



ENV/254/66  
10.02.11

# Suffolk Coastal District Council

## Air Quality Action Plan for the Woodbridge Junction



February 2011



# Executive summary

The Environment Act 1995 requires all local authorities to review air quality within their districts. If it appears that any air quality “Objective” prescribed in the regulations and in the National Air Quality Strategy is not likely to be achieved then the local authority must designate the affected areas as Air Quality Management Areas (AQMAs). The Act then requires that an Action Plan be produced for any areas designated as AQMAs, setting out the actions that the District Council intend to take to achieve the air quality standards in the National Air Quality Strategy.

In 2006, Suffolk Coastal District Council, hereafter referred to as The District Council, declared an AQMA at the junction of Lime Kiln Quay Road, Thoroughfare and St John’s Street in Woodbridge (hereafter referred to as the Woodbridge Junction) for expected traffic related exceedence of the nitrogen dioxide (NO<sub>2</sub>) annual average objective. The District Council is working with the local highway authority, Suffolk County Council (hereafter referred to as the County Council), to help secure improvements to the network. The District Council has consulted widely with local organizations and the public in developing measures for inclusion in this Action Plan.

The Action Plan confirms the likely source of nitrogen dioxide is from transport and in particular from heavy goods vehicles. Evidence suggests that a 16% reduction in traffic emissions of oxides of nitrogen (or NO<sub>x</sub> which is a precursor to NO<sub>2</sub>) is necessary (based on 2006 figures) to achieve the air quality standard. The Action Plan considers 79 options to improve air quality and recommends 20 of these for implementation which are aimed at reducing levels of air pollution within the AQMA in Woodbridge. It also sets out the framework of partnership working with other organisations, within which the actions have been developed and will be progressed and monitored.

The plan aims to reduce transport emissions in the AQMA by around 10% by 2015. It is anticipated that a reduction of this scale will lead to the achievement of the annual mean NO<sub>2</sub> air quality standard (40µg/m<sup>3</sup>) at the Woodbridge junction in future years. No additional measures are thought to be required. However, it is acknowledged that the Action Plan is a continuously evolving document involving numerous groups and Authorities, which may require revision in the future.

It is acknowledged that Woodbridge is a market town with a need to balance the requirements of local businesses and community against improving local air quality. The actions and measures are anticipated to provide other benefits for Woodbridge and the District, which are beyond the original scope of the Action Plan. The benefits include:

- Reduction of other pollutants such as particulate matter, benzene etc
- Reduction in emission of green house gasses
- Reduced noise from traffic
- Reduced congestion
- Environmental improvements when schemes are undertaken
- Assist with climate change polices
- Improvements to human health

In compiling this Action Plan, Government Guidance LAQM.PG (09) and the Review and Assessment reports produced by the District Council have been referred to.

## Suffolk Coastal District Council Air Quality Action Plan

The Action Plan has undergone a full statutory and public consultation and has been amended accordingly, a summary of the main alterations are included at the start of the Plan. A number of additional measures are under-going further investigation for possible future inclusion in the Action Plan following the consultation.

When this Action Plan has been formally adopted by the District Council work can begin on the measures included. Annual updates will be provided in the form of an Action Plan Progress Report, as required by Defra. Over time, should the measures chosen prove not to be fully successful in reduction of nitrogen dioxide concentrations in the AQMA, other measures available will be reassessed.

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# Changes made to the draft Action Plan

A number of notable changes, together with minor re-wording, have been made to the draft Action Plan in order to produce this final Action Plan document. Changes have come about due to additional information obtained by members of the Steering Group, including a further year of monitoring data at the junction, together with results of the statutory and public consultation exercise undertaken on the draft document. The notable changes are summarised below:

- **Section 1 – Introduction** – Figure 1.2 has been updated from 2006 data to show 2009 data.
- **Section 2.4 – Recent trends in air quality** – this section has been updated to include the 2009 monitoring data and additional comments on trends shown.
- **Section 3.5 – Consultation responses to the draft Action Plan** - this section now details and discusses fully the results of the statutory and public consultation undertaken on the draft Action Plan.
- **Section 3.6 – Measures to improve air quality - Measure 3 (pedestrianise the Thoroughfare / increase the restrictions to 8am-6pm)**. This has been re-worded and the description expanded upon to better reflect its meaning. The measure now reads 'Extension of restrictions to Thoroughfare (8am – 6pm)'.

Suffolk County Council advised that pedestrianisation of the Thoroughfare is not a viable option due to the need for access by residents and businesses for delivery purposes during the day. Extending the hours of the current access restrictions is possible and investigations will be undertaken (should Measures 1 and 2 be unfeasible or unsuccessful) to determine whether this option is viable. These investigations will include consulting local businesses, residents and interested parties to determine the viability of this measure.

- **Section 3.6 – Measures to improve air quality - Measure 4 (remove the ability to turn right or go straight on from the direction of Melton Hill)**. This has been altered following further investigations by Suffolk County Council. The measure now reads 'Remove the ability to turn right from the direction of Melton Hill'.

Suffolk County Council has considered this option further and determined that banning the straight on manoeuvre would impact on operation of the Thoroughfare. Traffic would have to reroute and travel along Lime Kiln Quay Road to enter, increasing traffic coming from this direction, or the traffic flow in the Thoroughfare would have to be reversed. If the flow were reversed the traffic lights would have to accommodate an additional phase to allow traffic to exit onto the junction, potentially increasing congestion on the other arms. Reversing the flow could also lead to additional traffic using the Thoroughfare from the Cumberland Street direction as a cut through. Traffic waiting in the Thoroughfare at the lights could cause a new air quality concern as the Thoroughfare is a street canyon and as such any emissions would be difficult to disperse and could lead to exceedance of the objectives. As such, this option is not considered viable at this time.

Removing the ability to turn right on its own will not have as much of an impact on congestion as the original measure. However, alongside a possible straight on queuing lane on Melton Hill (Measure 2) and increased access restrictions in the Thoroughfare (Measure 3), if they were to be implemented, it could have an impact

and help to improve traffic flow on Melton Hill. This suggestion also has its potential problems as it may impact on the amount of traffic using Sun Lane which would need to be investigated. As above, these investigations will include consulting local businesses, residents and interested parties to determine the viability of this measure.

- **Section 3.6 – Measures to improve air quality – Recommendation for Measures 5 and 6 (relocation / removal of parking on Melton Hill).** Following the results of the public consultation, it has been noted that there is strong local resident objection to both measures and this will be taken into account when assessing these two options.
- **Section 3.6 – Measures to improve air quality – Recommendation for Package of Measures 3: Direction signing).** The public consultation process has shown strong support for additional measures to be included relating to reducing the volume of through traffic on this route, which includes several ideas relating to Direction Signing. Additional investigation is currently being undertaken to determine the percentage of through traffic and additional measures will be considered following the outcome.
- **Section 3.6 – Measures to improve air quality – Table 3 Summary of Action Plan Measures.** Information has been removed from his table and is now presented in Section 4 – Implementation Plan.
- **Section 4 – Implementation Plan.** This section has been significantly altered to include Implementation details and timetables for all 20 measures presented in the Action Plan.

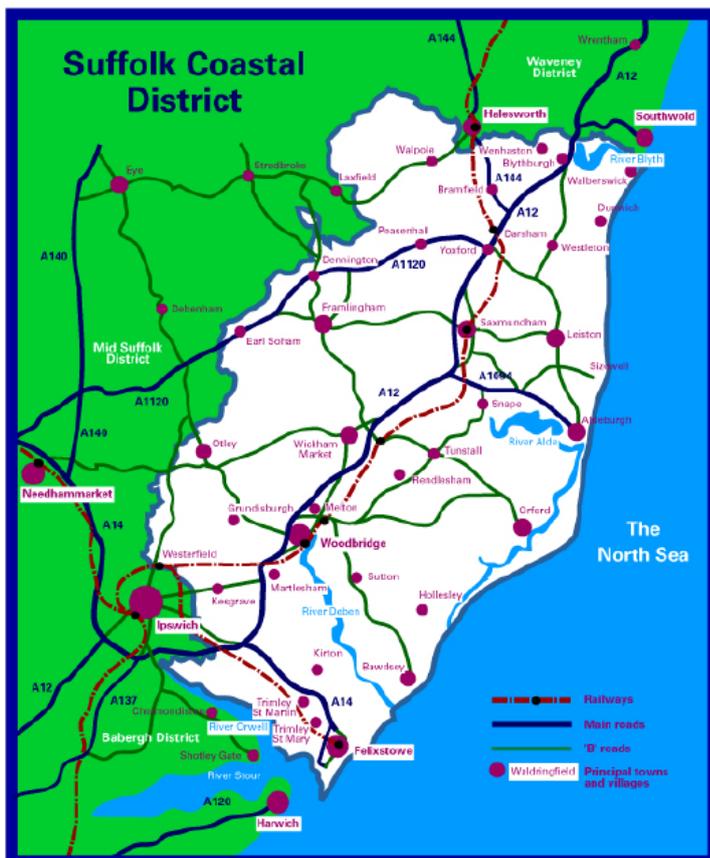
# 1 Introduction

This local Air Quality Action Plan sets out a work programme to improve air quality at the Woodbridge Junction by the District Council in partnership with the County Council. The District Council has consulted the public and other statutory consultees in order to produce this final plan. The District Council will obtain approval for this Action Plan from central Government and both Councils before it is implemented.

Suffolk Coastal is a diverse district incorporating thirty miles of coast, expansive areas of countryside, much of which still forms a working landscape, five market towns including Woodbridge, the resort and port of Felixstowe as well as many villages (Figure 1.1).

The excellent quality of our environment is recognised in the substantial areas of countryside and coast that are designated as Areas of Outstanding Natural Beauty. Our built environment is of a similar high quality, with numerous listed buildings, Conservation Areas and Scheduled Ancient Monuments. Our coast and estuaries support vibrant communities, a wealth of outstanding landscapes and are internationally significant for the wildlife they support.

**Figure 1.1** Suffolk Coastal District Council

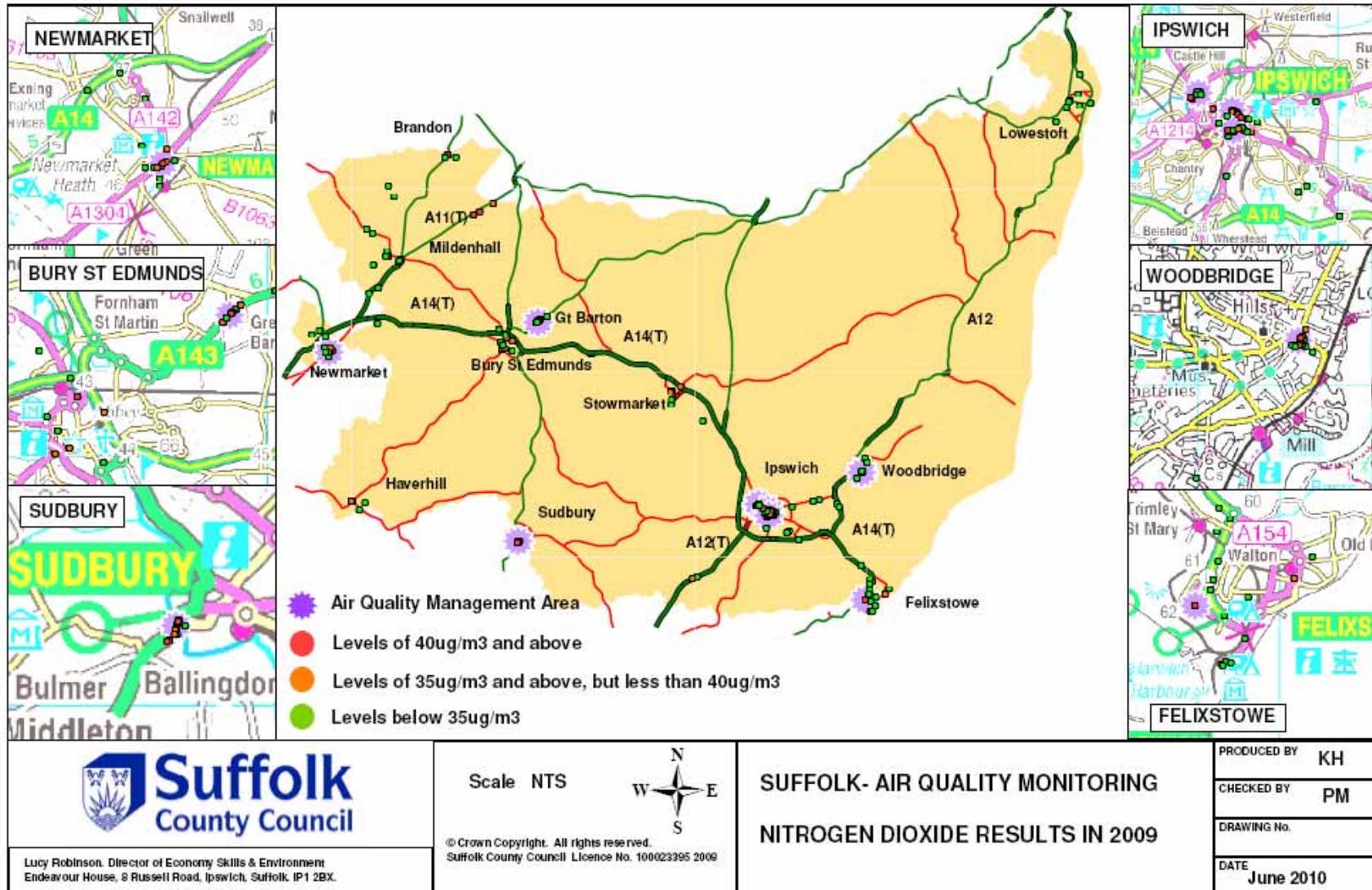


## Suffolk Coastal District Council Air Quality Action Plan

The district supports over 4,000 businesses, including large employers like the Port of Felixstowe, BT and Sizewell Power Station, as well as a high proportion of small and medium sized businesses that are vital to the local economy. Tourism is also a major driver for the local economy. Much of the district is within the Haven Gateway that is identified for significant growth.

While the quality of our air is generally very good and well within the limits set by Government for the protection of human health, there are now two areas within the district where levels of pollution give rise for concern. Two Air Quality Management Areas have, therefore, been declared in the District, one in Woodbridge and the other in Felixstowe both for annual mean nitrogen dioxide. The District has a statutory duty to develop an Action Plan to improve air quality in these locations. Other areas within the county also exceed the annual mean nitrogen dioxide limit ( $40\mu\text{gm}^3$ ), these locations are shown in Figure 1.2 overleaf.

**Figure 1.2 Nitrogen dioxide concentrations recorded in Suffolk in 2009**



## 2 Air Quality in Suffolk Coastal

This chapter sets out local authority duties in relation to Local Air Quality Management. These are the tasks that the District Council must complete as a statutory duty.

### 2.1 Health effects of poor air quality

There are various sources of air pollution in the UK. These can include transport (mainly road transport), energy – both use and production, commercial / industrial premises and natural sources. The Government has identified 8 key pollutants:

- Nitrogen Dioxide
- PM<sub>10</sub> particulates
- Benzene
- 1,3 – butadiene
- Lead
- Sulphur Dioxide
- Carbon Monoxide
- Ozone

Whilst this Action Plan is primarily aimed at reducing NO<sub>2</sub>, the initiatives within it will have a positive affect on the reduction of other air pollutants, especially particulates. The health implications of the three main transport emissions types are as follows:

**Nitrogen Oxides (NO<sub>x</sub>)** Road transport is responsible for approximately 50% of the emissions of NO<sub>2</sub> in Britain. NO<sub>2</sub> has been identified as having various adverse health effects particularly on the respiratory system and in both asthmatics and non-asthmatics. Short term exposure to this pollutant can increase the likelihood of reaction to allergens such as pollen and has been known to increase asthma in some people. Children exposed to this pollutant may have increased risk of respiratory infections.

**Particulates (PM<sub>10</sub>)** Particulates can be produced directly from combustion and other processes, as well as from natural activities. They can also be caused by chemical reaction in the air. Particulates of less than 3 microns can pass deep into the lungs thus causing respiratory problems.

**Carbon Monoxide (CO)** Carbon monoxide is a colourless, tasteless gas, which is known to be poisonous when incomplete combustion occurs. Inhaling small doses of this gas can result in a person becoming confused and having reduced co-ordination. It can also increase the likelihood of angina.

**Principal Sources of Air Pollution in the District** Nitrogen dioxide (NO<sub>2</sub>) and nitric oxide (NO) are collectively known as Nitrogen Oxides (NO<sub>x</sub>). Nitrogen Oxides, which are the main source of poor air quality, are produced during all combustion processes in air, usually in the form of NO which subsequently reacts with ozone (O<sub>3</sub>) to form NO<sub>2</sub>. The predominant source of NO<sub>x</sub> in Britain is road transport and it is thought that half of emissions in Europe originate from this source; certainly the highest concentrations of NO<sub>2</sub> are generally found close to busy roads in urban areas. NO<sub>2</sub> pollution levels within the District follow a similar pattern with the majority of NO<sub>x</sub> emissions being road transport related. Commercial, industrial and domestic sources also make a small contribution to background. NO<sub>x</sub> emissions close to the Port of Felixstowe arise from a number of commercial and transport related sources.

In the UK, air pollution is currently estimated to reduce the life expectancy of every person by an average of 7-8 months with estimated equivalent health costs of up to £20 billion each year. Air pollution also has a detrimental effect on our ecosystems and vegetation. Clearly there are significant benefits to be gained from further improvements.

To protect the health of the population, the Government have set out a national air quality strategy which includes statutory objectives (standards) for some key pollutants. The objectives are expressed as a maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedences within a specified timescale (see Appendix 1). The objectives have been set throughout the UK and European Union at levels that aim to protect the vulnerable in society from the harmful effects of breathing pollution.

In response, a number of measures have been introduced at an international level (including the UK) to reduce this impact. They include:

- Incremental reductions in emissions from vehicles and industry
- Climate change programme policies
- Local Air Quality Management (see following section)

The UK government recognises the important role that local authorities have and continue to play in helping deliver the air quality objectives. "Action taken at the local level can be an effective way of tackling localised air quality problems leading to an overall improvement of air quality."

