00	15.92	12.53	**16.08**	**0**	15.48	0.44	0.19	12.38	**12.57**
4	R11 DM	2025	0.01	0.01	0.00	14.73	12.08	**16.11**	**0**	14.03	0.70	0.30	11.84	**12.14**
5	R11 DS	2025	0.01	0.01	0.00	14.44	11.98	**16.06**	**0**	14.03	0.41	0.18	11.84	**12.02**

NETCEN Background Data

Year	NOx	NO2	PM10
2008*	15.63	13.88	17.00
2012**	13.69	11.03	16.31
2027***	12.40	10.55	16.28

*uplifted from 2005 using NETCEN Year Adjustment Calculator
**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator
***uplifted from 2010 to 2020 using NETCEN year Adjustment Calculator

Receptor 12

Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
			Annual mean mg/m^3	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Days $>50\mu g/m^3$	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	R12 BASE	2008	0.03	0.03	0.02	20.84	15.56	**17.65**	**1**	15.63	5.21	2.12	13.88	**16.00**
2	R12 DM	2012	0.03	0.03	0.02	17.85	12.41	**16.81**	**1**	13.69	4.16	1.74	11.03	**12.77**
3	R12 DS	2012	0.02	0.02	0.01	15.84	11.76	**16.59**	**1**	13.69	2.15	0.92	11.03	**11.95**
4	R12 DM	2025	0.02	0.03	0.02	15.92	11.75	**16.70**	**1**	12.40	3.52	1.50	10.55	**12.05**
5	R12 DS	2025	0.02	0.02	0.01	14.79	11.38	**16.58**	**1**	12.40	2.39	1.03	10.55	**11.58**

NETCEN Background Data

Year	NOx	NO2	PM10
2008*	19.87	15.92	17.38
2012**	17.65	15.18	16.60
2027***	16.00	14.53	16.57

*uplifted from 2005 using NETCEN Year Adjustment Calculator
**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator
***uplifted from 2010 to 2020 using NETCEN year Adjustment Calculator

Receptor 13

Receptor number	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
			Annual mean mg/m^3	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Days $>50\mu g/m^3$	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	R13 BASE	2008	0.09	0.10	0.07	32.86	19.70	**19.24**	**3**	19.87	12.99	4.85	15.92	**20.77**
2	R13 DM	2012	0.09	0.10	0.06	28.20	18.36	**18.07**	**1**	17.65	10.55	4.06	15.18	**19.24**
3	R13 DS	2012	0.08	0.09	0.06	27.01	18.03	**17.94**	**1**	17.65	9.36	3.63	15.18	**18.81**
4	R13 DM	2025	0.09	0.10	0.06	25.14	17.36	**17.92**	**1**	16.00	9.14	3.59	14.53	**18.12**
5	R13 DM	2025	0.09	0.10	0.06	24.99	17.31	**17.92**	**1**	16.00	8.99	3.53	14.53	**18.06**

Appendix H

Adjusted DMRB results for Routes

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	18.31	15.47	17.09

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 1

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	Route 1 DM 20	2012	0.05	0.05	0.04	25.99	17.83	**17.94**	**1**	18.31	7.68	3.00	15.47	**18.47**
2	70m	Route 1 DM 70	2012	0.01	0.01	0.01	20.55	16.19	**17.34**	**1**	18.31	2.24	0.91	15.47	**16.38**
3	115m	Route 1 DM 115	2012	0.00	0.00	0.00	19.05	15.71	**17.17**	**1**	18.31	0.74	0.31	15.47	**15.78**
4	175m	Route 1 DM 175	2012	0.00	0.00	0.00	18.59	15.56	**17.12**	**1**	18.31	0.28	0.12	15.47	**15.59**
5	20m	Route 1 DS 20	2012	0.03	0.04	0.02	21.20	16.40	**17.56**	**1**	18.31	2.89	1.17	15.47	**16.64**
6	70m	Route 1 DS 70	2012	0.01	0.01	0.01	19.15	15.75	**17.23**	**1**	18.31	0.84	0.35	15.47	**15.82**
7	115m	Route 1 DS 115	2012	0.00	0.00	0.00	18.59	15.56	**17.14**	**1**	18.31	0.28	0.12	15.47	**15.59**
8	175m	Route 1 DS 175	2012	0.00	0.00	0.00	18.41	15.50	**17.11**	**1**	18.31	0.10	0.04	15.47	**15.51**

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	16.24	14.51	16.99

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 2

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 2 - DM 20	2012	0.02	0.02	0.02	19.97	15.72	**17.36**	**1**	16.24	3.73	1.53	14.51	**16.04**
2	70m	ROUTE 2 - DM 70	2012	0.00	0.01	0.00	17.33	14.87	**17.10**	**1**	16.24	1.09	0.46	14.51	**14.97**
3	115m	ROUTE 2 - DM 115	2012	0.00	0.00	0.00	16.60	14.63	**17.03**	**1**	16.24	0.36	0.15	14.51	**14.66**
4	175m	ROUTE 2 - DM 175	2012	0.00	0.00	0.00	16.38	14.56	**17.00**	**1**	16.24	0.14	0.06	14.51	**14.57**
5	20m	ROUTE 2 - DS 20	2012	0.02	0.02	0.01	19.00	15.42	**17.35**	**1**	16.24	2.76	1.14	14.51	**15.65**
6	70m	ROUTE 2 - DS 70	2012	0.01	0.01	0.00	17.04	14.78	**17.09**	**1**	16.24	0.80	0.34	14.51	**14.85**
7	115m	ROUTE 2 - DS 115	2012	0.00	0.00	0.00	16.51	14.60	**17.02**	**1**	16.24	0.27	0.11	14.51	**14.62**
8	175m	ROUTE 2 - DS 175	2012	0.00	0.00	0.00	16.34	14.54	**17.00**	**1**	16.24	0.10	0.04	14.51	**14.55**