## **2.2 The legislative framework for air quality**

### **Local Air Quality Management**

The Environment Act 1995 gives local authorities duties and responsibilities that are designed to secure improvements in air quality, particularly at the local level. These include the review and assessment of key pollutants in their area in a series of rounds every three years. If it appears that any of the air quality objectives set by government are not likely to be achieved and members of the public are being exposed to the pollution, the local authority must by order designate any part of its area so affected, as an Air Quality Management Area (AQMA). They must then prepare and implement a remedial Action Plan of measures to reduce air pollution levels in that AQMA. A Review and Assessment round consists of local authorities initially undertaking an Updating and Screening Assessment (USA) and then carrying out the following stages if any objectives are found to be exceeded:

- Detailed Assessment of those areas identified in the USA as potential AQMA's
- Designation of AQMA
- Further Assessment of air pollution in the AQMA
- Amendment if necessary of AQMA boundaries
- Action Plan
- Annual Action Plan Progress Reports

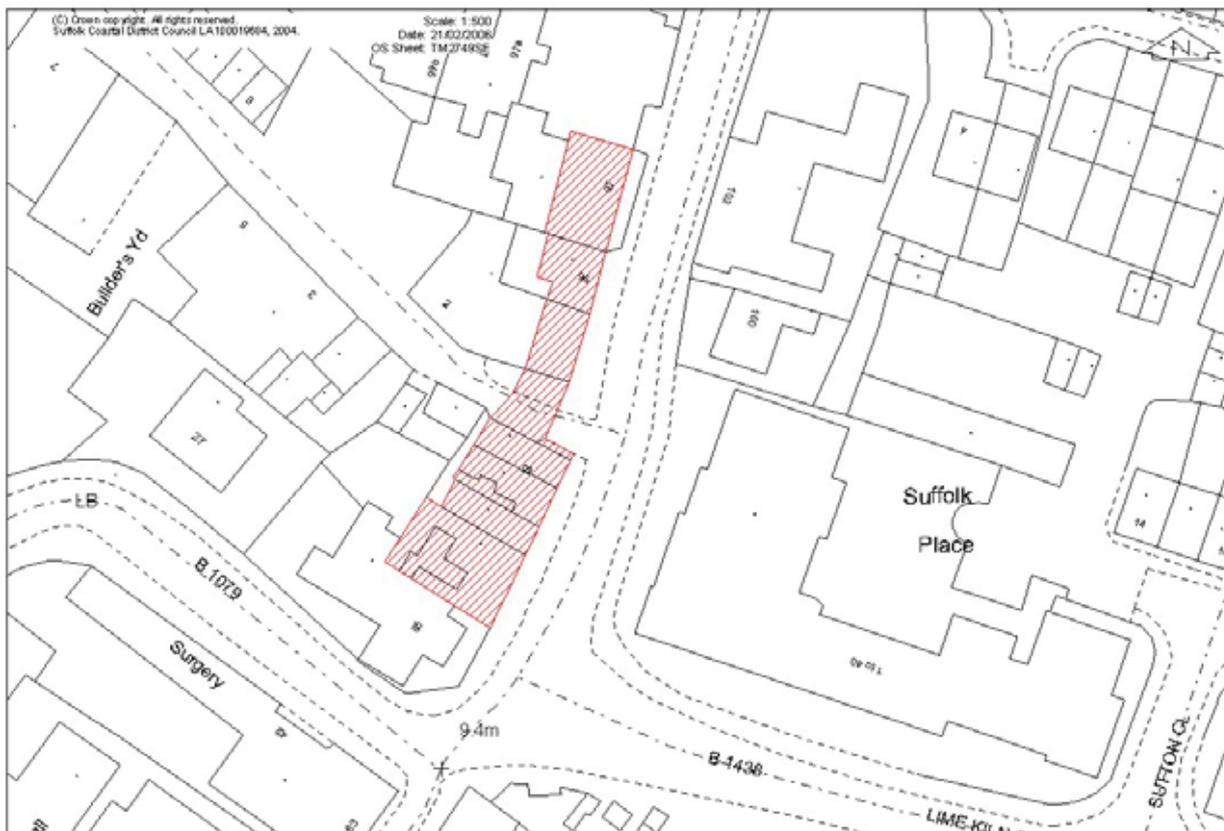
The fourth round of Review and Assessment commenced in 2009. The District Council has currently designated two AQMA's, one in Woodbridge and the other more recently declared in Felixstowe. The Woodbridge AQMA is the subject of this Action Plan. The Action Plan for the Felixstowe area will be developed separately.

## 2.3 Conclusions of previous review and assessment of air quality in Suffolk Coastal

The District Council has completed its Local Air Quality Management duties in compliance with the government guidance. The bulk of work to date has been to review air quality in the district and to assess whether any problems with achieving the health based air quality objectives exist now or are predicted for the future. This section provides a summary of this work.

Initial assessment of air quality began in 1999, but it was not until 2003 that the Woodbridge Junction was highlighted as a potential area where the annual average nitrogen dioxide objective could be exceeded. This exceedence was confirmed in 2004 and further monitoring was carried out at the junction. This work culminated in the declaration of the AQMA at the Woodbridge Junction in March 2006. The area designated can be seen in Figure 2.1, it covers a number of properties on the Western side of the Thoroughfare / Melton Hill arm of the Woodbridge Junction. A full copy of the Air Quality Management Area Order made for the Woodbridge Junction is attached in Appendix 2.

**Figure 2.1** Map showing the Air Quality Management Area at the Woodbridge junction, Woodbridge, Suffolk



Figures 2.2 to 2.4, which follow, show queuing traffic on the three main arms of the junction, demonstrating the traffic related problems experienced. The phasing of the traffic lights includes time for pedestrians to cross (a necessity at this junction), which will increase queuing time for traffic.

**Figure 2.2** The Thoroughfare / Melton Hill arm of the Woodbridge Junction, where the Air Quality Management Area is located



**Figure 2.3** The Lime Kiln Quay Road arm of the Woodbridge Junction



**Figure 2.4 The St John's Street arm of the Woodbridge Junction**



### **Summary of Further Assessment for the Woodbridge Junction (October 2007)**

In the AQMA the exceedance has been identified as being mainly attributable to traffic pollution. There are no other significant sources within the locality of the junction and as such traffic is identified as being the main source and should be the focus of any work done to remediate the problem in the AQMA.

As part of the Further Assessment, the air quality impact from road traffic emissions on nitrogen dioxide concentrations at receptor locations was predicted using an air dispersion computer model.

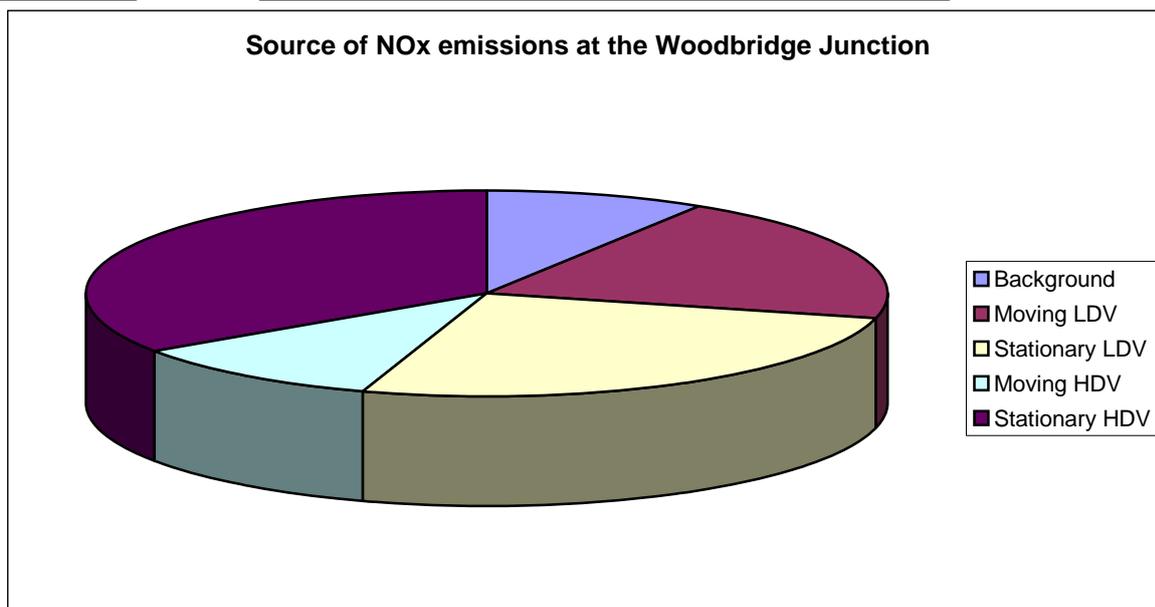
The results of the modelling were presented as contour maps and can be seen in Appendix 3. The modelled contour maps show a predicted exceedance of the annual mean NO<sub>2</sub> air quality objective (40µg/m<sup>3</sup>) at two properties on the Western side of the Thoroughfare / Melton Hill arm of the junction in 2006, the highest exceedance predicted at 43.5µg/m<sup>3</sup>. The Further Assessment therefore found that it was probable that the annual mean NO<sub>2</sub> objective was exceeded at Woodbridge junction during 2006. Furthermore it was possible that the same objective would be exceeded during 2010 when the UK aims to have eliminated such exceedances.

The model does not predict exceedances for all receptor locations situated within the designated AQMA even though diffusion tube monitoring being undertaken at those locations shows concentrations above 40µg/m<sup>3</sup>. The model also predicts marginal exceedances of the annual mean objective at receptor locations on the Eastern side of the Thoroughfare / Melton Hill and in Lime Kiln Quay Road. Diffusion tube monitoring at these locations does not show any exceedances of the objectives. Due to the diffusion tube results, the Further Assessment concluded that the boundary of the AQMA be retained.

The aim of an air quality Action Plan in Woodbridge would be to take action to make progress towards the annual average NO<sub>2</sub> objective of 40µg/m<sup>3</sup>.

Figure 2.5 and Table 1 below show the average source apportionment of NO<sub>x</sub> at the Woodbridge Junction. Proportionally, emissions from light duty vehicles (LDV) are the same as those from heavy duty vehicles (HDV). However, stationary traffic (including both LDV and HDV) emissions are twice those from moving traffic, with the highest proportion being emitted from stationary HDV.

**Figure 2.5 NO<sub>x</sub> emissions by source at the Woodbridge Junction**



**Table 1: Key results from source apportionment study**

Site	Estimated background contribution to annual mean NO <sub>x</sub> (%)	Estimated traffic contribution to annual mean NO <sub>x</sub> (%)	Reduction in NO <sub>x</sub> from traffic required to meet objective (%)	LDV contribution to moving traffic NO <sub>x</sub> emissions (%)	HDV contribution to moving traffic NO <sub>x</sub> emissions (%)	LDV contribution to queuing traffic NO <sub>x</sub> emissions (%)	HDV contribution to queuing traffic NO <sub>x</sub> emissions (%)
Thoroughfare/Melton Hill	9	91	16	21	11	26	33

LDV = light duty vehicles (cars and light goods) HDV = heavy duty vehicles (heavy goods and buses)

Table 1 confirms that road transport is the dominant contributor to local pollutant concentrations at the Woodbridge Junction. Based on the figures obtained from the Further Assessment modeling, that the annual mean NO<sub>2</sub> concentration in 2006 at a receptor on Thoroughfare/Melton Hill was estimated to be 43.5 µg/m<sup>3</sup>, it is estimated that a 16% reduction in road traffic emissions of NO<sub>x</sub> (or nitrogen oxides, a pre-cursor of NO<sub>2</sub><sup>1</sup>) at the junction would be necessary to achieve the AQ objective of 40 µg/m<sup>3</sup> in 2006.

Table 2 overleaf shows the traffic make-up at the Woodbridge Junction. Heavy goods vehicles and buses together (heavy duty vehicles) constitute less than 5% of the traffic flow

<sup>1</sup> The relationship between oxides of nitrogen (NO<sub>x</sub>) and one of its components, nitrogen dioxide (NO<sub>2</sub>) is complex and non-linear. Essentially a greater than proportionate reduction in NO<sub>x</sub> is required to achieve a given percentage reduction in NO<sub>2</sub>. For example, if a 10% reduction in NO<sub>2</sub> concentration is needed at a given location, the local emissions of NO<sub>x</sub> must be reduced by more than 10% in order to achieve this.

through the junction, yet Table 1 highlighted that these vehicles contribute 44% of the local transport emissions at the junction.

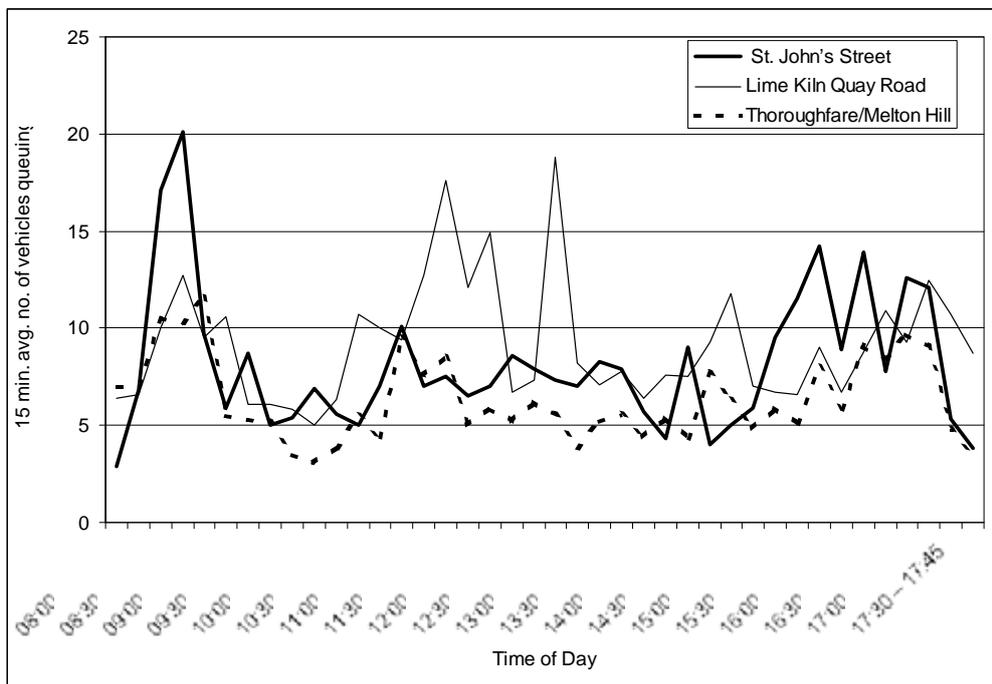
**Table 2: Key results from traffic study**

Site	Contribution of cars to flow rate (%)	Contribution of LGVs to flow rate (%)	Contribution of HGVs to flow rate (%)	Contribution of buses to flow rate (%)
Thoroughfare / Melton Hill	87	10	1.5	1.5

LGV = light goods vehicles HGV = heavy goods vehicles  
 Flow rate = from 11-hour traffic survey undertaken on 24<sup>th</sup> November 2005.

On 23 November 2005 a manual count of traffic queue lengths was undertaken at the Woodbridge Junction for the three main arms. Figure 2.6 below shows the results from this one day survey broken down into 15 minute averages. If this single day survey can be taken as representative of weekday traffic, these data indicate that queuing is heaviest during the morning and evening traffic peaks on all three arms of the junction. There also may be a peak in traffic using Lime Kiln Quay Road in the middle of the day. Traffic queues on Thoroughfare / Melton Hill (where the AQMA is situated) are much lower than on the other three arms of the junction and show peaks at 11:00-12:00 and 15:00-15:30 in addition to the morning and evening peaks.

**Figure 2.6 15-minute average number of vehicles queuing at Woodbridge Junction on Wednesday 23<sup>rd</sup> November, 2005**



The results of the Further Assessment in Woodbridge indicate the following:

- Road traffic on Woodbridge Junction is the dominant local contributor to annual mean NO<sub>2</sub> concentration (90% of the total).
- Traffic queues of greater than 10 vehicles at the junction may be the norm during weekday morning and evening traffic peaks on all three arms of the junction. Queues in excess of 15 vehicles are evident during the lunch hour break in Lime Kiln Quay Road.
- Although the queues involve few vehicles, emissions while queuing contribute around 60% to local concentrations. Moving traffic (around 4000-5000 vehicles per day) contributes around 30% to local concentrations
- The remaining 10% of local concentrations comes from regional sources unassociated with traffic at Woodbridge junction.
- Heavy-duty vehicles contribute around 44% toward local concentrations although they comprise only 3-4% of traffic flows. Heavy-duty vehicles are evenly split in number between goods vehicles and buses.
- Based on 2006 figures a 16% reduction in traffic NO<sub>x</sub> emissions at Woodbridge Junction would be required to achieve the annual mean air quality standard for NO<sub>2</sub>. If this standard is achieved then the AQMA order could be removed.

## 2.4 Recent trends in air quality in Woodbridge

NO<sub>2</sub> levels have been monitored in Suffolk Coastal since 1993 using diffusion tubes, however most of the original sites have now been relocated or removed. Prior to 2002, data was corrected for laboratory bias using the correction factor provided by the laboratory. Since 2002, the bias correction factor has been calculated from collocation studies undertaken within the Suffolk Coastal District. From 2004 onwards the collocation study has been undertaken at the Woodbridge Junction itself. For this reason, monitoring data has only been presented from 2002 onwards for the purpose of obtaining information on air quality trends. Figure 2.7 overleaf shows the locations of the current monitoring sites at the Woodbridge Junction.

An automatic analyzer is also located at 93 Thoroughfare in order to gain measurements at the predicted maximum location, see figures 2.7 and 2.8 for location. Annual average results recorded by the analyser 2006-2009 are shown below. The air quality objective is 40µg/m<sup>3</sup>.