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	13.50	10.83	15.62

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 3

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 3 DM 20	2012	0.02	0.02	0.02	17.84	12.27	**16.05**	**0**	13.50	4.34	1.81	10.83	**12.64**
2	70m	ROUTE 3 DM 70	2012	0.01	0.01	0.01	14.76	11.27	**15.75**	**0**	13.50	1.26	0.55	10.83	**11.38**
3	115m	ROUTE 3 DM 115	2012	0.00	0.00	0.00	13.92	10.98	**15.66**	**0**	13.50	0.42	0.18	10.83	**11.01**
4	175m	ROUTE 3 DM 175	2012	0.00	0.00	0.00	13.66	10.89	**15.64**	**0**	13.50	0.16	0.07	10.83	**10.90**
5	20m	ROUTE 3 DS 20	2012	0.01	0.01	0.02	17.78	12.26	**15.99**	**0**	13.50	4.28	1.79	10.83	**12.62**
6	70m	ROUTE 3 DS 70	2012	0.00	0.00	0.01	14.75	11.26	**15.73**	**0**	13.50	1.25	0.54	10.83	**11.37**
7	115m	ROUTE 3 DS 115	2012	0.00	0.00	0.00	13.91	10.97	**15.66**	**0**	13.50	0.41	0.18	10.83	**11.01**
8	175m	ROUTE 3 DS 175	2012	0.00	0.00	0.00	13.66	10.88	**15.63**	**0**	13.50	0.16	0.07	10.83	**10.90**

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	16.80	14.80	16.70

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 4

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 4 DM 20	2012	0.06	0.06	0.08	32.16	19.29	**18.25**	**2**	16.80	15.36	5.77	14.80	**20.57**
2	70m	ROUTE 4 DM 70	2012	0.02	0.02	0.02	21.28	16.24	**17.15**	**1**	16.80	4.48	1.81	14.80	**16.61**
3	115m	ROUTE 4 DM 115	2012	0.01	0.01	0.01	18.28	15.29	**16.85**	**1**	16.80	1.48	0.62	14.80	**15.42**
4	175m	ROUTE 4 DM 175	2012	0.00	0.00	0.00	17.36	14.99	**16.76**	**1**	16.80	0.56	0.23	14.80	**15.03**
5	20m	ROUTE 4 DS 20	2012	0.05	0.05	0.06	29.28	18.53	**17.93**	**1**	16.80	12.48	4.77	14.80	**19.57**
6	70m	ROUTE 4 DS 70	2012	0.01	0.01	0.02	20.44	15.98	**17.06**	**1**	16.80	3.64	1.48	14.80	**16.28**
7	115m	ROUTE 4 DS 115	2012	0.00	0.00	0.01	18.00	15.20	**16.82**	**1**	16.80	1.20	0.50	14.80	**15.30**
8	175m	ROUTE 4 DS 175	2012	0.00	0.00	0.00	17.25	14.95	**16.74**	**1**	16.80	0.45	0.19	14.80	**14.99**

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	17.65	15.18	16.89

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 5

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Days $>50\mu g/m^3$	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 5 DM 20	2012	0.05	0.05	0.06	30.78	19.06	**18.09**	**1**	17.65	13.13	4.97	15.18	**20.15**
2	70m	ROUTE 5 DM 70	2012	0.01	0.01	0.02	21.48	16.41	**17.24**	**1**	17.65	3.83	1.55	15.18	**16.73**
3	115m	ROUTE 5 DM 115	2012	0.00	0.00	0.01	18.92	15.60	**17.01**	**1**	17.65	1.27	0.52	15.18	**15.70**
4	175m	ROUTE 5 DM 175	2012	0.00	0.00	0.00	18.13	15.34	**16.93**	**1**	17.65	0.48	0.20	15.18	**15.38**
5	20m	ROUTE 5 DS 20	2012	0.05	0.04	0.07	33.98	19.89	**18.24**	**2**	17.65	16.33	6.06	15.18	**21.24**
6	70m	ROUTE 5 DS 70	2012	0.01	0.01	0.02	22.41	16.69	**17.28**	**1**	17.65	4.76	1.91	15.18	**17.09**
7	115m	ROUTE 5 DS 115	2012	0.00	0.00	0.01	19.23	15.70	**17.02**	**1**	17.65	1.58	0.65	15.18	**15.83**
8	175m	ROUTE 5 DS 175	2012	0.00	0.00	0.00	18.24	15.38	**16.94**	**1**	17.65	0.59	0.25	15.18	**15.43**

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	16.52	14.60	16.60

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 6

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 6 DM 20	2012	0.06	0.06	0.10	35.98	20.14	**18.24**	**2**	16.52	19.46	7.14	14.60	**21.74**
2	70m	ROUTE 6 DM 70	2012	0.02	0.02	0.03	22.19	16.40	**17.08**	**1**	16.52	5.67	2.28	14.60	**16.88**
3	115m	ROUTE 6 DM 115	2012	0.01	0.01	0.01	18.40	15.22	**16.76**	**1**	16.52	1.88	0.78	14.60	**15.38**
4	175m	ROUTE 6 DM 175	2012	0.00	0.00	0.00	17.23	14.84	**16.66**	**1**	16.52	0.71	0.30	14.60	**14.90**
5	20m	ROUTE 6 DS 20	2012	0.06	0.07	0.11	37.76	20.58	**18.36**	**2**	16.52	21.24	7.72	14.60	**22.32**
6	70m	ROUTE 6 DS 70	2012	0.02	0.02	0.03	22.71	16.56	**17.11**	**1**	16.52	6.19	2.48	14.60	**17.08**
7	115m	ROUTE 6 DS 115	2012	0.01	0.01	0.01	18.57	15.28	**16.77**	**1**	16.52	2.05	0.85	14.60	**15.45**
8	175m	ROUTE 6 DS 175	2012	0.00	0.00	0.00	17.29	14.86	**16.66**	**1**	16.52	0.77	0.32	14.60	**14.92**