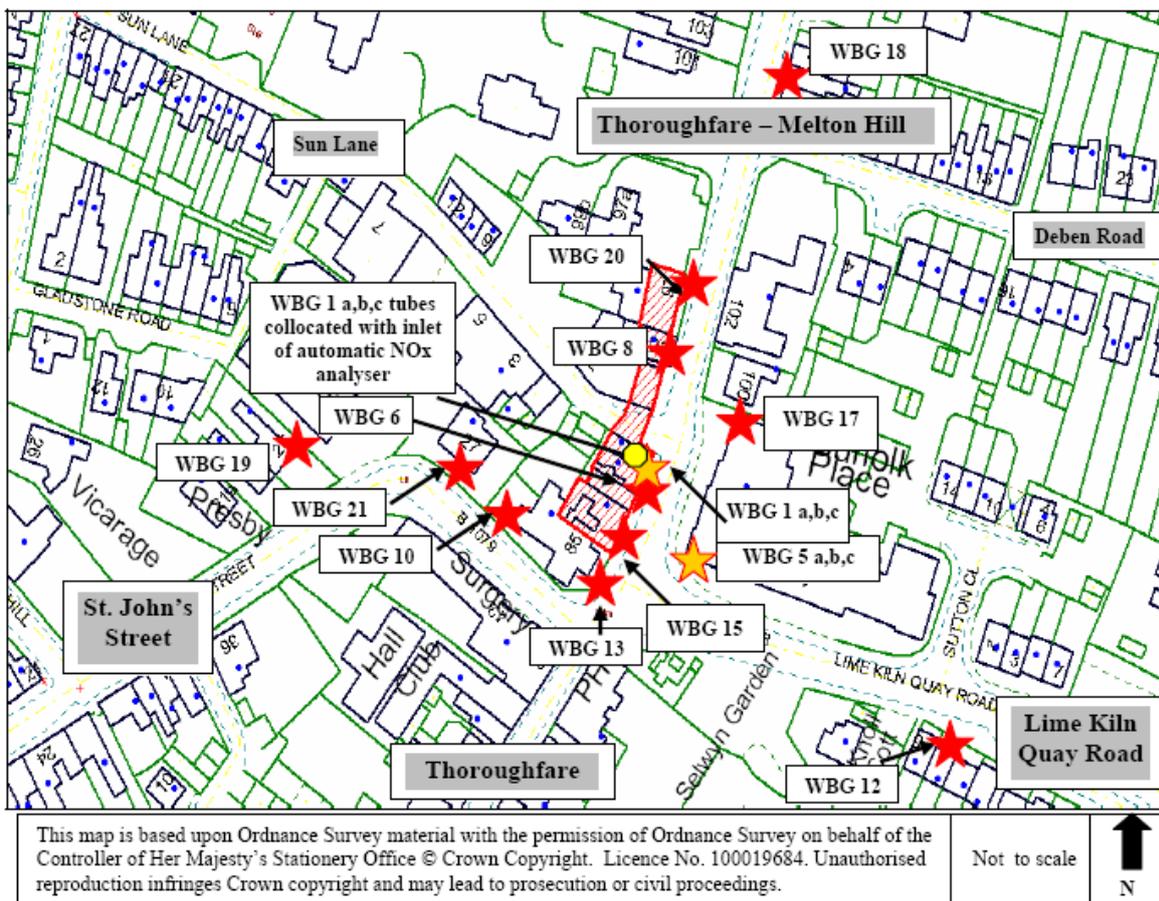
Year	Annual average NO <sub>2</sub> (µg/m <sup>3</sup> )
2006	44
2007	46
2008	45
2009	45

The graph in figure 2.9 shows the annual average concentration of NO<sub>2</sub> recorded at all sites in Woodbridge (2002 – 2009) which are still currently in place. A number of the current diffusion tube sites are in place for short-term assessment of locations of concern and are not relevant for the purpose of obtaining trend information but have still been included in this graph for completeness.

Predicted background concentrations were expected to decrease over the past years and to continue to decrease into the future, as the national vehicle fleet gradually improved and other national policies to reduce emissions took effect. However, this expected decrease over the past 5 years has not been seen in Woodbridge, which is a trend realized at many locations in the UK. It is now known that with the introduction of particulate traps to reduce particle emissions on Heavy Goods Vehicles, a rise in direct NO<sub>2</sub> emissions has occurred potentially leading to increased NO<sub>2</sub> concentrations at nearby receptors. In Woodbridge, other local factors may be playing a part in the continued levels above the objective, which is investigated within this Action Plan.

The graph in figure 2.9 shows that concentrations at all diffusion tube sites have been fairly stable but with a general decrease seen in the last 2-3 years which could mean that the national policies are possibly slowly beginning to now have an effect. NO<sub>2</sub> levels recorded by the continuous analyser do not really show a significant decrease but they do seem to have stabilised in the last 3 years.

**Figure 2.7** Map showing the location of the air quality monitors located at the Woodbridge Junction which measure the NO<sub>2</sub> ambient concentrations



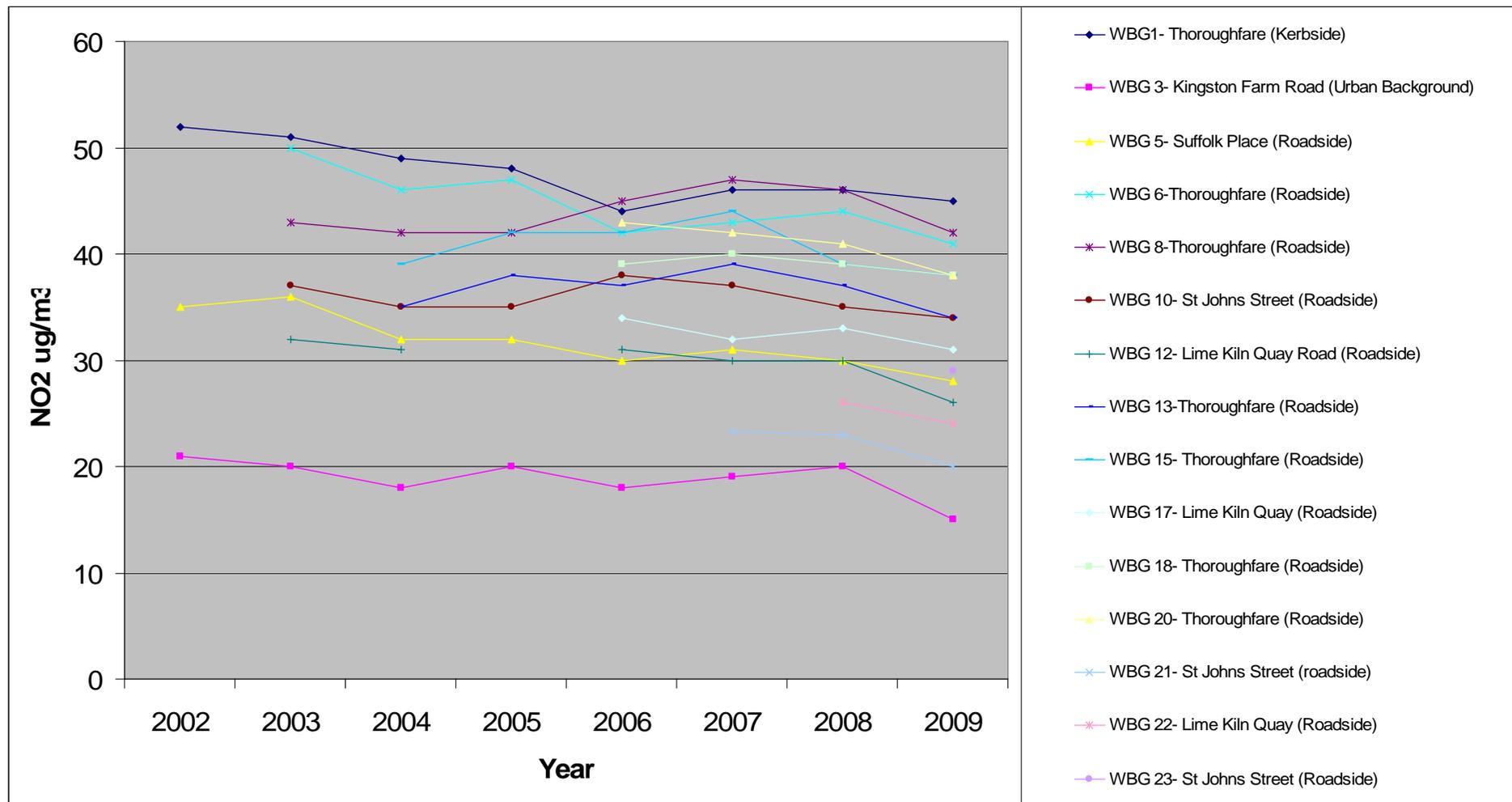
- ★ Single Diffusion Tube
- ★ Triplicate Diffusion Site
- Site of automatic NO<sub>x</sub> analyser
- AQMA

**Figure 2.8** Location of the automatic analyzer inlet for the measurement of ambient NO<sub>2</sub> concentrations on Thoroughfare / Melton Hill at the Woodbridge Junction



Automatic  
analyser inlet for  
the  
measurement of  
NO<sub>2</sub>  
concentrations

**Figure 2.9 Annual average diffusion tube results (NO<sub>2</sub>) in Woodbridge**



## 2.5 Conclusions

1. The Woodbridge Junction has a problem with local NO<sub>x</sub> emissions causing levels of NO<sub>2</sub> to be above the health-based annual mean standard of 40µg/m<sup>3</sup>. Road transport on the Woodbridge Junction is the dominant local source of NO<sub>x</sub> emissions. Therefore it is intended that this Action Plan will be integrated into the Suffolk Local Transport Plan (LTP).
2. Based on the source apportionment analysis, options to reduce traffic emissions should firstly focus on reducing traffic queuing times at the junction.
3. This may solve the air quality problem but if not then additional options that focus on heavy-duty vehicle emissions may also be considered.
4. Based on 2006 values, these measures would need to reduce traffic NO<sub>x</sub> emissions at the Woodbridge Junction by up to 16% to achieve the air quality standard.
5. Although this Action Plan will focus on making progress towards achieving the annual mean objective for NO<sub>2</sub>, it will have additional value for the Suffolk Coastal District community if it also addresses other objectives relating to traffic emissions including: reducing exposure to fine particulate matter (PM<sub>10</sub> for human health benefits) and reducing emissions of carbon dioxide (CO<sub>2</sub>) as part of efforts to mitigate human-influenced climate change.

These conclusions will be referred to throughout the process of developing the Action Plan.

## 3 Development of the Action Plan

The Action Plan must include:

- Quantification of the source contributions to the predicted exceedences of the objectives; this will allow the Action Plan measures to be effectively targeted.
- Evidence that all available options have been considered on the grounds of cost-effectiveness and feasibility
- How the local authority will use its powers and also work in conjunction with other organisations in pursuit of the air quality objectives
- Clear timescales in which the District Council and other organisations and agencies propose to implement the measures within the plan
- Quantification of the expected impacts of the proposed measures and where possible an indication as to whether the measures will be sufficient to meet the air quality objectives and
- How the local authority intends to fund, monitor and evaluate the effectiveness of the plan.

Once the Action Plan is adopted, the District Council will also report progress on the implementation of the Action Plan annually and revise it from time to time depending on circumstances.

### 3.1 Partnership between the District Council and the Local Transport Authority (the County Council)

In Suffolk, the County Council is responsible for overall transport strategy. As the AQMA in Woodbridge is dominated by emissions from transport, a partnership arrangement between the District and County Councils for the development of this Action Plan has been used. The County Council has determined proposed actions which they themselves can implement in pursuit of the air quality objectives.

#### Integration with Local Transport Plan (LTP)

The Local Transport Plan system is a 5-year transport strategy at a local level whereby Local Transport Authorities are required to submit a 5-year Local Transport Plan (LTP) for their area that sets objectives and targets for transport, and strategies for achieving them. The plans must cover all forms of transport and establish strategies to tackle congestion and poor air quality. The LTP provides the basis for allocating resources to the Local Transport Authority in order for them to implement their plans. The Local Transport Authority for Suffolk is the County Council.

The Department for Transport (Dft) has included air quality as one of four new shared priority areas to be reported in the Second Local Transport Plan (LTP2) which covers the period from 2006 to 2011. This is the first time that air quality has been addressed separately as a priority alongside three other areas which are congestion, accessibility and road safety. The County Council's Plan was completed early in 2006 and is available for inspection at <http://www.suffolk.gov.uk/TransportAndStreets/Policies/SuffolkLocalTransportPlan2006-2011.htm>

A full report on Suffolk's air quality, including reference to the Woodbridge Air Quality Management Area declared in April 2006, has been included in Chapter 8 of the LTP2 together with the County Council's objectives of:

- a) To comply with the requirements of the National Air Quality Strategy and
- b) To seek to maintain and where possible improve air quality in Suffolk.

The LTP has set the following policy aims and targets to help improve air quality:

**LTP8 Air Quality in Air Quality Management Areas** Target pollutant concentrations within individual air quality management areas. Intermediate outcomes can be transport emissions, vehicle mileage or traffic flows in the air quality management areas.

**Local Indicator L2: Percentage of people travelling to work by sustainable means.**

Green travel planning will be an important intervention, in which the County Council will work with businesses in the larger towns to help reduce congestion and also to encourage healthier travel modes. A baseline of 27.8% of businesses had a green travel plan in place in 2005/6 which had increased to 34.2% in 2007/8.

**BV102 Public transport patronage including other public transport modes like community services.** A baseline in 2003/4 was 17.5m passengers and the target for 2010/11 is 20.25m. During 2007/8 public transport patronage was 20.18m and therefore is well on target.

**BV104 Bus satisfaction** Sample survey every 3 years. Baseline 2003/04 54% top quartile. The target is 56% of all respondents satisfied with local bus services by 2009/10. After an increase to 58% in 2006/7 this has decreased to 49% in 2007/8.

**LTP1 Demand responsive transport patronage.** The Number of passengers on demand responsive services including community transport services, 112,000 in 2004/5. The target is 130,000 passengers on demand responsive services by 2010/11. This is well ahead of target in 2007/8 at 156,000.

**LTP2 Change in area wide road traffic mileage.** Suffolk County Council strategic counts of roads maintained by the County Council. Baseline 2002 – 2004 average 3.9% growth pa is high compared to national average (for all roads including trunk) of 1.6% pa. The target is not to exceed 23.7% total growth in vehicle kilometres over 2005 to 2010 on County Council roads. This is well on target in 2007/8 at 18.6%.

**LTP3 Cycling trips (annualised index).** Sample sites representative of on road, shared and segregated facilities. Baseline 2005/06 to be established as new sample of sites selected. Previous monitoring showed 14% fall from 26 sites 2000/01 to 2004/05. The target is no reduction in cycling trips from 2004/05 baseline by 2010/11. This is well on target with an increase of 12% in 2007.

**LTP4 Mode share of journeys to school.** Biannual survey of school pupils. Baseline 2003/04 65.9% sustainable journeys (by bus, coach, cycle or walk) fallen to 65% in 2004/05. The target is 65% of children travel to school by sustainable modes (walk, cycle, bus or coach) by 2010/11. In 2005/6 this was 65%, which increased to 71% in 2007/8.

As a result of its submission, the County Council received a rating of "excellent" from the Department for Transport (Dft) for its management of local air quality. This was awarded partly in recognition of the close working relationships developed between the two tier local authorities in Suffolk.

Following agreement from the District Council, the County Council will integrate the completed Air Quality Action Plan for the Woodbridge Junction into the LTP process.

## **3.2 Partnership with Development Planning**

The planning system plays a key role in protecting and improving the environment. Land use planning and development control can become an effective tool to improve air quality by first locating developments in such a way as to reduce emissions overall, and secondly reducing the direct impacts of those developments. Although the presence of an AQMA makes consideration of the air quality impacts of a proposed development more important, there is still a need to regard air quality as a material factor in determining planning applications in any location. This is particularly important where the proposed development is not physically within the AQMA, but could have adverse impacts on air quality within it, or where air quality in that given area is close to exceeding guideline objectives itself.

The Government's commitment to the principles of sustainable development were set out in 'A Better Quality of Life – A Strategy for Sustainable Development for the UK', May 1999. Eight principles of particular relevance to planning and pollution control were set out: -

- Taking a long term perspective;
- Putting people at the centre;
- Taking account of costs and benefits;
- Respecting environmental limits;
- Applying the precautionary principle;
- Using scientific knowledge;
- Following procedures which are based on transparency, access to information, effective participation by stakeholders and access to justice; and
- Making the polluter pay.

The national air quality strategy reiterates that the government strongly believes that air quality issues should be dealt with in a holistic and multi-disciplinary way. In developing an air quality Action Plan the District Council has engaged with land-use and transport planners to ensure the actions are supported by all parts of the authority.

## **3.3 Formation of steering group**

A steering group was established to develop the Action Plan, which included officers from Environmental Protection and Development Planning within the District Council and Transport Planning plus the air quality manager at the County Council.

## **3.4 Action Plan options and their assessment**

The steering group, in developing the draft and this final Action Plan, has considered a full range of relevant options to change traffic at the Woodbridge junction. The process has been one of narrowing down the range of potential options to ones that are focussed on the problem, feasible, do not adversely impact on other locations or vulnerable highway users, and are cost-effective compared to others. This section summarises how this was done. Full details of the assessment methodology are provided in Appendix 4, and the results of the assessments for each option are provided in Appendix 5.

Essentially the steering group adopted the following procedure:

- Consideration was given to the full range of potential options.
- Initial decisions were made to determine whether any options were unfeasible or unacceptable and they were eliminated from the options list.
- Remaining options were defined further and underwent a detailed assessment.
- The results of the assessment identified those options to prioritise and to adopt as measures in the Action Plan.

There is a very wide range of options available to reduce the emissions from road transport. The District and County Councils do not necessarily have the power to implement them all directly but potentially they do have a role in attempting to influence those bodies or individuals who could implement them. Therefore, it is appropriate to initially consider all options. The District Council undertook large-scale consultation with local organisations and the public in order to assist with derivation of the list of options for consideration, the application of the assessment methodology, and the options that were chosen as probable measures. A total of 79 options were identified and are detailed in Appendix 5.

Following production of the draft Action Plan a further full public consultation was undertaken to obtain comments and views on the contents. The results from this consultation are detailed in the following section.

### **3.5 Consultation responses to the draft Action Plan**

Schedule 11 of the Environment Act 1995 states that all Local Authorities must consult on the preparation of their Air Quality Action Plan once options to be included in the plan have been developed. This enables local views to be taken into consideration as part of the process, which is of great importance as Local Air Quality Management (LAQM) is about air quality issues relevant to the Suffolk Coastal district.

A full statutory and public consultation on the draft Action Plan for the Woodbridge Junction was undertaken in August 2009 in order to inform production of this final Action Plan.

A total of 19 responses were received, mainly from local stakeholders and residents of the junction. Many of the responses covered a number of issues relating to the draft Action Plan and options for the junction (hence the numbers below do not add to 19). The responses have been grouped into topics and are detailed below. At the end of each suggestion/comment the number of responses received referring to that topic is included in brackets and highlighted in bold type. Where relevant, our comments and any future actions are detailed at the end of each topic.