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	15.48	12.38	16.01

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 7

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 7 DM 20	2012	0.01	0.01	0.01	16.91	12.86	**16.21**	**0**	15.48	1.43	0.60	12.38	**12.98**
2	70m	ROUTE 7 DM 70	2012	0.00	0.00	0.00	15.90	12.52	**16.07**	**0**	15.48	0.42	0.18	12.38	**12.56**
3	115m	ROUTE 7 DM 115	2012	0.00	0.00	0.00	15.62	12.43	**16.03**	**0**	15.48	0.14	0.06	12.38	**12.44**
4	175m	ROUTE 7 DM 175	2012	0.00	0.00	0.00	15.53	12.40	**16.02**	**0**	15.48	0.05	0.02	12.38	**12.40**
5	20m	ROUTE 7 DS 20	2012	0.01	0.01	0.01	16.53	12.74	**16.16**	**0**	15.48	1.05	0.44	12.38	**12.82**
6	70m	ROUTE 7 DS 70	2012	0.00	0.00	0.00	15.79	12.48	**16.05**	**0**	15.48	0.31	0.13	12.38	**12.51**
7	115m	ROUTE 7 DS 115	2012	0.00	0.00	0.00	15.58	12.41	**16.02**	**0**	15.48	0.10	0.04	12.38	**12.42**
8	175m	ROUTE 7 DS 175	2012	0.00	0.00	0.00	15.52	12.39	**16.02**	**0**	15.48	0.04	0.02	12.38	**12.40**

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	14.44	11.61	15.82

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 8

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Days $>50\mu g/m^3$	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 8 DM 20	2012	0.02	0.02	0.01	16.63	12.35	**16.10**	**0**	14.44	2.19	0.92	11.61	**12.53**
2	70m	ROUTE 8 DM 70	2012	0.00	0.01	0.00	15.08	11.83	**15.90**	**0**	14.44	0.64	0.27	11.61	**11.88**
3	115m	ROUTE 8 DM 115	2012	0.00	0.00	0.00	14.65	11.68	**15.85**	**0**	14.44	0.21	0.09	11.61	**11.70**
4	175m	ROUTE 8 DM 175	2012	0.00	0.00	0.00	14.52	11.64	**15.83**	**0**	14.44	0.08	0.03	11.61	**11.64**
5	20m	ROUTE 8 DS 20	2012	0.01	0.01	0.01	15.80	12.07	**16.00**	**0**	14.44	1.36	0.58	11.61	**12.19**
6	70m	ROUTE 8 DS 70	2012	0.00	0.00	0.00	14.84	11.75	**15.87**	**0**	14.44	0.40	0.17	11.61	**11.78**
7	115m	ROUTE 8 DS 115	2012	0.00	0.00	0.00	14.57	11.66	**15.84**	**0**	14.44	0.13	0.06	11.61	**11.67**
8	175m	ROUTE 8 DS 175	2012	0.00	0.00	0.00	14.49	11.63	**15.83**	**0**	14.44	0.05	0.02	11.61	**11.63**

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	13.69	11.03	16.31

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 9

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 9 DM 20	2012	0.02	0.02	0.01	16.79	12.08	**16.69**	**1**	13.69	3.10	1.31	11.03	**12.34**
2	70m	ROUTE 9 DM 70	2012	0.01	0.01	0.00	14.59	11.34	**16.42**	**0**	13.69	0.90	0.39	11.03	**11.42**
3	115m	ROUTE 9 DM 115	2012	0.00	0.00	0.00	13.99	11.13	**16.35**	**0**	13.69	0.30	0.13	11.03	**11.16**
4	175m	ROUTE 9 DM 175	2012	0.00	0.00	0.00	13.80	11.07	**16.32**	**0**	13.69	0.11	0.05	11.03	**11.08**
5	20m	ROUTE 9 DS 20	2012	0.01	0.01	0.01	15.29	11.58	**16.52**	**1**	13.69	1.60	0.69	11.03	**11.72**
6	70m	ROUTE 9 DS 70	2012	0.00	0.00	0.00	14.16	11.19	**16.37**	**0**	13.69	0.47	0.20	11.03	**11.23**
7	115m	ROUTE 9 DS 115	2012	0.00	0.00	0.00	13.84	11.08	**16.33**	**0**	13.69	0.15	0.07	11.03	**11.10**
8	175m	ROUTE 9 DS 175	2012	0.00	0.00	0.00	13.75	11.05	**16.32**	**0**	13.69	0.06	0.03	11.03	**11.06**

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	13.69	11.03	16.31

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 10

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Days >50$\mu g/m^3$	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 10 DM 20	2012	0.04	0.04	0.03	19.43	12.91	**17.01**	**1**	13.69	5.74	2.36	11.03	**13.39**
2	70m	ROUTE 10 DM 70	2012	0.01	0.01	0.01	15.36	11.60	**16.51**	**1**	13.69	1.67	0.72	11.03	**11.75**
3	115m	ROUTE 10 DM 115	2012	0.00	0.00	0.00	14.24	11.22	**16.38**	**0**	13.69	0.55	0.24	11.03	**11.27**
4	175m	ROUTE 10 DM 175	2012	0.00	0.00	0.00	13.90	11.10	**16.34**	**0**	13.69	0.21	0.09	11.03	**11.12**
5	20m	ROUTE 10 DS 20	2012	0.03	0.03	0.02	17.54	12.32	**16.81**	**1**	13.69	3.85	1.61	11.03	**12.64**
6	70m	ROUTE 10 DS 70	2012	0.01	0.01	0.01	14.81	11.42	**16.46**	**0**	13.69	1.12	0.48	11.03	**11.51**
7	115m	ROUTE 10 DS 115	2012	0.00	0.00	0.00	14.06	11.16	**16.36**	**0**	13.69	0.37	0.16	11.03	**11.19**
8	175m	ROUTE 10 DS 175	2012	0.00	0.00	0.00	13.83	11.08	**16.33**	**0**	13.69	0.14	0.06	11.03	**11.09**