#### **Responses relating to Measure 1 (Install queue detector at traffic lights – MOVA)**

- Feel that installation of MOVA has successfully reduced traffic queuing at the junction **(1)**

#### **Responses relating to Measure 2 (Install a right hand turning lane on Melton Hill)**

- Agree that installation of a right hand turning lane on Melton Hill is a good idea **(2)**
- Concerned that installation of a right hand turning lane from Melton Hill could imply more tarmac and less soft landscaping fronting Suffolk Place which would be detrimental to the area **(1)**

The County Council has obtained funding to undertake a basic feasibility study for this measure to investigate whether there is space available for the turning lane to be installed and where that land will come from. This should be completed by the end of 2010 and will be reported on in the annual Action Plan update report. Should the study show that this measure is feasible, more in depth design and computer modelling work will be undertaken to determine what impacts this would have on the traffic and air quality at the junction and therefore whether it will be implemented.

**Responses relating to Measure 3 (Pedestrianise the Thoroughfare / increase the restrictions to 8am-6pm)**

- Do not agree that access to the Thoroughfare should be reduced in any way as this will hinder business in the town **(2)**
- Thoroughfare cannot be pedestrianised any more than it currently is as residents have to have access by car and deliveries need to be made to businesses **(3)**

This measure has been re-worded and the description expanded upon to better reflect its meaning following additional advice from the County Council Highways Engineers and now reads 'Extension of restrictions to Thoroughfare (8am – 6pm)'. Suffolk County Council advised that pedestrianisation of the Thoroughfare is not a viable option due to the need for access by residents and businesses for delivery purposes during the day.

Extending the hours of the current access restrictions is possible and investigations will be undertaken (should Measures 1 and 2 be unfeasible or unsuccessful) to determine whether this option is viable. These investigations will include consulting local businesses, residents and interested parties to determine the viability of this measure.

**Responses relating to Measure 4 (Remove ability to turn right or go straight on from direction of Melton Hill)**

- Think that banning the right hand turn from Melton Hill into St. John's Street is a bad idea as it would restrict traffic access to the town centre **(1)**
- Think this would increase traffic using Lime Kiln Quay Road, Quay Street, Church Street and New Street thus causing even more pollution **(1)**

This measure has been altered following further investigations by Suffolk County Council and now reads 'Remove the ability to turn right from the direction of Melton Hill'.

The County Council has considered the original option further and determined that banning the straight on manoeuvre would impact on operation of the Thoroughfare. Traffic would have to reroute and travel along Lime Kiln Quay Road to enter, increasing traffic coming from this direction, or the traffic flow in the Thoroughfare would have to be reversed. If the flow were reversed the traffic lights would have to accommodate an additional phase to allow traffic to exit onto the junction, potentially increasing congestion on the other arms. Reversing the flow could also lead to additional traffic using the Thoroughfare from the Cumberland Street direction as a cut through. Traffic waiting in the Thoroughfare at the lights could cause a new air quality concern as the Thoroughfare is a street canyon and as such any emissions would be difficult to disperse and could lead to exceedance of the objectives. As such, the original option is not considered viable at this time.

Removing the ability to turn right on its own will not have as much of an impact on congestion as the original measure. However, alongside a possible straight on queuing lane on Melton Hill (Measure 2) and increased access restrictions in the Thoroughfare (Measure 3), if they were to be implemented, it could have an impact and help to improve traffic flow on Melton Hill. This suggestion also has its potential problems as it may impact on the amount of traffic using Sun Lane which would need to be investigated.

This measure will be put into the Action Plan for further investigation, this will include consulting local businesses, residents and interested parties to determine the viability of this measure.

### **Responses to Measures 5 and 6 (Relocate or remove on street parking currently opposite Council Offices)**

- Do not agree with moving or removing the parking area along Melton Hill opposite the Council offices **(5)**
- If parking were removed the Council should install dedicated and readily accessible 24-hour parking spaces available to residents in the Council car park **(1)**
- Do not agree that there would be as much as a 5% reduction in traffic queuing and therefore pollution if parking on Melton Hill was relocated **(1)**
- Agree that the parking area along Melton Hill opposite the Council offices should be relocated **(1)**
- Agree that the parking area along Melton Hill opposite the Council offices should be removed **(1)**

There has been a strong local response received in opposition to this measure. A fundamental part of the decision making process regarding this measure will therefore be local consultation so that we can ascertain opinions of all properties that may be involved. Additional air quality modelling work may now be required to confirm what emission reductions are likely to be seen from this measure before any decision can be made.

### **Responses to Measure 7 (Investigate SatNav systems)**

- Agree with and support investigating SatNav routing issues **(3)**

### **Responses relating to Package of Measures 3 (Direction Signing) together with volume of through traffic using the junction**

- Believe that the only package of measures that may begin to address the problem at the junction (being that of traffic volume) is number 3 and this is the weakest section in the document **(1)**
- Encourage more vehicles, especially Heavy Goods Vehicles, to make use of the A12 bypass in order to reduce the amount of through traffic using the route via the Woodbridge Junction **(2)**
- At all main entry points to Woodbridge from A12 and A1152 use signage to prohibit HGVs from entering Woodbridge other than for loading and unloading, and to display the preferred HGV route.
- Decrease the speed limit along the Thoroughfare to 20mph to try and deter traffic from using this route **(3)**
- Believe that we need to decrease the volume of traffic using this route somehow **(4)**
- Change or remove the brown signs from the Bredfield end of the A12 which encourages traffic via Woods lane and through the junction. Make the sign read to Sutton Hoo only. Use more prohibitive signage especially at Woods Lane/Melton Road junction to say 'Woodbridge Local Traffic Only', 'Woodbridge Access Only, No Through Traffic', 'Avoid Woodbridge Town Centre Congestion: follow A1152 and A12' **(3)**
- Add traffic calming measures, by way of crossings and speed reduction to deter through use **(2)**
- Install permanent speed cameras in Melton Road to help deter through traffic **(1)**

- Main recommendation of the document is to reduce queuing times at the junction, this can only be a short term measure and ultimately counter-productive as it will encourage more traffic to use this route **(1)**

There has been a strong local response regarding the amount of through traffic that is perceived to be using this route via the junction and the part that this has to play in the air quality problem. A video cordon survey was commissioned by the District Council to investigate the volume of traffic passing along this route through Woodbridge and the junction which could be classed as 'through traffic'. The survey initially indicates that there could be a significant percentage classed as 'through traffic'. However, the survey did not account for any vehicles which may travel along this route and stop off to use local facilities, thereby not actually being true 'through traffic'. It is very important that the pursuit of air quality improvements is balanced with the needs of the town and local business interests. Additional study of the data gathered is being undertaken to look at the time it took each vehicle classed as 'through traffic' to travel along the route. This will enable us to determine which vehicles travelled straight through without stopping and will give us our percentage of 'through traffic'.

Potential measures available to reduce 'through traffic' using this route will be re-visited following the results of this additional investigation. Details will be provided in the annual Action Plan update report in 2011.

#### **Responses relating to Package of Measures 4 - Encouragement of Public Transport Use**

- Agree with measure 8 – encourage bus operators to use cleanest fleet **(1)**
- Agree with measure 12 – new bus station/interchange at Turban Centre if not expensive **(1)**
- Bus upgrades (measure 13) not worth the expense for only a 2% reduction in air quality at this location **(1)**

#### **Responses relating to Package of Measures 5 – Car Sharing and Travel Planning**

- Measure 14 – car sharing scheme – think this is impracticable **(1)**
- Measure 15 – travel planning – think this is impracticable **(1)**
- Agree with the necessity for and support Measure 15c relating to a travel plan for the SCDC offices **(3)**

The car sharing and travel planning measures mainly involve promotion of options that are currently available and therefore involve very little in the way of funding or time allocation. For this reason these measures will remain in the plan in the hope of even a small uptake. A Travel Plan for the District Council Offices was adopted by the Council in November 2009 with a number of key actions to be completed during 2010, many of these actions have now been completed.

The Travel Plan can be viewed at [www.suffolkcoastal.gov.uk/NR/rdonlyres/23DF467E-B8EA-4445-B940-BB3CA0C56F2B/0/SuffolkCoastalTravelPlanOctober2009.pdf](http://www.suffolkcoastal.gov.uk/NR/rdonlyres/23DF467E-B8EA-4445-B940-BB3CA0C56F2B/0/SuffolkCoastalTravelPlanOctober2009.pdf)

#### **Responses relating to Package of Measures 6 – Promotion of Cycling and Walking**

- Agree and support measure 16 - promotion of walking and cycling in the town **(1)**

**Comments relating to Measures which have not been included in the Action Plan at this time**

- Think that we should stop the regular traffic lights and let drivers 'enter in turn', leave the traffic lights for pedestrian crossings only. This could be trialled for 6 months **(2)**

This suggestion was included in the 79 options investigated (option 34 in Appendix 5) in the draft Action Plan. The County Council Highway Engineers provided the following comments regarding this option: it would reduce delays at the junction for the major traffic movements but increase delays on St Johns Street. It may well encourage/increase use of the junction as could be perceived as quicker route than using A1152/A12. This would remove any benefits by increasing the traffic volume using the junction. Formal pelican crossings would be needed on Melton Hill and St Johns Street, however, with narrow pavements, this may not be possible to achieve. Pedestrian crossings would have to be set back along the arms of the junction to achieve visibility, diverting people from their preferred routes. To still be attractive for pedestrian use, they would still be located in the 'problem' area. Extra delays would be introduced in these areas as the crossings would be too far apart to be linked i.e. they would operate independently rather than at present as part of the traffic signal cycle. Many elderly pedestrians in the area would be disadvantaged by them. The County Council's targets of increasing walking would be affected. A junction with no traffic control creates problems for cyclists due to possible increases in traffic speed and less lane control. This could not be trialled using temporary measures as there would be safety issues for both motorists and pedestrians. This option will not be investigated further at this time.

- Could there be an alternative exit to the SCDC car park? **(1)**

This suggestion was included in the 79 options investigated (option 55 in Appendix 5) in the draft Action Plan. The District Council's Property Services Department and Planning Department looked into this idea many years ago. The Railway Inspectorate had safety concerns regarding times when there would be a number of vehicles entering/ exiting the Council's car park causing queues on Sun Wharf. Queues here could potentially block traffic coming over the level crossings and cars may get stuck on the railway tracks. The Highway Authority (the County Council) also had concerns about the junction with Lime Kiln Quay Road and possible queues at peak times. The District Council could investigate this option again but it would require a full report which would be costly and the likelihood is that the Railway Inspectorate would again be against the proposal. In addition the District Council is currently not sure of the lifespan of the offices at Melton Hill due to the local government review currently being undertaken. The District Council has also investigated an exit via the new Deben Mill development but were not granted permission for this from the developers. This is therefore not an option to explore at this time.

- Request for installation of a roundabout at the junction, in place of the current traffic light system **(5)**
- Believe that comments relating to the option of installing a mini roundabout are incorrect and that arguments about minor detrimental aspects of this option are being allowed to out-weigh the great advantage of this option in that it would work. This option being marked as 'low benefit' is wrong **(1)**

There has been a strong and detailed local response received in support of this option (option 23 in Appendix 5). It has therefore been decided that further investigations will be undertaken into the feasibility of installation of a roundabout at this junction. Details will be provided in the annual Action Plan update report in 2011.

- Install a sign at the traffic lights which reads 'Please switch off your engine if the lights are red' **(1)**

This suggestion was not included in the original 79 options considered and as such has now been investigated. It is felt, at this time, that it is not an option we would take up as the new traffic control system (MOVA) installed at the junction should ensure that the number of times that the queue lengths would warrant this approach will be minimal. The possibility that motorists may switch off their engines when the queues were not very long would exist which could cause the traffic to take longer to get through the lights due to the wait for everyone to start up again, particularly with diesel engines. This option, as with all available options, may be reconsidered in the future if it is felt that it would have a beneficial effect.

- The measures included for this junction will not keep even pace with increased traffic in years ahead and the only realistic way to reduce traffic to acceptable levels is to consider a major diversion, such as continuing the link road alongside the railway to join Melton Hill further towards Melton **(1)**

This suggestion was included in the 79 options investigated (option 54 in Appendix 5) in the draft Action Plan and considered unfeasible. It would allow the junction to be by-passed, however the cost of building such a road is likely to be very expensive when considering land to be purchased, flooding risk etc. It may compromise any future duelling of the line to increase the capacity of the rail network. Increased use of the railway is much more sustainable than increasing car use along the A12. This option is still considered unfeasible at this time.

### **Additional Comments**

- Concerns that personal health has deteriorated, particularly with regard to asthma **(4)**

With regard to issues of personal health, this is the driver behind the Local Air Quality Management Regime and is why we have declared an Air Quality Management Area at this junction. This Action Plan will work towards reducing vehicle emissions at the junction and therefore improving air quality for the local residents. We would strongly urge anyone with health concerns to consult their doctor as the authority on personal health.

- Request for additional monitoring locations at the junction along Lime Kiln Quay Road **(2)**

The current monitoring locations for both the continuous analyser and the diffusion tubes cover all arms of the junction and the areas of greatest concern regarding air quality. The choice of these locations was guided by the computer modelling undertaken for the junction, this allowed us to predict the concentrations of nitrogen dioxide at all properties at, and on the approach to, the junction. Due to financial constraints we are unable to place any further monitoring locations at the junction at this time.

- Are happy with the draft Action Plan and its contents **(2)**

## 3.6 Measures to improve air quality

Of the 79 options, 20 measures have been identified at the current time via assessment (see Appendix 4 for assessment information) for inclusion in this Action Plan as priorities for the improvement of air quality at the Woodbridge Junction and the wider area. These measures have been grouped into Packages where they have similar characteristics or are alternative options to achieve the same end. Each Package of Measures concludes with those options recommended for implementation at this time. This provides 9 Packages of Measures in total which include:

1. Specific options aimed at promoting more sustainable travel choices and reducing queues at the Woodbridge Junction (Package of Measures 1-3)
2. Strategic options aimed at integrating air quality into all relevant areas of decision making within the District and County Councils (Package of Measures 4 – 9).

The measures in the draft Action Plan are detailed in the following section and a summary is presented in table 3. Information regarding implementation of each measure is detailed in Section 4, table 4. This Plan is:

- Focussed – road transport is the dominant source of emissions in the AQMA and queuing vehicles and HDVs are particularly significant sources.
- Proportionate – the plan puts most emphasis on reducing queuing from all vehicles and contains specific measures to attempt to address HDV emissions.
- Realistic – the measures in the plan have been assessed as being the more feasible, acceptable and cost-effective among many options.
- Strategic – key measures to be implemented include improving the District Council's capacity to manage air quality in order to avoid worsening air quality and to make progress towards the air quality standards.
- Sustainable – we believe that the plan can contribute to the District Council community aims to reduce CO<sub>2</sub> emissions as outlined in the Council's draft Climate Change Strategy, improve quality of life (by improved health) and not compromise the local economy or pedestrians and cyclists.

The 20 measures in this draft Action Plan are the ones that the District and County Councils have considered for adoption and implementation in pursuit of the air quality standards within the Woodbridge Junction AQMA at this time. Detailed information on most of the 20 measures is presented in Appendix 5. Some of the identified measures require further study to facilitate which ones are most cost effective. After these studies are complete, the Councils will be able to decide which of the measures are fully warranted for implementation.

Following the public consultation on the draft Action Plan, detailed in the previous section, a number of additional measures will also be investigated to determine whether they will be included in the Action Plan. Updates will be provided in the annual update report required for this Action Plan, due in 2011.

The source apportionment and review and assessment information presented in this report indicates that a 16% reduction in local emissions at Woodbridge junction is required, based on 2006 figures, to achieve the air quality standard. If transport emissions and air quality continue to improve then by the end of 2010 the risk that the annual mean air quality standard for NO<sub>2</sub> will be exceeded will be lower. Before then a 10% reduction in emissions may be required to achieve the standard. The District Council review and assessment activity between now and the end of 2010 will continue to monitor this situation. In this context even a 1-2% reduction in emission can be seen as a significant step towards achieving the air quality standard in the AQMA.

It is anticipated that a reduction of 10% will lead to the achievement of the annual mean NO<sub>2</sub> air quality standard (40µg/m<sup>3</sup>) within the AQMA and hence potentially the revocation of the AQMA. No additional measures are thought to be required at this time. The District Council will continue to review and assess air quality to monitor this situation and should the chosen measures not deliver the expected reductions, some of the additional options will be reassessed.

Funding for the implementation of this Action Plan is through the Local Transport Plan where existing projects complement the Action Plan. Further funding will be sought through the Department for Environment, Food and Rural Affairs (Defra) air quality grant annual award scheme for the implementation of specific tasks within measures.

### **Package of Measures 1: Altering Traffic Signal and Junction Configuration**

Stationary vehicles give rise to a high proportion of emissions relative to moving traffic. Consequently, measures to reduce traffic queues are likely to reduce emissions. The measures within this package are focussed on reducing congestion at the Woodbridge Junction.

**Measure 1** (option 37 Appendix 5) - Install queue detectors on signals to alter timing changes to reduce queues on the junction of Lime Kiln Quay Road, the Thoroughfare and St John's Street.

Microprocessor Optimised Vehicle Actuation (MOVA) is a self optimizing control system for traffic signals developed by the Transport Research Laboratory (TRL). Using an online microprocessor MOVA maintains the optimum green stage, cycle time and control strategy to accommodate prevailing conditions and therefore minimise queuing at signalised junctions. TRL tests have shown on average a 13% delay saving for the motorist over conventional vehicle actuation controlled traffic signals. This reduction in queuing traffic should lead to a reduction in Nitrogen Dioxide levels at the junction. MOVA has been reported to produce emission reductions up to 15% (McCrae, 2009).

**Measure 2** (option 22 Appendix 5) - Put in a right hand turning/queuing lane on Melton Hill so cars can get past to filter left (could then reassess the light timings again to assist other arms of the junction).

This measure is expected to reduce some of the queuing at the junction. If combined with a ban on right turn into St John's/additional access restrictions on Thoroughfare, it could remove some delays. This measure is likely to reduce emissions of nitrogen oxides from traffic at the junction in the direct vicinity of the AQMA. However, to implement it may need land from adjacent flats as the pavement is narrow. It would appear that often there is only one vehicle at the front of the queue on Melton Hill wishing to either go straight on or turn right which holds up the rest of the traffic. If there is a possible way to allow left filtering vehicles to get round any queuing vehicle(s) it could have a positive impact on queues and the traffic flow.

**Measure 3** (option 50 Appendix 5) – Extension of the restrictions to the Thoroughfare (8am – 6 pm).

This measure has been re-worded and the description expanded upon to better reflect its meaning following additional advice from the County Council Highways Engineers. The measure previously read 'Pedestrianise the Thoroughfare/ increase the restrictions to 8am-6pm'. Suffolk County Council advised that pedestrianisation of the Thoroughfare is not a

viable option due to the need for access by residents and businesses for delivery purposes during the day.

Extending the hours of the current access restrictions is possible and investigations will be undertaken (should Measures 1 and 2 be unfeasible or unsuccessful) to determine whether this option is viable. These investigations will include consulting local businesses, residents and interested parties to determine the viability of this measure. Increasing the current access restrictions from 10am-4pm to 8am-6pm would remove some of the traffic which queues on Melton Hill to go straight over into the Thoroughfare when the green left turn filter light is on. This is particularly important during peak hours which are not currently included in the access restrictions. This measure would reduce congestion on the Melton Hill arm of the junction where the AQMA is situated and in turn reduce vehicle emissions in this location.

**Measure 4 (option 26 Appendix 5) - Remove the ability to turn right from the direction of Melton Hill**

This measure has been altered following further investigations by the County Council. The measure previously read 'Remove the ability to turn right or go straight on from the direction of Melton Hill'.

The County Council has considered the original option further and determined that banning the straight on manoeuvre would impact on operation of the Thoroughfare. Traffic would have to reroute and travel along Lime Kiln Quay Road to enter, increasing traffic coming from this direction, or the traffic flow in the Thoroughfare would have to be reversed. If the flow were reversed the traffic lights would have to accommodate an additional phase to allow traffic to exit onto the junction, potentially increasing congestion on the other arms. Reversing the flow could also lead to additional traffic using the Thoroughfare from the Cumberland Street direction as a cut through. Traffic waiting in the Thoroughfare at the lights could cause a new air quality concern as the Thoroughfare is a street canyon and as such any emissions would be difficult to disperse and could lead to exceedance of the objectives. As such, the original option is not considered viable at this time.

Removing the ability to turn right on its own will not have as much of an impact on congestion as the original measure. However, alongside a possible straight on queuing lane on Melton Hill (Measure 2) and increased access restrictions in the Thoroughfare (Measure 3), if they were to be implemented, it could have an impact and help to improve traffic flow on Melton Hill. This suggestion also has its potential problems as it may impact on the amount of traffic using Sun Lane which would need to be investigated.

This measure will be put into the Action Plan for further investigation, this will include consulting local businesses, residents and interested parties to determine the viability of this measure.

**Recommendation: Altering Traffic Signals and Junction Configuration**

Measure 1 will be implemented, with a 'before and after' traffic queue survey to understand its impact. Should further emission reduction be necessary, it is recommended that initial feasibility studies be undertaken (including public consultation), followed by a detailed junction study, on measures 2 and 3 to ascertain the impact on traffic flows and air quality. Implementation of these measures can be considered after the initial feasibility studies are complete and the success of measure 1 is determined. Measure 4 would only be considered if measures 2 or 3 were found not to be feasible or successful.

## **Package of Measures 2: On Street Car Parking**

On street parking is currently situated on Thoroughfare / Melton Hill opposite the District Council Offices. The location of parked vehicles reduces the width of the carriageway such that two-way traffic is not possible when a larger vehicle is involved (for example large van, bus, Heavy Goods Vehicle). This can lead to traffic queuing down towards the junction which, if the queue is long, will add to emissions affecting the AQMA.

### **Measure 5 (option 5 Appendix 5) - Relocate parking - move to opposite side of the road to keep traffic away from houses**

This measure would help reduce speed on approach to the junction down Melton Hill and control volume of traffic on approach to signals. Traffic is more likely to queue up and past the District Council Offices where receptors are not as close to the road. This measure might make the route less attractive to traffic from the north and reduce traffic flow. It also may require pavement widening.

### **Measure 6 (option 3 Appendix 5) - Remove on street parking opposite the District Council Offices**

Parking on the street opposite the council offices causes queuing at busy times. Removing the parking would aid traffic flow near to the junction. It would also increase the speed that traffic clears the junction. A negative impact is increased traffic speed in the area which would decrease road safety, but to counteract this, an increase in pavement width would help to lower speeds.

### **Recommendation: On Street Parking**

Measure 5 is the preferred first option since it will continue to provide parking for residents. However, there has been strong local resident objection to both measures via the consultation process and this will be taken into account when assessing these options.

## **Package of Measures 3: Direction signing**

### **Measure 7 (option 10 Appendix 5) - Investigate Satellite Navigation systems (SatNav) and their preferred route to Martlesham / the Peninsula**

There are anecdotal reports on SatNav sending vehicles through Woodbridge town rather than via the A12/A1152. SatNav companies will be approached to remove this as a route and re-route along Woods Lane. This may achieve some traffic reduction, particularly the HDVs which give rise to a high proportion of emissions.

### **Recommendation: Direction Signing**

This measure is recommended. The consultation process has shown strong support for additional measures to be included relating to reducing the volume of through traffic on this route, which includes several ideas relating to Direction Signing. Further detail is provided in the previous section of this report. Additional investigation is currently being undertaken to determine the percentage of through traffic and additional measures will be considered following the outcome.

## **Package of Measures 4: Encouragement of Public Transport Use**

Generally in the UK, 25% of Britain's car journeys are less than 2 miles, which is a distance that can be covered by walking or cycling. Also, 17% of car journeys are travelling to and from work while school journeys are estimated at 17.5% of morning peak traffic in urban areas in term time. Indeed, if half of UK motorists received a lift one day a week, pollution would be reduced by 10% and traffic jams by 20%. It is therefore important to consider the promotion of public transport uptake, car sharing and travel planning within the Woodbridge area and Suffolk in general.

The County Council's Bus Strategy was published in 2006. Regarding air quality the following objectives are set:

- Providing that services are well used, passenger transport helps to minimise the impact of travel on the environment by helping to reduce the number of vehicles on roads - a double-deck vehicle can carry more than 70 passengers.
- Modern vehicles are built to stringent European emission standards, however older vehicles do not have to meet these standards. Consequently it is important that an economic climate exists in the county where operators are able to invest in the replacement of older vehicles.
- There is potential to reduce vehicle emissions further through use of alternative 'dual fuelled' diesel/electric vehicles, particularly within urban areas that are more susceptible to pollution issues.
- Park and ride services intercept car trips and can help reduce the impact of travel on air quality for key areas.

### **Measure 8 (option 43 Appendix 5) - Work in partnership with Bus Operators and the Passenger Transport Unit to investigate improvements to buses using the junction.**

The option of setting up a Bus Quality Partnership has been investigated and does not appear to be the best way forward for Woodbridge. Bus Quality Partnerships are most successful when limited to single operators and in Woodbridge several operators are in place. Instead work will be undertaken with the Bus Operators to see if anything can be done to help reduce emissions at the junction (cleanest buses on fleet used on routes that go through the junction), and work with the Passenger Transport Unit at the County Council to promote bus patronage and look at options regarding future bus contracts.

The District Council will contact the bus operators to request that where possible the cleanest vehicles in their fleet are deployed in Woodbridge and help promote bus patronage.

### **Measure 9 (option identified by the County Council) - Introduction of Demand Responsive Transport in Woodbridge**

The County Council Passenger Transport Unit is currently investigating the uptake of Demand Responsive Transport within pilot areas of Suffolk. This is where bus services are stopped and are replaced by other modes such as taxis. A pilot scheme, implemented during the summer of 2009, encompasses the Bawdsey peninsula and has direct consequences for bus services through Woodbridge. The concept is that the core bus timetable will be reduced to corridors of known regular demand. Irregular and more isolated demand will be catered for by Demand Responsive Transport that by definition only operates when required. This will then connect with existing conventional bus services rather than duplicating the resource. In some cases this will mean only a taxi responding to the demand or a small minibus instead of a large bus. This will reduce the number of bus movements through the Woodbridge area using the Turban Centre as a key interchange point.

**Measure 10** (option identified by the County Council) - Simplified ticket schemes for public transport

The County Council is at the early stages of investigating simplified ticketing schemes for the greater Ipswich area. Surveys have revealed that a key reason why people do not use public transport is that they do not understand how it works. A key component of this is the purchase of tickets. The County Council anticipate that by simplifying ticketing and possibly looking at fares based on zones, new passengers will be attracted to services thus increasing patronage. Innovative schemes such as the Explore card offer discounted travel to young people encouraging use of bus services and familiarity with services that will hopefully translate into habitual use.

In addition, the County Council is investigating the Plus bus ticket scheme for Woodbridge. There is already a plus bus scheme for rail services that allows the purchase of a ticket that is valid on buses run by operators within the scheme. Currently Ipswich is in the scheme but Woodbridge is not.

**Measure 11** (option identified by the County Council) - Improve accessibility to the bus timetable

*Task 1: Revise timetable on website*

The County Council is reviewing its public website and this will offer the Passenger Transport Unit the opportunity to completely revise and improve the way that information is presented. This will include all timetable information across the whole of Suffolk. The County Council has recently had success in getting operators to place links on their own websites linking the public to the timetable pages and the County Council is actively seeking new partners to duplicate this approach. In Woodbridge the latest bus timetables for the district can be picked up from the Council's Melton Hill offices, or any of the tourist information centres at Felixstowe, Aldeburgh or Woodbridge itself.

*Task 2: Improve paper timetables for bus routes*

The County Council Passenger Transport Unit identified that the old Area Book system of Timetables was not particularly user friendly and often led to people just tearing out the pages they needed and discarding the rest. The format of the timetables was also not as user friendly as it could be. The seven books have now been replaced by 22 leaflets in a pocket size format with improved features including simplified maps and easier to read timetables. These have been well received by the public.

*Task 3: Bus timetable publicity at the roadside*

The County Council Passenger Transport Unit has adopted a new "brand" that allows all publicity produced by the County Council to be readily identified as being related to public transport, a leaflet has the same look as roadside publicity for example. Roadside publicity is also under review at present and major steps have been made in improving both the quality and quantity of information available at this level.

**Measure 12** (option identified by the County Council) - Turban Centre new bus station/interchange at Woodbridge

There is a desire to invest in a new bus station/interchange at Woodbridge either on or near the site of the current bus station. Previous capital projects of this nature have delivered high quality and attractive areas where the public can feel comfortable and safe. The latest investment was in Lowestoft. The capital investment in Woodbridge currently has no start date as no firm decision has been made regarding the location. It is also envisaged that at some stage the interchange will provide real time passenger information to further instill

confidence in bus services.

**Measure 13** (option identified by the County Council) - Update of bus fleet to improve emissions

It is expected that in early 2009 the County Council Passenger Transport Unit will be adopting a quality assessment model when awarding tenders for bus services. Price will still be the major factor in the award process but quality will account for up to 30% of the tender score. In turn this quality element will include factors such as the age of vehicle, emission standards, company environmental policy, staff training policy, for example. It is anticipated that the net effect should be that companies investing in newer fuel efficient vehicles will score well, and consequently, older vehicles will be removed from the fleet. As well as providing benefits to users in terms of improved accessibility and general improvement to the ambience of their travel experience, and hence improve patronage, modern vehicles are required to meet stringent vehicle emission standards (currently Euro IV for new vehicles). In accordance with the Disability Discrimination Act 2005, all buses must be compliant for wheelchair access by 2015. The current bus fleet will be replaced with Euro III standard vehicles as a minimum, these will have lower floors and comply with the Disability Discrimination Act 2005. The replacement of the older vehicles will reduce the emissions from the fleet throughout Suffolk.

**Recommendation: Encouragement of Public Transport Use**

All measures are recommended

**Package of Measures 5: Car Sharing and Travel Planning**

The encouragement of travellers to plan their journey and share transport when possible is likely to lead to fewer vehicle trips and, therefore, lower emissions. Car sharing and travel planning are therefore important measures to improve air quality.

**Measure 14** (option identified by County Council) - Car Sharing Scheme

Car sharing schemes operate in urban areas around the UK, and have been reported to reduce driver days by up to 36% (Jones, 2009).

As part of Suffolk's commitment to reduce congestion and pollution, the County Council, Suffolk Chamber of Commerce and Suffolk ACRE are working in partnership in association with *liftshare* to set up [www.suffolkcarshare.com](http://www.suffolkcarshare.com), which is managed by Suffolk ACRE. This website aims to promote all forms of transport and integrate both public and private transport modes. It's about maximising people's travel options whilst also reducing the number of cars on the roads, cutting pollution, saving money and protecting the environment.

SuffolkCarShare.com is free to use and has been built and designed for every possible user. To date the car sharing scheme, which operates throughout Suffolk, has over 1000 registered members. The District Council will aim to promote this scheme.

**Measure 15** (options 60 & 79 Appendix 5) - Travel Plans

A Travel Plan (sometimes referred to as a green travel plan) is a package of measures designed to influence the travel behaviour of individuals, businesses, schools or other organisations through promoting sustainable travel. The general aim is to reduce the negative effects of traffic by encouraging alternatives to single-occupancy car-use.

The County Council is working with businesses, schools, developers and individuals by promoting sustainable travel through travel planning. <http://www.suffolktravelplans.com/>

Within the District Council's Local Development Framework Preferred Options travel plans are sought under the Development Control Policy DC21. Proposals for new development that would have significant transport implications shall be accompanied by a Green Travel Plan'. It is not necessarily the size of the development that would trigger the need but more the nature of the use. It would include:

- new employment sites employing over 10 people
- a use which is aimed at the public ( eg retail, leisure activities)
- major residential development

The Travel Plans should seek to:

- (a) reduce the use of cars by encouraging car sharing;
- (b) provide links to enable the use of public transport;
- (c) improve road safety for pedestrians and cyclists; and
- (d) Identify any mitigation works to be funded by the developer in conjunction with the proposal.

#### **Measure 15a (option 79 Appendix 5) - Business Travel Plans**

The County Council actively works with businesses with a minimum of 60 employees to prepare and implement a business travel plan. To date, most of the focus has been on businesses within Ipswich, Lowestoft and Bury St Edmunds.

To encourage businesses within Woodbridge to prepare travel plans the following tasks are outlined:

*Task 1: Identify businesses within Woodbridge that have greater than 60 employees*

*Task 2: The District Council to work in partnership with the County Council to contact these businesses*

*Task 3: Assist where possible in the preparation of the business travel plans*

*Task 4: Monitor the completion and implementation of the travel plans*

*Task 5: The District Council will promote travel plans for business with less than 60 employees through advertisement and a presentation.*

#### **Measure 15b (option 60 Appendix 5) - School Travel Plans**

The County Council has already begun a rolling programme and has ensured that all schools had a Green Travel Plan by March 2010, this does not include private schools however. For example, the school on Pytches Road has a Travel Plan which shows evidence of reduced vehicle use.

#### **Measure 15c (option 62 Appendix 5) - Travel Plan for the District Council offices**

A Travel Plan for the District Council Offices was adopted by the Council in November 2009 with a number of key actions for 2010, many of these actions have now been completed. It is hoped that this will have a beneficial effect on emissions and air quality at the Woodbridge Junction.

The Travel Plan can be viewed at [www.suffolkcoastal.gov.uk/NR/rdoonlyres/23DF467E-B8EA-4445-B940-BB3CA0C56F2B/0/SuffolkCoastalTravelPlanOctober2009.pdf](http://www.suffolkcoastal.gov.uk/NR/rdoonlyres/23DF467E-B8EA-4445-B940-BB3CA0C56F2B/0/SuffolkCoastalTravelPlanOctober2009.pdf)

#### **Recommendation: Car Sharing and Travel Planning**

All measures are recommended.

## **Package of Measures 6: Promotion of Cycling and Walking**

Measures to encourage cycling and walking rather than using car especially for local journeys are important to reduce emissions and hence improve air quality.

### **Measure 16 (option 72 Appendix 5) – Try to reduce traffic in Woodbridge - Promotion of cycling and walking in Woodbridge**

The provision of facilities to encourage people to make short trips on foot or by bicycle, rather than by car is very important. Within the Local Transport Plan, the County Council has set out programmes of improvements to walking and cycling routes, with crossings in the centres of the larger market towns to make it easier for people to access schools, shops and other local services. This measure comprises two tasks:

*Task 1: Review the current walking and cycling routes across Woodbridge and identify where improvements can be made*

*Task 2: Prepare a detailed implementation programme for such works in Woodbridge.*

### **Recommendation: Promotion of Cycling and Walking**

This measure is recommended.

## **Package of Measures 7: Development Planning**

### **Measure 17 (option 68 Appendix 5) - Consider air quality within the Local Development Framework for the future**

The planning system plays a key role in protecting and improving the environment. Land use planning and development control can become an effective tool to improve air quality by first locating developments in such a way as to reduce emissions overall, and secondly reducing the direct impacts of those developments. As air quality is a material planning consideration, the District Council is contributing to a Supplementary Planning Document on air quality being prepared by the County Council for the whole of Suffolk. This will help to understand the air quality impact of any proposed development by planners, environmental services officers and developers.

The Supplementary Planning Document will seek to ensure that developments in Suffolk Coastal are well served by public transport, pedestrian and cycle facilities in order to promote sustainable travel. It will enable the District Council to secure appropriate developer contributions and ensure resources are targeted towards schemes that promote long term sustainable travel. The inclusion of an indicator in the Local Development Framework that measures access by public transport to services from new residential developments, will also help us to monitor progress in incorporating sustainable travel into the planning process.

### **Recommendation: Development Planning**

This measure is recommended.

## **Package of Measures 8: Promotion of air quality issues**

To monitor the impact of this Action Plan on the improvement of ambient air quality it is important that the District Council measures the air pollutant concentration and reports this into the public domain. With effective communications the District Council can raise awareness about the air pollution problem to encourage more sustainable travel in Woodbridge.

### **Measure 18 - Continue to improve and raise the level of knowledge and publicity relating to air pollution**

The District Council will continue to raise the level of knowledge of air pollution in Woodbridge and release press statements when appropriate to promote sustainable travel options.

### **Measure 19 - Continue to monitor air pollution**

The District Council will continue to undertake routine monitoring of air pollution in existing AQMAs and locations around the District and change the number of monitoring points as necessary. The District Council will continue to report progress on air pollution monitoring.

### **Recommendation: Promotion of air quality issues**

All measures are recommended.

## **Package of Measures 9: Feasibility Studies and Funding**

In preparing this Action Plan the District Council and the County Council have not had all relevant traffic data available to undertake a detailed analysis of all measures. Target emission reductions for each measure that have been derived are therefore uncertain for some measures and have been based on judgement and available information. It is therefore important that the Councils undertake some further feasibility studies for example to determine which junction alteration (measure 2 or 3) is most appropriate. Funding streams have to be identified to enable such feasibility studies.