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	17.65	15.18	16.60

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 11

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Days $>50\mu g/m^3$	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 11 DM 20	2012	0.05	0.05	0.03	23.84	17.12	17	1	17.65	6.19	2.46	15.18	17.64
2	70m	ROUTE 11 DM 70	2012	0.01	0.02	0.01	19.46	15.77	17	1	17.65	1.81	0.74	15.18	15.92
3	115m	ROUTE 11 DM 115	2012	0.00	0.01	0.00	18.25	15.38	17	1	17.65	0.60	0.25	15.18	15.43
4	175m	ROUTE 11 DM 175	2012	0.00	0.00	0.00	17.87	15.25	17	1	17.65	0.22	0.09	15.18	15.27
5	20m	ROUTE 11 DS 20	2012	0.04	0.05	0.03	23.45	17.00	17	1	17.65	5.80	2.31	15.18	17.49
6	70m	ROUTE 11 DS 70	2012	0.01	0.01	0.01	19.34	15.73	17	1	17.65	1.69	0.70	15.18	15.88
7	115m	ROUTE 11 DS 115	2012	0.00	0.00	0.00	18.21	15.37	17	1	17.65	0.56	0.23	15.18	15.41
8	175m	ROUTE 11 DS 175	2012	0.00	0.00	0.00	17.86	15.25	17	1	17.65	0.21	0.09	15.18	15.27

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	17.65	15.18	16.60

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 12

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Annual mean $\mu g/m^3$	Days $>50\mu g/m^3$	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 12 DM 20	2012	0.06	0.07	0.04	23.79	17.10	**17.51**	**1**	17.65	6.14	2.44	15.18	**17.62**
2	70m	ROUTE 12 DM 70	2012	0.02	0.02	0.01	19.44	15.76	**16.86**	**1**	17.65	1.79	0.74	15.18	**15.92**
3	115m	ROUTE 12 DM 115	2012	0.01	0.01	0.00	18.24	15.38	**16.69**	**1**	17.65	0.59	0.25	15.18	**15.43**
4	175m	ROUTE 12 DM 175	2012	0.00	0.00	0.00	17.87	15.25	**16.63**	**1**	17.65	0.22	0.09	15.18	**15.27**
5	20m	ROUTE 12 DS 20	2012	0.06	0.06	0.04	23.57	17.04	**17.48**	**1**	17.65	5.92	2.35	15.18	**17.53**
6	70m	ROUTE 12 DS 70	2012	0.02	0.02	0.01	19.38	15.74	**16.86**	**1**	17.65	1.73	0.71	15.18	**15.89**
7	115m	ROUTE 12 DS 115	2012	0.01	0.01	0.00	18.22	15.37	**16.68**	**1**	17.65	0.57	0.24	15.18	**15.42**
8	175m	ROUTE 12 DS 175	2012	0.00	0.00	0.00	17.86	15.25	**16.63**	**1**	17.65	0.21	0.09	15.18	**15.27**

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	25.39	18.86	17.87

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 13

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 13 DM 20	2012	0.03	0.04	0.03	31.37	20.62	19	2	25.39	5.98	2.26	18.86	21.12
2	70m	ROUTE 13 DM 70	2012	0.01	0.01	0.01	27.13	19.39	18	1	25.39	1.74	0.68	18.86	19.54
3	115m	ROUTE 13 DM 115	2012	0.00	0.00	0.00	25.97	19.04	18	1	25.39	0.58	0.23	18.86	19.09
4	175m	ROUTE 13 DM 175	2012	0.00	0.00	0.00	25.61	18.93	18	1	25.39	0.22	0.08	18.86	18.94
5	20m	ROUTE 13 DS 20	2012	0.03	0.03	0.02	29.89	20.20	18	2	25.39	4.50	1.71	18.86	20.57
6	70m	ROUTE 13 DS 70	2012	0.01	0.01	0.01	26.70	19.26	18	1	25.39	1.31	0.51	18.86	19.37
7	115m	ROUTE 13 DS 115	2012	0.00	0.00	0.00	25.82	18.99	18	1	25.39	0.43	0.17	18.86	19.03
8	175m	ROUTE 13 DS 175	2012	0.00	0.00	0.00	25.55	18.91	18	1	25.39	0.16	0.06	18.86	18.92

NETCEN Background Data

Year	NOx	NO2	PM10
2012**	15.39	12.28	16.13

**uplifted from 2010 to 2012 using NETCEN year Adjustment Calculator

ROUTE 15

Receptor Number	Distance to Route	Name	Year	CO *	Benzene	1,3-butadiene	NO_x	NO_2 *	PM_{10}		Background-NOx	Road-NOx	Road-NO2	Background-NO2	Total-NO2
				Annual mean mg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Annual mean µg/m^3	Days >50µg/m^3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
1	20m	ROUTE 15 DS 20	2012	0.03	0.03	0.04	25.34	15.35	**16.96**	**1**	15.39	9.95	3.90	12.28	**16.18**
2	70m	ROUTE 15 DS 70	2012	0.01	0.01	0.01	18.29	13.24	**16.37**	**0**	15.39	2.90	1.21	12.28	**13.49**
3	115m	ROUTE 15 DS 115	2012	0.00	0.00	0.00	16.35	12.61	**16.21**	**0**	15.39	0.96	0.41	12.28	**12.69**
4	175m	ROUTE 15 DS 175	2012	0.00	0.00	0.00	15.75	12.40	**16.16**	**0**	15.39	0.36	0.15	12.28	**12.43**

Appendix I

Local Air Quality TAG Spreadsheet

PM_{10}, SUMMARY OF ROUTES: THE AGGREGATED TABLE	**0-50m (i)**	**50-100m (ii)**	**100-150m (iii)**	**150-200m (iv)**	**0-200m (v=i+ii+iii+iv)**
Total properties across all routes (min)	617	578	636	698	2529
Total properties across all routes (some)	617	578	636	698	2529
Do-minimum* PM_{10} assessment *across all routes	10704.25	9811.51	10702.14	11748.36	Total assessment PM_{10} **(I)**: 42966.26
Do-something* PM_{10} assessment *across all routes	10565.98	9770.54	10688.76	11743.64	Total assessment PM_{10} **(II)**: 42768.92
Net total assessment for PM_{10}, all routes (II-I)					-197.34
Number of properties with an improvement					***2529***
Number of properties with no change					***0***
Number of properties with a deterioration					***0***

Reference Sources: DMRB: Volume 11 (May 2007)
DfT -Transport Apprasial Guidance (WebTAG) Unit 3.3.3 The Local Air Quality Sub-Objective

Quantitative Measures: 0 properties will experience worse air quality
2529 properties will experinece improved air quality

Assessment Scores: (-197.34) overall improvement in air quality with scheme

Qualitative Comments: No route will experience in increase in PM10 of 1 µgm-3

PM_{10}, ROUTE 1. **Route name: Pelham Rd**	**0-50m (i)**	**50-100m (ii)**	**100-150m (iii)**	**150-200m (iv)**	**0-200m (v=i+ii+iii+iv)**
Properties (amin)	264	302	306	351	1223
Properties (asome)	264	302	306	351	1223
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 17.94	At 70m: 17.34	At 115m: 17.17	At 175m: 17.12	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 17.56	At 70m: 17.23	At 115m: 17.14	At 175m: 17.11	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	4736.16	5236.68	5254.02	6009.12	Total route assess PM_{10} **(I)**: 21235.98
Do-something* PM_{10} assessment *(c = asome*bsome)	4635.84	5203.46	5244.84	6005.61	Total route assess PM_{10} **(II)**: 21089.75
Net total route assessment for PM_{10} (II-I)	1223	0	0		-146.23

PM_{10}, ROUTE 2. **Route name: Stallingborough Rd**	**0-50m (i)**	**50-100m (ii)**	**100-150m (iii)**	**150-200m (iv)**	**0-200m (v=i+ii+iii+iv)**
Properties (amin)	74	86	119	130	409
Properties (asome)	74	86	119	130	409
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 17.36	At 70m: 17.1	At 115m: 17.03	At 175m: 17	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 17.35	At 70m: 17.09	At 115m: 17.02	At 175m: 17	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	1284.64	1470.6	2026.57	2210	Total route assess PM_{10} **(I)**: 6991.81
Do-something* PM_{10} assessment *(c = asome*bsome)	1283.9	1469.74	2025.38	2210	Total route assess PM_{10} **(II)**: 6989.02
Net total route assessment for PM_{10} (II-I)	409	0	0		-2.79

PM_{10}, ROUTE 3. **Route name: Stallingborough Rd**	**0-50m (i)**	**50-100m (ii)**	**100-150m (iii)**	**150-200m (iv)**	**0-200m (v=i+ii+iii+iv)**
Properties (amin)	6	1	12	8	27
Properties (asome)	6	1	12	8	27
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 16.05	At 70m: 15.75	At 115m: 15.66	At 175m: 15.64	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 15.99	At 70m: 15.73	At 115m: 15.66	At 175m: 15.63	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	96.3	15.75	187.92	125.12	Total route assess PM_{10} **(I)**: 425.09
Do-something* PM_{10} assessment *(c = asome*bsome)	95.94	15.73	187.92	125.04	Total route assess PM_{10} **(II)**: 424.63
Net total route assessment for PM_{10} (II-I)	27	0	0		-0.46

PM_{10}, ROUTE 4. **Route name: A1173**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	46	33	36	29	144
Properties (asome)	46	33	36	29	144
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 18.25	At 70m: 17.15	At 115m: 16.85	At 175m: 16.76	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 17.93	At 70m: 17.06	At 115m: 16.82	At 175m: 16.74	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	839.5	565.95	606.6	486.04	Total route assess PM_{10} **(I)**: 2498.09
Do-something* PM_{10} assessment *(c = asome*bsome)	824.78	562.98	605.52	485.46	Total route assess PM_{10} **(II)**: 2478.74
Net total route assessment for PM_{10} (II-I)	144	0	0		-19.35

PM_{10}, ROUTE 5. **Route name: A1173**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	0	0	0	0	0
Properties (asome)	0	0	0	0	0
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 18.09	At 70m: 17.24	At 115m: 17.01	At 175m: 16.93	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 18.24	At 70m: 17.28	At 115m: 17.02	At 175m: 16.94	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	0	0	0	0	Total route assess PM_{10} **(I)**: 0
Do-something* PM_{10} assessment *(c = asome*bsome)	0	0	0	0	Total route assess PM_{10} **(II)**: 0
Net total route assessment for PM_{10} (II-I)	0	0	0		0

PM_{10}, ROUTE 6. **Route name: A1173**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	0	0	0	0	0
Properties (asome)	0	0	0	0	0
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 18.24	At 70m: 17.08	At 115m: 16.76	At 175m: 16.66	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 18.36	At 70m: 17.11	At 115m: 16.77	At 175m: 16.66	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	0	0	0	0	Total route assess PM_{10} **(I)**: 0
Do-something* PM_{10} assessment *(c = asome*bsome)	0	0	0	0	Total route assess PM_{10} **(II)**: 0
Net total route assessment for PM_{10} (II-I)	0	0	0		0