### **Measure 20 - Undertake identified feasibility studies**

The District and County Councils will work together to undertake identified feasibility studies of measures to determine more robustly the effectiveness and cost of options. These feasibility studies will require traffic counts to be undertaken which will be used in transport modelling to investigate the impact of the measure on traffic flows and emission reduction.

### **Recommendation: Feasibility Studies and Funding**

This measure is recommended.

**Table 3 Summary of Action Plan measures for the Woodbridge Junction.**

No	Measure description	Focus	Lead Authority
1	MOVA installation	Reduce queuing traffic at the lights	SCC
2	Junction alteration – right hand turning lane at junction on Thoroughfare / Melton Hill <i>(only for consideration if measure 1 is not successful)</i>	Reduce queuing traffic at the lights	SCC
3	Extension of restrictions to Thoroughfare (8am-6pm) <i>(only for consideration if measure 1 is not successful and measure 2 is no feasible ort successful)</i>	Reduce traffic at junction	SCC
4	Junction alteration – remove ability to turn right from direction of Thoroughfare / Melton Hill <i>(only for consideration if measure 1 is not successful and measures 2 or 3 are not feasible or successful)</i>	Reduce queuing traffic at the lights	SCC
5	Relocate on street parking to opposite side of carriageway	Reduce queuing traffic in AQMA	SCC
6	Remove on street parking opposite the Council offices <i>(only for consideration if measure 5 is not successful)</i>	Reduce queuing traffic in AQMA	SCC
7	Investigate Satellite Navigation system routes around the town	Reduce traffic flows through the AQMA junction	SCDC
8	Bus operators to use cleanest fleet in Woodbridge	Reduce emissions from HDVs through the AQMA junction	SCDC
9	Demand Responsive Transport	Reduce traffic flows through the AQMA junction	SCC
10	Simplified Ticket scheme	Reduce traffic flows through the AQMA junction	SCC
11	Improve accessibility to bus timetable	Reduce traffic flows through the AQMA junction	SCC
12	Turban Centre new bus station/interchange	Reduce traffic flows through the AQMA junction	SCC
13	Procurement of bus contracts to include fleet upgrade	Reduce emissions from HDVs through the AQMA junction	SCC
14	Car sharing scheme	Reduce car trips	SCC
15	Travel Planning: <ul style="list-style-type: none"> <li>- Business</li> <li>- Schools</li> <li>- SCDC</li> </ul>	Reduce reliance on car and reduce queuing time in AQMA	SCC / SCDC
16	Promotion of cycling and walking in Woodbridge	Reduce traffic flows through the AQMA	SCC / SCDC
17	Integration with planning system	Avoid worsening AQ and open the S106 funding stream	SCDC
18	Raise air quality awareness	Reduce traffic flows in AQMA	SCDC
19	Monitor air quality	To report progress	SCDC
20	Undertake identified feasibility studies	To fully understand the impact of identified measures	SCDC / SCC

## 4 Implementation Plan

### 4.1 Summary of actions taken already

Measures have already been introduced which it is believed may have had a beneficial effect on air quality in Woodbridge. A brief description of these measures is provided here.

#### **Traffic light timings at the Woodbridge Junction**

The timing of the lights at the junction was originally optimized to minimize vehicle queuing times and now a queue detection system (MOVA) has been installed. This should have the effect of reducing the emissions from vehicles standing stationary with their engines idling, which in turn should reduce the impact of traffic on air quality at the junction. In addition the traffic sensor at this junction has been checked to ensure it is working such that flow is optimised.

#### **Alteration of traffic lights at Melton crossroads**

The timing of newly installed traffic lights has been set to make them more efficient at maintaining or prioritising flows on A1152. Actions to deter traffic entering Woodbridge from the south-east would also affect traffic heading towards the A12, reducing the attractiveness of this as a route.

### 4.2 Traffic counts

To facilitate the implementation of the traffic management options, traffic surveys of the current levels need to be reassessed. Following implementation of any option, the impact on the traffic can then be reviewed and the success of the option measured. The following traffic surveys have been undertaken / are planned:

1. Permanent traffic counters were installed on Melton Hill and Lime Kiln Quay Road in April 2009.
2. Manual 12-hour turning count survey (classified according to vehicle type) from 7am to 7pm at the Woodbridge Junction was undertaken in April 2009.
3. Traffic queue counts were undertaken in late 2009, before the installation of the MOVA traffic signal control system at the Woodbridge Junction.
4. Traffic queue counts will be undertaken again following the installation of MOVA.

These traffic data can be compared to those undertaken in the past for the purposes of the detailed air quality assessments. Before and after traffic queue length surveys will be undertaken to ascertain the impact of measures.

### 4.3 Implementation of Action Plan measures

A number of measures included in this Action Plan require basic and / or in-depth feasibility studies to be undertaken before a decision can be reached on whether they can be implemented. This will include public consultation on those measures which may impact on local residents and / or businesses. Table 4 overleaf provides a description of actions required in order to progress each of the 20 measures included in this Action Plan, together with a timetable, a progress indicator and a potential target emissions reduction for each.

The 'potential target emissions reduction' is an indication of what percentage of the overall level of NO<sub>x</sub> may be reduced if the measure is implemented and works to its fullest potential. In reality these targets may not all be reached due to the number of factors involved but they are an indication of what could be achieved. These percentages have been derived based on professional judgement of AEA Technology plc, Dr Beth Conlan, who were commissioned to produce the draft Action Plan for this AQMA.

## **4.4 Consultation**

### **Consultees for the Action Plan**

The draft Action Plan was issued to the following consultees and as appropriate, and the Action Plan has been amended to reflect their views and comments:

All properties in the Air Quality Management Area and on the Woodbridge Junction

Woodbridge Town Council

Suffolk County Council

Defra

All Parish and Town Councils within the Suffolk Coastal District

Local Chambers of Commerce

Federation of Small Businesses

Bus Operators in Suffolk

Babergh District Council

Forest Heath District Council

Ipswich Borough Council

Mid Suffolk District Council

St Edmundsbury District Council

Waveney District Council

All Suffolk Coastal District Council Departments

Highways Agency

Environment Agency

English Nature

Freight Transport Association

Suffolk Coastal District Council website for general public access

## **4.5 Monitoring the Action Plan**

The Action Plan will be monitored annually and the results collated for the yearly progress report on the implementation of the Plan. The progress report will include details of any measures still under investigation for inclusion in the Action Plan.

**Table 4 Action Plan measures - implementation details and timetable**

Measure	Focus	Lead Authority	Task Description	Implementation Date	Progress Indicator	Potential target emission reduction
<b>Package of measures 1: Altering traffic signal and junction configuration</b>						
<u>Measure 1</u> Install queue detectors on traffic signals to reduce queuing at the junction	Reduce queuing traffic at the lights	SCC	Traffic queue survey at the junction prior to installation	Late 2009	Survey completed	10%
			Installation of traffic signal queue detectors (MOVA)	Early 2010	Queue detector installed March 2010	
			Traffic queue survey at the junction following installation	2011	Peak queue lengths	
<u>Measure 2</u> Install right hand turning lane at lights on Thoroughfare /Melton Hill arm  For consideration if Measure 1 is not successful.	Reduce queuing traffic at the lights	SCC	Basic feasibility study	2010 / early 2011	Study completion	Approx. 5%
			Traffic and air quality modelling study if this measure proves feasible	2011	Study completion	
			If installation to go ahead, traffic queue survey at the junction prior.	2012	Survey completion	
			Further detailed scheme design	2012 / early 2013	Design completion	
			Installation of right hand turning lane if both studies confirm feasibility and Measure 1 not successful.	2013	Turning lane installed.	
			Traffic queue survey at the junction following installation	Late 2013	Peak queue lengths	
<u>Measure 3</u> Extension of restrictions to Thoroughfare (8am-6pm)	Reduce queuing traffic at the lights	SCC	For consideration if Measures 1 and 2 are not feasible or not successful.	2012	N/A currently	2%
<u>Measure 4</u> Remove ability to turn right from direction of Thoroughfare / Melton Hill	Reduce queuing traffic at the lights	SCC	For consideration if Measure 1 is not successful and Measures 2 and 3 are not are not feasible or not successful.	2013	N/A currently	N/A currently as dependant on measures 2 and 3

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Measure	Focus	Lead Authority	Task Description	Implementation Date	Progress Indicator	Potential target emission reduction
<b>Package of measures 2: On street car parking</b>						
<u>Measure 5</u> Relocate the on street parking currently in Thoroughfare /Melton Hill to the opposite side of carriageway.	Reduce queuing traffic in AQMA	SCC	Feasibility study and resident consultation	Late 2010	Study completion	5%
			If study confirms this measure is feasible, traffic queue survey prior to parking relocation. (use results from queue survey following Measure 1 implementation)	2011	Survey completion	
			If feasible, relocate parking to the opposite side of the carriageway	Early/mid 2011	Parking relocated	
			Traffic queue survey at the junction following installation	Late 2011 / early 2012	Peak queue lengths	
<u>Measure 6</u> Remove the on street parking currently in Thoroughfare /Melton Hill.	Reduce queuing traffic in AQMA	SCC	For consideration if Measure 5 is not successful	2013	N/A currently	5%
<b>Package of measures 3: Direction signing</b>						
<u>Measure 7</u> Investigate Satellite Navigation (SatNav)system routes around the town	Reduce traffic flows through the AQMA junction	SCDC	Contact SatNav Companies to establish whether vehicles are being sent through the AQMA junction unnecessarily.	2010	Companies contacted and any concerns identified.	1%
			If the study shows up any concerns regarding SatNav Systems look into how to try and solve this.	2010 / 2011	SatNav Systems altered where required. Peak queue lengths reduced at junction.	

Measure	Focus	Lead Authority	Task Description	Implementation Date	Progress Indicator	Potential target emission reduction
<b>Package of measures 4: Encouragement of public transport use</b>						
<u>Measure 8</u> Bus operators to use cleanest fleet in Woodbridge	Reduce emissions from HDVs through the AQMA junction	SCDC	Contact bus operators using the AQMA junction to request for cleanest fleet to be used in this area.	2010	Contact made with bus operators. No. of Euro IV buses operating in Woodbridge	2%
<u>Measure 9</u> Demand Responsive Transport	Reduce traffic flows through the AQMA junction	SCC	To be put in place by SCC	2009	Scheme in place as of 2009. Increase bus patronage	2%
<u>Measure 10</u> Simplified Ticket Scheme	Reduce traffic flows through the AQMA junction	SCC	Working group to be set up by SCC to investigate this option	2009	Group set up 2009.	1%
			Trial the scheme in Ipswich and surrounding areas – to cover Woodbridge	Mid/late 2011	Trial undertaken to cover Woodbridge. Increase in ticket sales and bus patronage.	
			If trial is successful, implementation of the scheme to cover Woodbridge	Mid 2012	Launch Increase ticket sales & bus patronage	
<u>Measure 11</u> Improve accessibility to bus timetable	Reduce traffic flows through the AQMA junction	SCC	Improve website and deliver new timetable leaflets.	2009	Website launch. Leaflets delivered 2009. Increase bus patronage	1%
<u>Measure 12</u> Turban Centre new bus station/interchange	Reduce traffic flows through the AQMA junction	SCC	SCC and SCDC to agree a design option	2010 / early 2011	Design option agreement.	2%
			Construction of new bus station	2011 / early 2012	Opening of new bus station. Increase bus patronage	

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Measure	Focus	Lead Authority	Task Description	Implementation Date	Progress Indicator	Potential target emission reduction
<u>Measure 13</u> Procurement of bus contracts to include fleet upgrade	Reduce emissions from HDVs through AQMA junction	SCC	Put a quality assessment in place as part of the procurement process	Late 2009	Quality assessment in place as of November 2009.	2%
			In accordance with the Disability Discrimination Act 2005 all buses must be compliant for wheelchair access by 2015. Buses to be replaced with lower floors to comply. All will be of Euro III standard.	2015	All buses to be compliant and of Euro III standard.	
<b>Package of measures 5: Car sharing and travel planning</b>						
<u>Measure 14</u> Car sharing scheme	Reduce car trips	SCDC	Promote the car sharing scheme run by Suffolk ACRE	2010 and on-going	Increased number of registered users of the scheme	2%
<u>Measure 15a</u> Business Travel Plans	Reduce reliance on car and reduce queuing time in AQMA	SCDC / SCC	Produce a list of businesses in Woodbridge with >60 employees that can be sent to the Business Travel Plan co-ordinator at SCC to contact.	2010	Number of Travel Plans adopted by Woodbridge companies.	2% for 15a,b and c in combination
			SCC Business Travel Team to contact Businesses identified	2010 / early 2011	Businesses contacted	
			Arrange through the Woodbridge Town Centre Management Group to promote the use of the Travel Planning service – arrange a talk for Town Centre businesses.	Early 2011	Number of Travel Plans adopted by Woodbridge companies	
<u>Measure 15b</u> School Travel Plans	Reduce reliance on car and reduce queuing time in AQMA	SCDC / SCC	Schools – all schools in Woodbridge to have a Travel Plan. Currently only Woodbridge School is without one.	2010	All Woodbridge schools with Travel Plan	2% for 15a,b and c in combination
			Schools – contact Woodbridge schools to promote use of their Travel Plan	2010	Schools contacted.	

Measure	Focus	Lead Authority	Task Description	Implementation Date	Progress Indicator	Potential target emission reduction
Measure 15c Travel Plan for the District Council offices	Reduce reliance on car and reduce queuing time in AQMA	SCDC / SCC	SCDC to draft and adopt Travel Plan	Late 2009	Travel Plan adopted November 2009	2% for 15a,b and c in combination
			Travel Plan key actions to be completed	November 2010	Key actions completed	
<b>Package of measures 6: Promotion of cycling and walking</b>						
Measure 16 Promotion of cycling and walking in Woodbridge	Reduce traffic flows through the AQMA	SCC / SCDC	Build a base network of the current situation in Woodbridge.	2010 / early 2011	Study completion	1%
			Investigate any suggestions which come out of the above process	2012	N/A currently. Increase no. cyclists and walkers	
<b>Package of measures 7: Development planning</b>						
Measure 17 Integration with Planning System	Avoid worsening air quality and open the S106 funding stream	SCDC	Produce draft Supplementary Planning Document for Suffolk and put out to consultation	2010 / early 2011	Adoption of Supplementary Planning Document by SCDC	1%
			Use S106 funds to implement the Action Plan where relevant	N/A currently	N/A currently	
<b>Package of measures 8: Promotion of air quality issues</b>						
Measure 18 Raise air quality awareness	Reduce traffic flows in AQMA	SCDC	Promotion of air quality	On-going	Number of articles published	N/A
			Air quality reports on the SCDC website	On-going	Air quality reports put onto website once ready for Consultation	

Suffolk Coastal District Council Air Quality Action Plan

<b>Measure</b>	<b>Focus</b>	<b>Lead Authority</b>	<b>Task Description</b>	<b>Implementation Date</b>	<b>Progress Indicator</b>	<b>Potential target emission reduction</b>
<u>Measure 19</u> Monitor air quality	To report progress	SCDC	On-going	On-going	On-going	N/A
<b>Package of measures 9: Feasibility studies and funding</b>						
<u>Measure 20</u> Undertake identified feasibility studies	To fully understand impact of identified measures	SCDC / SCC	Feasibility studies undertaken for Measures 2 and 5.	2011	Feasibility studies completed.	N/A

## 5 Conclusions

This Action Plan describes the air quality assessment process that has taken place in Suffolk Coastal to date, identifies the role of traffic in the current problem and sets out a range of transport-focussed measures that could help improve air quality. In total, 79 options were considered. Some of these are based on measures already under consideration, and have been drawn from existing plans and policies. Additional options have been suggested to complement planned and ongoing activity. Of these options, 20 have moved forward as measures for implementation or further feasibility study. Following extensive statutory and public consultation on the draft Action Plan, a number of changes have been made (see summary changes section at the start of this document) and a number of additional measures are under-going further investigation for possible future inclusion in the Action Plan.

The objective of this Action Plan is to improve air quality at the Woodbridge Junction to work towards meeting the national air quality objective for the protection of human health. To this end, target emission reductions for the measures have been estimated and indicators to demonstrate progress have been identified. Implementation of measures is now on-going and annual updates will be provided in the form of an Action Plan Progress Report. Over time, should the measures chosen prove not to be fully successful in reduction of nitrogen dioxide concentrations in the AQMA, other measures available will be reassessed.

# Appendices

Appendix 1: UK air quality standards and objectives

Appendix 2: AQMA Order for the Woodbridge Junction within the Suffolk Coastal District

Appendix 3: Maps of Further Assessment of air quality at the Woodbridge Junction AQMA

Appendix 4: Assessment methods

Appendix 5: Assessment of Action Plan options

# Appendix 1

## UK air quality standards and objectives

Objectives included in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
<b>Benzene</b> All authorities	16.25 µg/m <sup>3</sup>	running annual mean	31.12.2003
Authorities in England and Wales only	5.00 µg/m <sup>3</sup>	annual mean	31.12.2010
Authorities in Scotland and Northern Ireland only	3.25 µg/m <sup>3</sup>	running annual mean	31.12.2010
<b>1,3-Butadiene</b>	2.25 µg/m <sup>3</sup>	running annual mean	31.12.2003
<b>Carbon monoxide</b> Authorities in England, Wales and Northern Ireland only	10.0 mg/m <sup>3</sup>	maximum daily running 8-hour mean	31.12.2003
Authorities in Scotland only	10.0 mg/m <sup>3</sup>	running 8-hour mean	31.12.2003
<b>Lead</b>	0.5 µg/m <sup>3</sup> 0.25 µg/m <sup>3</sup>	annual mean annual mean	31.12.2004 31.12.2008
<b>Nitrogen dioxide<sup>b,e</sup></b>	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year 40 µg/m <sup>3</sup>	1 hour mean annual mean	31.12.2005 31.12.2005
<b>Particles (PM<sub>10</sub>) (gravimetric)<sup>c</sup></b> All authorities	50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year 40 µg/m <sup>3</sup>	24 hour mean annual mean	31.12.2004 31.12.2004
Authorities in Scotland only <sup>d</sup>	50 µg/m <sup>3</sup> not to be exceeded more than 7 times a year 18 µg/m <sup>3</sup>	24 hour mean annual mean	31.12.2010 31.12.2010
<b>Sulphur dioxide</b>	350 µg/m <sup>3</sup> not to be exceeded more than 24 times a year 125 µg/m <sup>3</sup> not to be exceeded more than 3 times a year 266 µg/m <sup>3</sup> not to be exceeded more than 35 times a year	1 hour mean 24 hour mean 15 minute mean	31.12.2004 31.12.2004 31.12.2005

b. The objectives for nitrogen dioxide are provisional.

c. Measured using the European gravimetric transfer standard sampler or equivalent.

d. These 2010 Air Quality Objectives for PM10 apply in Scotland only, as set out in the Air Quality (Scotland) Amendment Regulations 2002.

e. The annual average and 1 hour average nitrogen dioxides objectives are the same as the EU Limit Values but the EU Limit Values have to be achieved by the 1 January 2010 and maintained thereafter

Additional national particles objectives for England, Wales and Greater London (see table below) are not currently included in Regulations for the purpose of LAQM. The Government and the Welsh Assembly Government however intends that the new particles objectives will be included in Regulations as soon as practicable after the review of the EU's first air quality daughter directive. Whilst authorities have no obligation to review and assess against them, they may find it helpful to do so, in order to assist with longer-term planning, and the assessment of development proposals in their local areas.

**Proposed new particles objectives for England, Wales and Greater London (not included in Regulations)**

Region	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
London	50 µg/m <sup>3</sup> not to be exceeded more than 10 times a year	24 hour mean	31.12.2010
London	23 µg/m <sup>3</sup>	annual mean	31.12.2010
London	20 µg/m <sup>3</sup>	annual mean	31.12.2015
Rest of England and Wales	50 µg/m <sup>3</sup> not to be exceeded more than 7 times a year	24 hour mean	31.12.2010
Rest of England and Wales	20 µg/m <sup>3</sup>	annual mean	31.12.2010

Efforts to achieve these objectives should be focussed on locations where members of the public are likely to be exposed over the averaging period of the objective. The table below summarises the locations where these objectives should and should not apply.

<b>Typical locations where the objectives should and should not apply</b>			
<b>Averaging Period</b>	<b>Pollutants</b>	<b>Objectives <i>should</i> apply at ...</b>	<b>Objectives <i>should not</i> generally apply at ...</b>
<b>Annual mean</b>	1,3 Butadiene Benzene Lead Nitrogen dioxide PM <sub>10</sub>	All background locations where members of the public might be regularly exposed.	Building facades of offices or other places of work where members of the public do not have regular access.
		Building facades of residential properties, schools, hospitals, libraries etc.	Gardens of residential properties.
<b>24-hour mean and 8-hour mean</b>	Carbon monoxide PM <sub>10</sub> Sulphur dioxide	All locations where the annual mean objective would apply.	Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term
		Gardens of residential properties.	Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term.
<b>1 hour mean</b>	Nitrogen dioxide Sulphur dioxide	All locations where the annual mean and 24 and 8-hour mean objectives apply.	Kerbside sites where the public would not be expected to have regular access.
		Kerbside sites (e.g. pavements of busy shopping streets). Those parts of car parks and railway stations etc. which are not fully enclosed. Any outdoor locations to which the public might reasonably be expected to have access.	
<b>15 minute mean</b>	Sulphur dioxide	All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer.	

## **Appendix 2**

### **AQMA Order for the Woodbridge Junction within the Suffolk Coastal District**

**Environment Protection Act 1995, Part IV section 83(1)**

**Suffolk Coastal District Council**

**Air Quality Management Area Order**

The Suffolk Coastal District Council Air Quality Management Area ORDER No 1, 2006

Suffolk Coastal District Council, in exercise of the powers conferred upon it by Section 83(1) of the Environment Act 1995, hereby makes the following Order

This Order may be referred to as '**The Suffolk Coastal District Council Air Quality Management Area Order No 1, 2006**', and shall come into effect on the **3<sup>rd</sup> April 2006**

The area shown on the attached map hatched in red is to be designated as an air quality management area (the designated area). **The designated area incorporates properties on the Western side of the Thoroughfare and Melton Hill arm of the junction with Lime Kiln Quay Road, in Woodbridge, Suffolk.**

The map may be viewed at the Council Offices, at Melton Hill, Woodbridge, between the hours of 08.45am to 5.15pm Mondays to Thursdays, and 08.45am to 4.45pm on Fridays.

This Area is designated in relation to a likely breach of the nitrogen dioxide (annual mean) objective as specified in the Air Quality Regulations (England)(Wales) 2000.

This order shall remain in force until it is varied or revoked by a subsequent order.

Dated; this Third day of March 2006

The Common Seal of Suffolk Coastal District Council was affixed in the presence of;

Ian S de Prez

.....

Authorised Officer

And

Simon Burridge

.....

**CS**

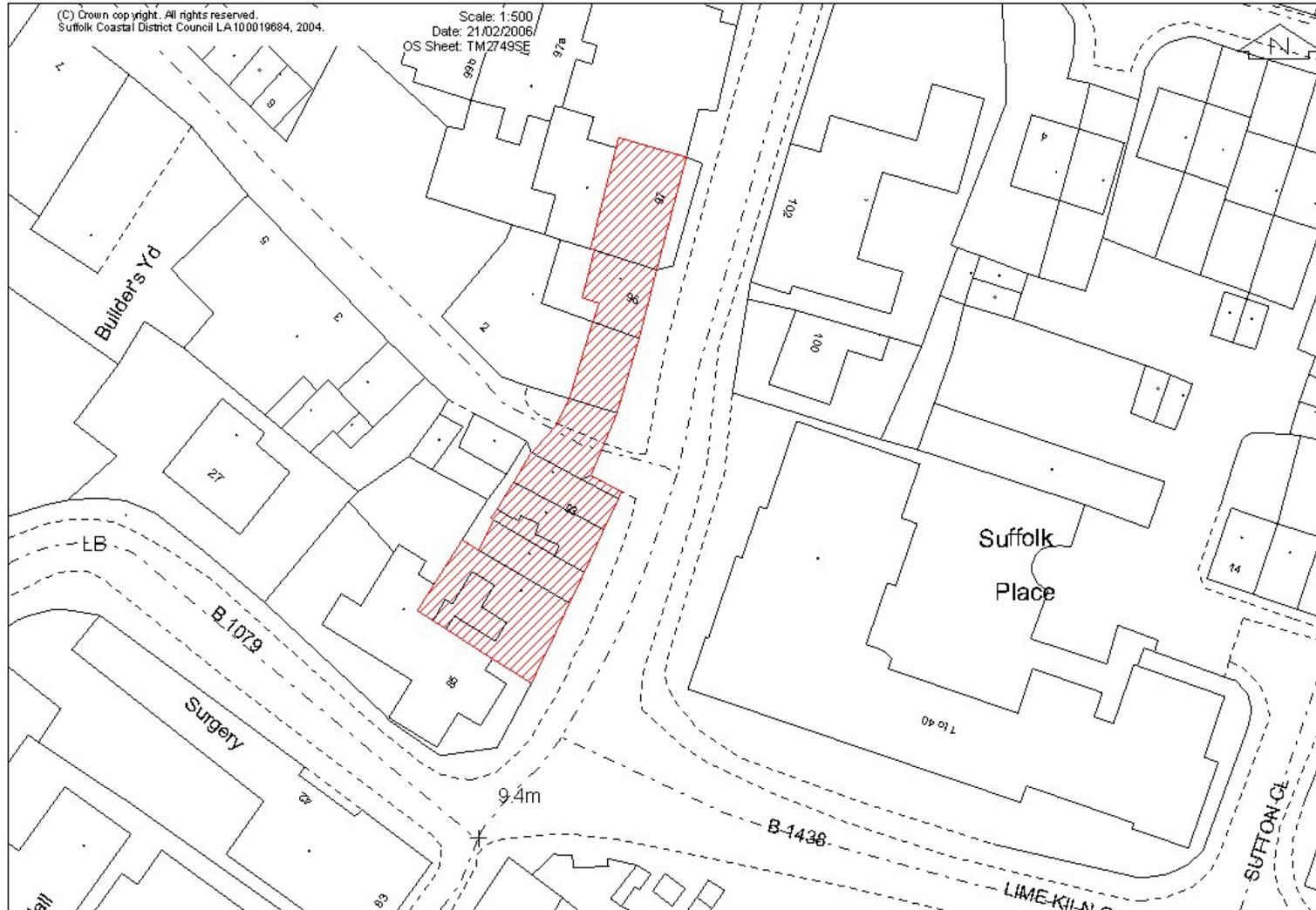
9281

Authorised Officer

**Dated 3<sup>rd</sup> March 2006**



# THE SUFFOLK COASTAL DISTRICT COUNCIL AIR QUALITY MANAGEMENT AREA ORDER NO 1, 2006



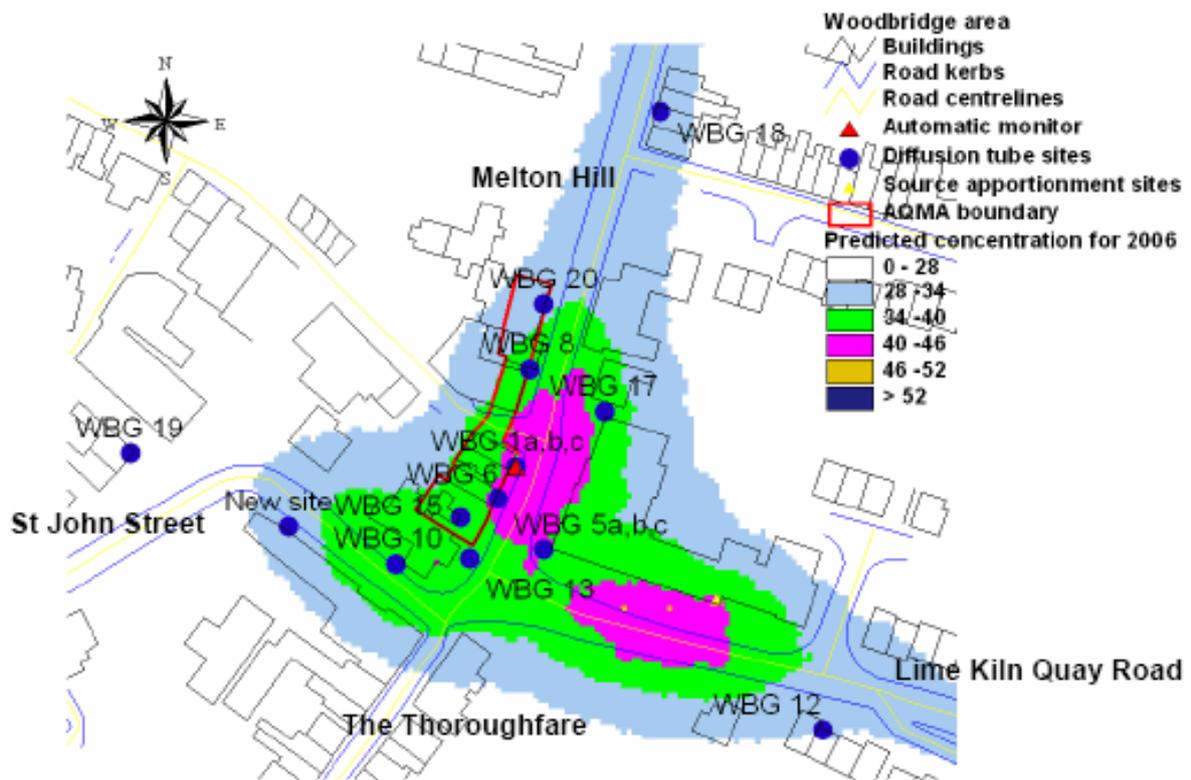


# Appendix 3

## Maps of Further Assessment of air quality at the Woodbridge Junction AQMA

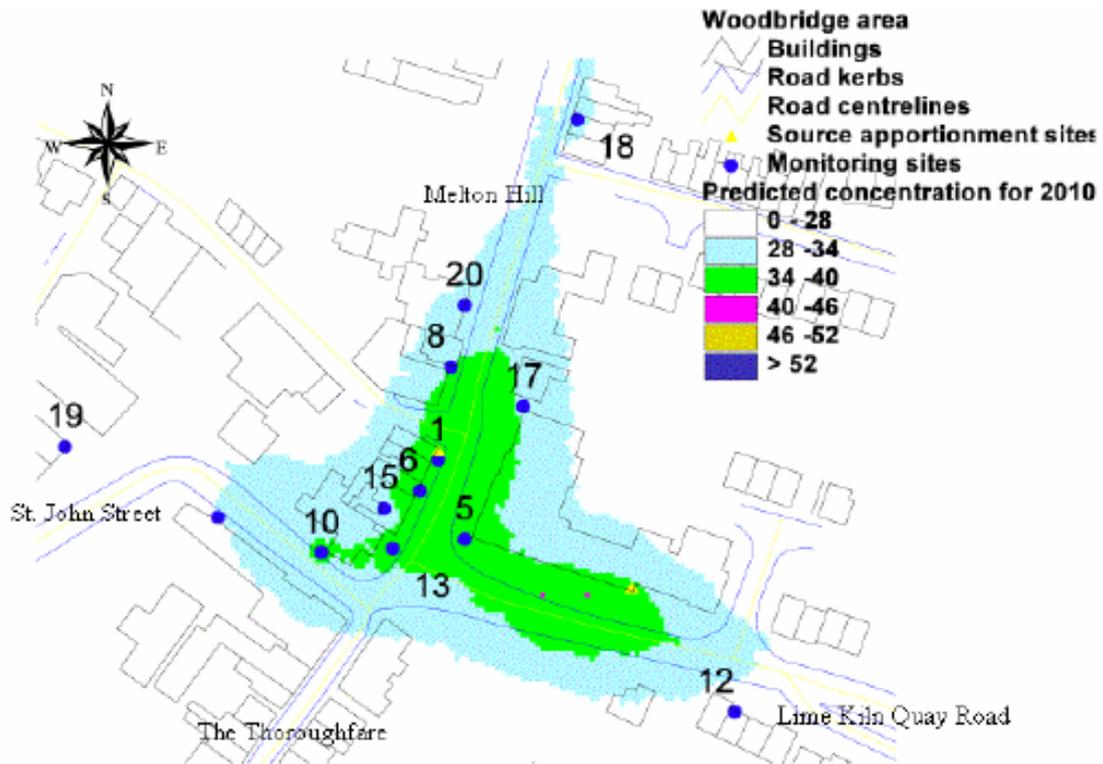
Reproduced from SCDC's Further Assessment report, October 2007

Figure 5.1 Modelled contours of annual mean NO<sub>2</sub> concentration at the Woodbridge junction for 2006 (See Table A2.3 in Appendix 2 for the names and locations of the numbered monitoring sites)



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Figure 5.2 Modelled contours of annual mean NO<sub>2</sub> concentration at the Woodbridge junction in 2010  
 (See Table A2.3 in Appendix 2 for the names and locations of the numbered monitoring sites)



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# Appendix 4

## Assessment methods

The steering group identified a wide range of options during the initial assessment, these are listed in Appendix 5. These options have been assessed in more detail against a range of criteria in order to determine which ones to include within the Action Plan. The following paragraphs outline how the assessment has been made.

### 5.1.1 What is the option?

The steering group has listed the potential options and made comments on the potential effects, pros and cons associated with the option. The information given here along with the source apportionment information in chapter 3 is the basis of the assessment.

### 5.1.2 What is being proposed?

The options are defined in specific terms where possible. For the detailed assessment each option has been defined in sufficient detail to understand the change, from the current situation, that is being proposed.

Typically the proposal is either to change the traffic in the AQMA or traffic more generally across Woodbridge. The effects on traffic in these locations are defined as 'fewer vehicles' or 'fewer vehicles queuing' or 'lower emitting vehicles'. In other cases the focus is considered to be 'strategic' i.e. developing those options may not have direct impacts on the problem but improve the District and County Councils capacity to make the correct decision on managing air quality in the AQMA and across Woodbridge.

### 5.1.3 Potential air quality impact

This is a key assessment in that the Air Quality Action Plan must focus on prioritising options that improve air quality most effectively. The assessment is complex in that the detailed assessment of any given option could normally be subject to a study of its own requiring significant resources.

Ideally, a traffic model for Woodbridge junction and Woodbridge would be developed to a stage where it would be possible to quantitatively assess the potential air quality impacts of any given options. However, this is not currently the case. Therefore, a semi-quantitative assessment relying on a level of judgement has been adopted. The method used is described below:

#### 1 What proportion of emissions would be affected by the option?

The option description, comments, focus of the option and source apportionment have been used to define how much of the contribution to the air quality issue at Woodbridge junction that this option potentially addresses estimated as a percentage.

#### 2 Realistically how much of the traffic would change due to the option?

Beyond the potential influence there must be consideration of the realistic impact of the proposed option. Road closure would obviously remove all traffic emissions and hence realistically remove 100% of all local road transport emissions. However, this may be acceptable in very few cases. Options of the kind listed for Woodbridge are mainly more modest in ambition. For example, there are many options to improve flow through Woodbridge junction by various means. Such non-regulatory interventions are likely to have limited impact since the junction-users will still be left to decide whether to use the junction or not.

The level of realistic change has been defined as being:

- Neutral – basically changing no traffic
- Very small – changing around 1-2% of traffic

- Small – changing 2-5% of traffic
- Moderate – changing 5-10% of traffic
- Large – changing more than 10% of traffic

### **3 Therefore what level of reduction in emissions might result from the option?**

The proportion of emissions potentially affected by the option and the view on how far they could be changed by the option (steps 1 and 2 above) are combined to express an overall assessment of the amount of local transport emissions at Woodbridge junction that may realistically be reduced by the option.

### **4 How significant might the air quality improvement be as a result?**

The source apportionment and review and assessment information presented in this report indicates that a 16% reduction in local emissions at Woodbridge junction are required based on 2006 figures to achieve the air quality standard. If transport emissions and air quality continue to improve then by 2010 the risk that the annual mean air quality standard for NO<sub>2</sub> will be exceeded will be lower. Before then a 10% reduction in emissions may be required to achieve the standard. The District Council review and assessment activity between now and 2010 will continue to monitor this situation.

In this context even a 1-2% reduction in emission can be seen as a significant step towards achieving the air quality standard in the AQMA. The District Council could potentially implement several measures with this level of influence to achieve an overall 10% reduction in emissions.