PM_{10}, ROUTE 7. **Route name: Station Rd**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	132	99	84	40	355
Properties (asome)	132	99	84	40	355
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 16.21	At 70m: 16.07	At 115m: 16.03	At 175m: 16.02	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 16.16	At 70m: 16.05	At 115m: 16.02	At 175m: 16.02	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	2139.72	1590.93	1346.52	640.8	Total route assess PM_{10} **(I)**: 5717.97
Do-something* PM_{10} assessment *(c = asome*bsome)	2133.12	1588.95	1345.68	640.8	Total route assess PM_{10} **(II)**: 5708.55
Net total route assessment for PM_{10} (II-I)	355	0	0		-9.42

PM_{10}, ROUTE 8. **Route name: Stallingborough Rd**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	10	21	34	41	106
Properties (asome)	10	21	34	41	106
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 16.1	At 70m: 15.9	At 115m: 15.85	At 175m: 15.83	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 16	At 70m: 15.87	At 115m: 15.84	At 175m: 15.83	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	161	333.9	538.9	649.03	Total route assess PM_{10} **(I)**: 1682.83
Do-something* PM_{10} assessment *(c = asome*bsome)	160	333.27	538.56	649.03	Total route assess PM_{10} **(II)**: 1680.86
Net total route assessment for PM_{10} (II-I)	106	0	0		-1.97

PM_{10}, ROUTE 9. **Route name: Stallingborough Rd**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	15	5	4	7	31
Properties (asome)	15	5	4	7	31
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 16.69	At 70m: 16.42	At 115m: 16.35	At 175m: 16.32	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 16.52	At 70m: 16.37	At 115m: 16.33	At 175m: 16.32	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	250.35	82.1	65.4	114.24	Total route assess PM_{10} **(I)**: 512.09
Do-something* PM_{10} assessment *(c = asome*bsome)	247.8	81.85	65.32	114.24	Total route assess PM_{10} **(II)**: 509.21
Net total route assessment for PM_{10} (II-I)	31	0	0		-2.88

PM_{10}, ROUTE 10. **Route name: Stallingborough Rd**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	58	20	26	55	159
Properties (asome)	58	20	26	55	159
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 17.01	At 70m: 16.51	At 115m: 16.38	At 175m: 16.34	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 16.81	At 70m: 16.46	At 115m: 16.36	At 175m: 16.33	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	986.58	330.2	425.88	898.7	Total route assess PM_{10} **(I)**: 2641.36
Do-something* PM_{10} assessment *(c = asome*bsome)	974.98	329.2	425.36	898.15	Total route assess PM_{10} **(II)**: 2627.69
Net total route assessment for PM_{10} (II-I)	159	0	0		-13.67

PM_{10}, ROUTE 11. **Route name: A1136**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	1	2	2	4	9
Properties (asome)	1	2	2	4	9
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 17.39	At 70m: 16.83	At 115m: 16.68	At 175m: 16.63	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 17.34	At 70m: 16.81	At 115m: 16.67	At 175m: 16.63	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	17.39	33.66	33.36	66.52	Total route assess PM_{10} **(I)**: 150.93
Do-something* PM_{10} assessment *(c = asome*bsome)	17.34	33.62	33.34	66.52	Total route assess PM_{10} **(II)**: 150.82
Net total route assessment for PM_{10} (II-I)	9	0	0		-0.11

PM_{10}, ROUTE 12. **Route name: A1136**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	11	9	13	33	66
Properties (asome)	11	9	13	33	66
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 17.51	At 70m: 16.86	At 115m: 16.69	At 175m: 16.63	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 17.48	At 70m: 16.86	At 115m: 16.68	At 175m: 16.63	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	192.61	151.74	216.97	548.79	Total route assess PM_{10} **(I)**: 1110.11
Do-something* PM_{10} assessment *(c = asome*bsome)	192.28	151.74	216.84	548.79	Total route assess PM_{10} **(II)**: 1109.65
Net total route assessment for PM_{10} (II-I)	66	0	0		-0.46

PM_{10}, ROUTE 13. **Route name: A1136**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	0	0	0	0	0
Properties (asome)	0	0	0	0	0
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 18.54	At 70m: 18.06	At 115m: 17.93	At 175m: 17.89	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 18.4	At 70m: 18.02	At 115m: 17.92	At 175m: 17.89	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	0	0	0	0	Total route assess PM_{10} **(I)**: 0
Do-something* PM_{10} assessment *(c = asome*bsome)	0	0	0	0	Total route assess PM_{10} **(II)**: 0
Net total route assessment for PM_{10} (II-I)	0	0	0		0

PM_{10}, ROUTE 15 **Route name: Option 2**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	0	0	0	0	0
Properties (asome)	0	0	0	0	0
PM_{10} concentration at average point within band for *do-minimum* (bmin)	At 20m: 16.13	At 70m: 16.13	At 115m: 16.13	At 175m: 16.13	**N/A**
PM_{10} concentration at average point within band for *do-something* (bsome)	At 20m: 16.96	At 70m: 16.37	At 115m: 16.21	At 175m: 16.16	**N/A**
Do-minimum* PM_{10} assessment *(c = amin*bmin)	0	0	0	0	Total route assess PM_{10} **(I)**: 0
Do-something* PM_{10} assessment *(c = asome*bsome)	0	0	0	0	Total route assess PM_{10} **(II)**: 0
Net total route assessment for PM_{10} (II-I)	0	0	0		0

Add route

NO_2, SUMMARY OF ROUTES: THE AGGREGATED TABLE	0-50m (i)	50-100m (ii)	100-150m (iii)	150-200m (iv)	0-200m (v=i+ii+iii+iv)
Total properties across all routes (min)	617	578	636	698	2529
Total properties across all routes (some)	617	578	636	698	2529
Do-minimum* NO_2 assessment *across all routes	10096.94	8753.83	9272.33	10116.65	Total assessment NO_2 **(I)**: 38239.75
Do-something* NO_2 assessment *across all routes	9460.38	8550.34	9199.92	10082.61	Total assessment NO_2 **(II)**: 37293.25
Net total assessment for NO_2, all routes (II-I)					-946.5
Number of properties with an improvement					***2529***
Number of properties with no change					***0***
Number of properties with a deterioration					***0***

Reference Sources: DMRB: Volume 11 (May 2007)
DfT -Transport Apprasial Guidance (WebTAG) Unit 3.3.3 The Local Air Quality Sub-Objective

Quantitative Measures: 0 properties will experience worse air quality
2529 properties will experinece improved air quality

Assessment Scores: (-946.50) overall improvement in air quality with scheme

Qualitative Comments: Route 15 will experience an increase in annual mean NO2 levels at 20m from the road centre of at least 2 µgm-3

NO_2, ROUTE 1. Route name: Pelham Rd	0-50m (i)	50-100m (ii)	100-150m (iii)	150-200m (iv)	0-200m (v=i+ii+iii+iv)
Properties (amin)	264	302	306	351	1223
Properties (asome)	264	302	306	351	1223
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 18.47	At 70m: 16.38	At 115m: 15.78	At 175m: 15.59	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 16.64	At 70m: 15.82	At 115m: 15.59	At 175m: 15.51	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	4876.08	4946.76	4828.68	5472.09	Total route assess NO_2 **(I)**: 20123.61
Do-something* NO_2 assessment *(c = asome*bsome)	4392.96	4777.64	4770.54	5444.01	Total route assess NO_2 **(II)**: 19385.15
Net total route assessment for NO_2 (II-I)	1223	0	0		-738.46

NO_2, ROUTE 2. Route name: Stallingborough Rd	0-50m (i)	50-100m (ii)	100-150m (iii)	150-200m (iv)	0-200m (v=i+ii+iii+iv)
Properties (amin)	74	86	119	130	409
Properties (asome)	74	86	119	130	409
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 16.04	At 70m: 14.97	At 115m: 14.66	At 175m: 14.57	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 15.65	At 70m: 14.85	At 115m: 14.62	At 175m: 14.55	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	1186.96	1287.42	1744.54	1894.1	Total route assess NO_2 **(I)**: 6113.02
Do-something* NO_2 assessment *(c = asome*bsome)	1158.1	1277.1	1739.78	1891.5	Total route assess NO_2 **(II)**: 6066.48
Net total route assessment for NO_2 (II-I)	409	0	0		-46.54

NO_2, ROUTE 3. Route name: Stallingborough Rd	0-50m (i)	50-100m (ii)	100-150m (iii)	150-200m (iv)	0-200m (v=i+ii+iii+iv)
Properties (amin)	6	1	12	8	27
Properties (asome)	6	1	12	8	27
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 12.64	At 70m: 11.38	At 115m: 11.01	At 175m: 10.9	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 12.62	At 70m: 11.37	At 115m: 11.01	At 175m: 10.9	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	75.84	11.38	132.12	87.2	Total route assess NO_2 **(I)**: 306.54
Do-something* NO_2 assessment *(c = asome*bsome)	75.72	11.37	132.12	87.2	Total route assess NO_2 **(II)**: 306.41
Net total route assessment for NO_2 (II-I)	27	0	0		-0.13

NO_2, ROUTE 4. **Route name: A1173**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	46	33	36	29	144
Properties (asome)	46	33	36	29	144
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 20.57	At 70m: 16.61	At 115m: 15.42	At 175m: 15.03	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 19.57	At 70m: 16.28	At 115m: 15.3	At 175m: 14.99	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	946.22	548.13	555.12	435.87	Total route assess NO_2 **(I)**: 2485.34
Do-something* NO_2 assessment *(c = asome*bsome)	900.22	537.24	550.8	434.71	Total route assess NO_2 **(II)**: 2422.97
Net total route assessment for NO_2 (II-I)	144	0	0		-62.37

NO_2, ROUTE 5. **Route name: A1173**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	0	0	0	0	0
Properties (asome)	0	0	0	0	0
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 20.15	At 70m: 16.73	At 115m: 15.7	At 175m: 15.38	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 21.24	At 70m: 17.09	At 115m: 15.83	At 175m: 15.43	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	0	0	0	0	Total route assess NO_2 **(I)**: 0
Do-something* NO_2 assessment *(c = asome*bsome)	0	0	0	0	Total route assess NO_2 **(II)**: 0
Net total route assessment for NO_2 (II-I)	0	0	0		0

NO_2, ROUTE 6. **Route name: A1173**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	0	0	0	0	0
Properties (asome)	0	0	0	0	0
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 21.74	At 70m: 16.88	At 115m: 15.38	At 175m: 14.9	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 22.32	At 70m: 17.08	At 115m: 15.45	At 175m: 14.92	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	0	0	0	0	Total route assess NO_2 **(I)**: 0
Do-something* NO_2 assessment *(c = asome*bsome)	0	0	0	0	Total route assess NO_2 **(II)**: 0
Net total route assessment for NO_2 (II-I)	0	0	0		0

NO_2, ROUTE 7. **Route name: Station Rd**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	132	99	84	40	355
Properties (asome)	132	99	84	40	355
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 12.98	At 70m: 12.56	At 115m: 12.44	At 175m: 12.4	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 12.82	At 70m: 12.51	At 115m: 12.42	At 175m: 12.4	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	1713.36	1243.44	1044.96	496	Total route assess NO_2 **(I)**: 4497.76
Do-something* NO_2 assessment *(c = asome*bsome)	1692.24	1238.49	1043.28	496	Total route assess NO_2 **(II)**: 4470.01
Net total route assessment for NO_2 (II-I)	355	0	0		-27.75

NO_2 ROUTE 8. **Route name: Stallingborough Rd**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	10	21	34	41	106
Properties (asome)	10	21	34	41	106
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 12.53	At 70m: 11.88	At 115m: 11.7	At 175m: 11.64	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 12.19	At 70m: 11.78	At 115m: 11.67	At 175m: 11.63	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	125.3	249.48	397.8	477.24	Total route assess NO_2 **(I)**: 1249.82
Do-something* NO_2 assessment *(c = asome*bsome)	121.9	247.38	396.78	476.83	Total route assess NO_2 **(II)**: 1242.89
Net total route assessment for NO_2 (II-I)	106	0	0		-6.93

NO_2 ROUTE 9. **Route name: Stallingborough Rd**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	15	5	4	7	31
Properties (asome)	15	5	4	7	31
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 12.34	At 70m: 11.42	At 115m: 11.16	At 175m: 11.08	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 11.72	At 70m: 11.23	At 115m: 11.1	At 175m: 11.06	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	185.1	57.1	44.64	77.56	Total route assess NO_2 **(I)**: 364.4
Do-something* NO_2 assessment *(c = asome*bsome)	175.8	56.15	44.4	77.42	Total route assess NO_2 **(II)**: 353.77
Net total route assessment for NO_2 (II-I)	31	0	0		-10.63

NO_2 ROUTE 10. **Route name: Stallingborough Rd**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	58	20	26	55	159
Properties (asome)	58	20	26	55	159
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 13.39	At 70m: 11.75	At 115m: 11.27	At 175m: 11.12	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 12.64	At 70m: 11.51	At 115m: 11.19	At 175m: 11.09	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	776.62	235	293.02	611.6	Total route assess NO_2 **(I)**: 1916.24
Do-something* NO_2 assessment *(c = asome*bsome)	733.12	230.2	290.94	609.95	Total route assess NO_2 **(II)**: 1864.21
Net total route assessment for NO_2 (II-I)	159	0	0		-52.03

NO_2 ROUTE 11. **Route name: A1136**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	1	2	2	4	9
Properties (asome)	1	2	2	4	9
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 17.64	At 70m: 15.92	At 115m: 15.43	At 175m: 15.27	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 17.49	At 70m: 15.88	At 115m: 15.41	At 175m: 15.27	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	17.64	31.84	30.86	61.08	Total route assess NO_2 **(I)**: 141.42
Do-something* NO_2 assessment *(c = asome*bsome)	17.49	31.76	30.82	61.08	Total route assess NO_2 **(II)**: 141.15
Net total route assessment for NO_2 (II-I)	9	0	0		-0.27

NO_2 ROUTE 12. **Route name: A1136**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	11	9	13	33	66
Properties (asome)	11	9	13	33	66
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 17.62	At 70m: 15.92	At 115m: 15.43	At 175m: 15.27	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 17.53	At 70m: 15.89	At 115m: 15.42	At 175m: 15.27	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	193.82	143.28	200.59	503.91	Total route assess NO_2 **(I)**: 1041.6
Do-something* NO_2 assessment *(c = asome*bsome)	192.83	143.01	200.46	503.91	Total route assess NO_2 **(II)**: 1040.21
Net total route assessment for NO_2 (II-I)	66	0	0		-1.39

NO_2 ROUTE 13. **Route name: A1136**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	0	0	0	0	0
Properties (asome)	0	0	0	0	0
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 21.12	At 70m: 19.54	At 115m: 19.09	At 175m: 18.94	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 20.57	At 70m: 19.37	At 115m: 19.03	At 175m: 18.92	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	0	0	0	0	Total route assess NO_2 **(I)**: 0
Do-something* NO_2 assessment *(c = asome*bsome)	0	0	0	0	Total route assess NO_2 **(II)**: 0
Net total route assessment for NO_2 (II-I)	0	0	0		0

NO_2 ROUTE 15 **Route name: Option 2**	**0-50m** **(i)**	**50-100m** **(ii)**	**100-150m** **(iii)**	**150-200m** **(iv)**	**0-200m** **(v=i+ii+iii+iv)**
Properties (amin)	0	0	0	0	0
Properties (asome)	0	0	0	0	0
NO_2 concentration at average point within band for *do-minimum* (bmin)	At 20m: 12.28	At 70m: 12.28	At 115m: 12.28	At 175m: 12.28	**N/A**
NO_2 concentration at average point within band for *do-something* (bsome)	At 20m: 16.81	At 70m: 13.49	At 115m: 12.69	At 175m: 12.43	**N/A**
Do-minimum* NO_2 assessment *(c = amin*bmin)	0	0	0	0	Total route assess NO_2 **(I)**: 0
Do-something* NO_2 assessment *(c = asome*bsome)	0	0	0	0	Total route assess NO_2 **(II)**: 0
Net total route assessment for NO_2 (II-I)	0	0	0		0

Appendix J

Greenhouse Gas TAG Spreadsheet

APPRAISAL- Greenhouse Gases

Proposal Name: **A18 - A180 Link Road**

Current Year of Appraisal: 2008

Proposal Opening year: 2012

Project (Road/Rail or Road and Rail): Road

Overall Assessment Score:

Net Present Value of Carbon Emissions of Proposal (£): 55,926

*positive value reflects a **net benefit** (i.e. carbon emissions reduction)

(60 Year Period)

Quantitative Assessment:

Change in Carbon Emissions over 60 year appraisal period (tonnes): -1,947
(between with scheme and without scheme scenarios)

Change in Carbon Emissions in Opening year (tonnes): -3
(between with scheme and without scheme scenarios)

Qualitative Comments:

For the whole appraisal period there is a reduction in carbon emissions of 1947 tonnes indicating that the 'with scheme' case reduces carbon emissions from the 'without scheme' case and hence there is a relative improvement on the greenhouse gas objective

For the opening year there is an decrease in carbon emissions of -3 tonnes indicating that the 'with scheme' case slighty decreases carbon emissions from the 'without scheme' case and hence there is a relative improvement on the greenhouse gas objective

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Sensitivity Analysis:

Description:

Upper bound Net Present Value of Carbon Emissions of Proposal (£): 84,561

Lower bound Net Present Value of Carbon Emissions of Proposal (£): 33,280

Data Sources:

Tuba v1.7a
TAG Unit 3.3.5