For the purpose of the air quality assessment the result of the realistic intervention has been assessed as having a potentially:

- Neutral local air quality benefit if the realistic intervention is 0% or worse
- Low local air quality benefit if the realistic intervention is 1%
- Medium local air quality benefit if the realistic intervention is 2-5%
- Large local air quality benefit if the realistic intervention is >5%

The result of the assessment is to define the potential air quality benefit of an option (in terms of making progress towards the air quality standard in the AQMA) as ranging from neutral to relatively large.

## **5.1.4 Cost-effectiveness assessment**

### **Implementation costs**

The potential implementation costs of each option are assessed as follows:

- Cost neutral
- Low costs (up to £20k annually e.g. for small surveys or campaigns or other options using current resources)
- Medium costs (up to £200k annually e.g. for small traffic management schemes)
- High costs (above £200k annually e.g. for new infrastructure)

The assessed costs attempt to include the costs to vehicle operators as well as to the District and County Councils. Costs already allocated or spent by the District and County Councils are not included in this assessment and would therefore be described as 'neutral'.

The effectiveness of each measure in improving air quality is compared to the implementation costs in the matrix provided overleaf.

In this matrix the assessed implementation costs and potential air quality impacts have been given a weighted score. The product of the weighted scores for each option is calculated. The results can be interpreted as follows:

- If the product is high (8 or more) then the measure is more cost-effective (significant impacts for the cost involved) and perhaps favourably cost-effective.
- If the product is medium (between 3-7) then the measure is in the medium range of cost-effectiveness
- If the product is low (2 or less) then the measure is less cost-effective (small impacts for the cost involved) and perhaps unacceptably poor in cost-effectiveness terms.

AQ benefit \ Cost		Rating	Neutral	Low	Medium	High
			0	1	2	3
Rating			0	1	2	3
Neutral	4	0	4	8	12	
Low	3	0	3	6	9	
Medium	2	0	2	4	6	
High	1	0	1	2	3	

The final cost-effectiveness value is sensitive to changes in the assumptions of how effective a measure might be in reducing emissions and how costly it is.

Note that a score of 4 for one option and a score of 8 for another does not necessarily mean that the former option is exactly two times more cost-effective. This method only estimates the *relative* cost-effectiveness of options rather than their *absolute* values. The method is useful during discussions of the relative priority of different options.

### 5.1.5 Potential co-environmental benefits

In this assessment other environmental benefits are highlighted.

- Other pollutants: The likely effect on local PM<sub>10</sub> concentration is assessed as being an overall reduction or a local reduction perhaps with emissions being relocated elsewhere in Woodbridge.
- Greenhouse gases: The likely effect on greenhouse gas emissions is assessed as being an overall reduction or a local reduction perhaps with emissions being relocated elsewhere in the District.

Without detailed information on the true impacts of the options these assessments rely on judgement and therefore any issues have been raised within the `comments' column in the assessment results in Appendix 5.

### 5.1.6 Potential risk factors

In this assessment risk factors are highlighted. These may be looked at more closely within a Strategic Environmental Assessment of any option implemented. At this stage it is simply highlighted whether it is likely that the option:

- may relocate emissions and hence lead to worsening air quality elsewhere
- may require a change in land use
- may place limits on pace of development or their costs

Without detailed information on the true impacts of the options these assessments rely on judgement and therefore any issues have been raised within the `comments' column in the assessment results in Appendix 5.

### 5.1.7 Potential social impacts

Potential social impacts are highlighted. These may need to be examined more closely when developing the options further. At this stage it is simply highlighted whether it is likely that the option would potentially:

- Provide health benefits in terms of lower exposure to pollutants or increased mobility
- Increase road safety
- Improve accessibility

Without detailed information on the true impacts of the options these assessments rely on judgement and therefore any issues have been raised within the `comments' column in the assessment results in Appendix 5.

### **5.1.8 Potential economic impacts**

Potential economic impacts are highlighted. These may need to be examined more closely when developing the options further. At this stage it is simply highlighted whether it is likely that the option would potentially:

- Improve sustainable development or accessibility in Woodbridge
- Reduce or increase overall travel time
- Impact on deliveries to Woodbridge
- Impact on operator costs and potentially pass these through to passengers or clients
- Require significant re-adjustment to the scheme

Without detailed information on the true impacts of the options these assessments rely on judgement and therefore any issues have been raised within the `comments' column in the assessment results in Appendix 5.

### **5.1.9 Who is the appropriate authority for implementing an option?**

A single authority would be responsible for leading on developing and implementing Action Plan measures or in attempting to influence other agencies to take such action. Each option has been identified as being within the responsibility of the following authorities:

1. Suffolk Coastal District Council (SCDC)
2. Suffolk County Council (SCC) via the Local Transport Plan (LTP)

# Appendix 5

## Assessment results

The following tables present the summary results of the assessments



**Assessment of options to reduce NO<sub>2</sub> concentrations at the junction of Lime Kiln Quay Road, Thoroughfare and St. John's Street, Woodbridge**

**Key to Cost and Benefit Ratings:**

**Cost**

Neutral = £0  
 Low = £0 - £20,000  
 Medium = £20,000 - £200,000  
 High = >£200,000

**Benefit**

rating score of 4  
 rating score of 3  
 rating score of 2  
 rating score of 1

Neutral = rating score of 0  
 Low = rating score of 1  
 Medium = rating score of 2  
 High = rating score of 3

No.	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
<b>Parking - car parks</b>					
1.	Car parking - assessment of what there is, costs etc.	<p>Little positive impact - car parks located to the southwest of the site so some traffic will use the junction depending on their access route into Woodbridge. Could look at increasing charges for car parks to try and deter car users, number of cars this would remove would be very low and may impact on the Woodbridge economy. Would not be a popular option for the Traders. Alternative ways of getting into town via public transport may not be sufficient to support this.</p> <p>The Economic Regeneration and Development Team at SCDC have undertaken a recent review of car parking in Woodbridge including charges. One of the review findings that may impact on other options for the junction is that there are not enough spaces at peak times.</p>	zero	low	4
2	Use council offices at weekends for free car parking for vehicles approaching from this direction.	<p>Some vehicles from Melton would stop before junction, some from southwest would drive through junction to car park so unsure as to whether positive or negative impact. The Council's Economic Regeneration and Development section have investigated the option of having a chargeable car park. This is not viable at present as the marked car parking spaces are too small for a public car park. They would need to re mark the spaces and the car park would end up with fewer spaces in total. This presents a problem as the car park is already over capacity on some days for employees. The council is undertaking a Green Travel Plan and if as a result of this the number of employee vehicles is reduced they can look at it again. Council car park to be used for 6 months from 18 April 2009 for free parking on Saturdays due to works in Hamblin Road car park.</p>	zero	low	4

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
	<b>Parking - on street</b>				
3	Parking on the street opposite the council offices causes queuing at busy times - remove or reduce this parking. Put in place other measures to ensure traffic speeds do not increase - increase pavement width on one side of the road.	Reducing the parking would have no impact as would still cause queuing. Removing the parking would aid traffic flow near to the junction. It would also increase the speed that traffic clears the junction. A negative impact is increased traffic speed in the area would decrease road safety. Increasing pavement width would help lower speeds. May not be popular option as car parking spaces in short supply in Woodbridge. Local residents using this parking may also object.	low	Medium	6
4	Leave the parking here as it keeps speeds low.	No impact	Not considered further		
5	Resituate parking - move to opposite side of the road to keep traffic away from houses on this side.	Would help reduce speed on approach to the junction and control volume of traffic on approach to signals. Traffic would queue instead up and past Council Offices where receptors are not as close to the road, would hold up the traffic in this area away from the junction. Might make the route less attractive to traffic from the north and reduce traffic flow. May still require pavement widening.	low	medium	6
6	Permit parking in Deben Road	No perceivable effect	Not considered further		
7	Prevent cars/lorries stopping on road - use red road markings as in London and design road markings to help	There is very little evidence of abuse of the current parking restrictions so red marking not required. London red markings can only be used in London so not applicable. Increased policing of current restrictions would solve this problem but be costly. Removing all parking from Melton Hill could increase the speed that traffic flows through the junction but could lead to an increase in overall traffic speed in the area and a decrease in road safety. Would not help reduce traffic volume. Would still need to police abuse of parking restrictions. Pavement widening on the east side would be required to reduce impact of faster traffic on pedestrians.	medium	zero	0

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
	<b>Direction signing – re-routing access from A12</b>				
8	Signing - can this be improved? From the A12 directing people into Woodbridge (remove this), better signing around Woodbridge etc. try to deter through traffic.	<p>Removing signing to Woodbridge from the A12 would not help as signing is needed to direct traffic along the most suitable routes to enter a town. Removing this signing would leave no control over which routes people choose. If the signing for north bound traffic were removed and all traffic signed to use the northern (Woods Lane) junction, all traffic would have to travel through the junction to enter the town. The signing at the southern access has already been changed to indicate 'town centre only' and route traffic for villages along the A12.</p> <p>Signing all southbound traffic via Ipswich Road could reduce traffic through the junction. However, this would have an impact on servicing the Thoroughfare as all servicing vehicles would have to travel through the town to then use the junction to turn left into the Thoroughfare. Would be resisted by residents of Ipswich Road as they already express concern regarding traffic noise and volume. In addition, the increase in traffic volume would have negative impact on cyclists by making the route less attractive and would cause problems for pedestrians as there are limited pavements (no continuous pavement on one side) and few formal crossing points. Would not influence drivers who know the route but would increase journey distances for those unfamiliar with the area - particularly those re-routed from the north-east. There is anecdotal evidence only of traffic using this as a through route. Should traffic surveys indicate otherwise we will rate the option again.</p>	zero	zero	0
9	Actively discourage through traffic by use of 'Local Traffic' only signs prior to the junction at Melton crossroads.	A12 south signs already altered to read 'town centre only'. Could achieve minor traffic reduction from Melton direction. There is anecdotal evidence only of traffic using road as through route. Should traffic surveys undertaken in the future indicate otherwise, we will rate this option again.	low	low	3
10	Look into Satellite Navigation systems - are they sending people via Woodbridge to get to Martlesham?	There are anecdotal reports on SatNav sending vehicles through the town rather than via the A12/A1152. SatNav companies could be approached to remove as route and re-route along Woods Lane. May achieve some traffic reduction. SCDC to approach SatNav companies to investigate this option.	zero	medium	8

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
11	The B1438 in Woodbridge is part of the County Designated Lorry Route and is therefore on satellite navigation systems as a recommended route - can this be undesignated.	The B1438 in Woodbridge is part of the County Lorry Route Network and is designated as a local distributor route. i.e. it is the route local lorries are expected to use for local deliveries/destinations within the immediate area. It would be shown on satellite navigation systems as such. Previous traffic surveys have shown the level of lorry traffic in the area to be low, which indicates that the route is primarily used as intended, for local deliveries rather than as part of a route to destinations further afield. If it were undesignated, there would be no approved route for lorries servicing premises within Woodbridge, therefore leaving distributors with no guidance as to which roads to use. This may lead to lorries diverting onto much less suitable roads within the town which is not acceptable.	Unacceptable		
12	Only encourage access to Woodbridge via Ipswich Road - do this via signing	Could possibly reduce the traffic through the junction if A12 southbound traffic were also directed to use Ipswich Road for access to the town. This would have an impact on servicing the Thoroughfare as all servicing vehicles would have to travel through the town to then use the junction to turn left into the Thoroughfare. Would be resisted by residents of Ipswich Road as they already express concern regarding traffic noise and volume. In addition, the increase in traffic volume would have negative impact on cyclists by making the route less attractive and would cause problems for pedestrians as there are limited pavements (no continuous pavement on one side) and few formal crossing points. Would not influence drivers who know the route but would increase journey distances for those unfamiliar with the area - particularly those re-routed from the north-east.	low	low	3
13	Must encourage access to Woodbridge via Ipswich Road and indicate that North Hill is for local traffic only.	As for 12 above	low	low	3

	<b>Option description</b>	<b>Comments</b>	<b>Cost Rating</b>	<b>Benefit Rating</b>	<b>Cost/benefit rating</b>
14	On leaving the Turban centre traffic should be directed right towards the 'A12' and 'onward journeys' to cut down the traffic build up on Lime Kiln Quay Road.	This may discourage non-local drivers from using the junction and could reduce some of the flow through the junction. However, local drivers would make the easier left turn and would ignore the signing. It would increase journey distances by 1.5 miles and increase traffic on Ipswich Road. May also cause some confusion for any drivers who did not know the area and had entered Woodbridge from the North.	low	low	3
	<b>Direction signing - car parks</b>				
15	Signing - can this be improved? Signing for car parks	Improved car park signing can prevent wasted trips but unlikely to affect traffic through junction - traffic from north east does not reach car parks until through junction. Some car park signs on Ipswich Road approach into Woodbridge are quite small and could be missed. Better signing to the Turban Centre car park when approaching from Ipswich Road direction may prevent any tourist traffic ending up at the junction if they have missed the other car parks on the way in. Could also look into putting a sign within the Turban centre car park pointing out where the other car parks are in Woodbridge should this one be full.	low	low	3
	<b>Traffic calming</b>				
16	Actively discourage through traffic by: traffic calming, speed cameras/radar	Traffic calming would not be considered on a main distributor road used for emergency access, bus route. Would be very expensive and is likely to create rat runs through the town - safety issues. If we slow HDVs the emissions from each will increase. There is anecdotal evidence only of traffic using this as a through route. Should traffic surveys indicate otherwise we will rate the option again.	high	low	1
	<b>Speed limits</b>				
17	Actively discourage through traffic by: 20mph at schools	No schools on the route, '20's Plenty' already being rolled out for schools. No impact on junction.	Not considered further		

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
18	Actively discourage through traffic by: increase the speed of Wood's Lane traffic and by-pass traffic etc.	Speed limit on Woods Lane difficult to increase as is residential for part of the route. Raising speed limit A12 may make the route more attractive but it would affect residents and safety on approach to traffic signals/cycle crossing. Speed limit recently decreased for school safety and so we cannot increase this. See also option 58 for comments. Limited effect on traffic volume.	low	low	3
19	Decrease the speed limit in the area to discourage short cut through Woodbridge. 20 mph suggested, also speed cameras and fines.	At peak times, traffic speeds are low due to traffic volume. If it were possible to introduce a lower limit on the main route through the town in isolation, it would likely lead to rat running through untreated roads. 20mph speed limits or zones can only be introduced if the actual speed is reduced to 24mph or less. If the speeds are higher than this, traffic calming has to be provided to bring the speeds down (see comments under option 3b above). In addition, 20mph speed limit zones are intended to allow peripheral roads to not be limited to allow for emergency access, public transport routes, deliveries etc. Introducing a lower limit would require additional signs in a sensitive area. Unlikely to reduce traffic volumes at peak times. May reduce some off peak traffic. There is anecdotal evidence only of traffic using this as a through route. Should traffic surveys indicate otherwise we will rate the option again.	high	low	1
20	Reduce speed of cars on Melton Hill - also install speed cameras	Traffic speeds can be in excess of the speed limit but this is not an area that would attract safety cameras - no record of injury accidents. As a main route between Woodbridge and Melton, an emergency access route, and a bus route, it would not attract traffic calming to reduce speed. Unlikely to effect use of road.	medium	low	2
<b>Traffic signals</b>					
21	Alteration of traffic light timings at Melton crossroads to deter through traffic entering Woodbridge.	Timing of newly installed traffic lights has been set to make them more efficient at maintaining/prioritising flows on A1152. Action to deter traffic entering Woodbridge from the south east would also effect traffic heading towards the A12, reducing the attractiveness of this as a route.	low	zero	0
22	Put in a right hand turning/queuing lane on Melton Hill so cars can get past to filter left (could then re-jig the light timings again to assist other arms of the junction).	Would reduce some of the queuing at the junction. If combined with ban on right turn into St John's/additional access restrictions on Thoroughfare, could remove some delays. May need land from adjacent flats as pavement narrow. It would appear that often there is only one vehicle at the front of the queue on Melton Hill wishing to either go straight on or turn right which holds up the rest of the traffic. If there is a possible way to allow left filtering vehicles to get round any queuing vehicle(s) it could have a positive impact on queues and the traffic flow.	medium	medium	4

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
23	Remove the lights and put in a mini roundabout - will need pedestrian crossings further along each arm of the junction.	Would reduce delays at the junction for the major traffic movements but increase delays on St Johns Street. May well encourage/increase use of the junction as could be perceived as quicker route than using A1152/A12. This would remove any benefits by increasing the traffic volume using the junction. Formal pelican crossings would be needed on Melton Hill and St Johns Street, however, with narrow pavements, this may not be possible to achieve. Pedestrian crossings would have to be set back along the arms of the junction to achieve visibility, diverting people from their preferred routes. To still be attractive for pedestrian use, they would still be located in the 'problem' area. Extra delays would be introduced in these areas as the crossings would be too far apart to be linked i.e. they would operate independently rather than at present as part of the traffic signal cycle. Many elderly pedestrians in area would be disadvantaged by them. SCC targets of increasing walking would be affected. A mini roundabout requires a lot of road space to accommodate large vehicles such as buses. At a junction with no traffic control this creates problems for cyclists due to possible increases in traffic speed and less lane control. Roundabouts are known to be more hazardous for cyclists to negotiate than other junction types.	medium	low	2
24	Do a trial mini roundabout using signs	See 14a. Could not be introduced using temporary measures as there would be safety issues for both motorists and pedestrians. Not feasible.	Unfeasible		
25	Move pedestrian crossings further along each arm	This would introduce additional delays to the operation of the signals, as traffic would be delayed in two locations both entering and leaving the junction. The current configuration allows pedestrians to cross as part of the signal cycle.	medium	low	2
26	Ban right turn from Melton Hill into St Johns Street	Right turn traffic volume is similar to straight on traffic but only forms approximately 8% of flow entering the junction from Melton Hill. Likely to be spread more evenly during the day as no time restriction. If this move were banned, displaced vehicles likely to use Sun Lane, as most are likely to be residents. Any congestion caused in Sun Lane would impact on traffic using the junction as vehicles may queue on Melton Hill waiting to turn into Sun Lane. Traffic flow would increase on an unsuitable route but delays caused to traffic travelling towards signals would reduce queues at the signals. The use of Sun Lane may have to be restricted to access to residential properties only i.e. no use as a through route. To restrict all access would have a large impact on local residents and a detour of approximately a mile to reach their properties, using Pytches Road/Castle Street. Traffic may choose to travel straight on more thus causing delays anyway.	low	low	3
27	Increase timing of left hand filter from Melton Hill to encourage left hand turns	The filter currently runs during all cycles where it is safe to do so. Increasing the time would have little effect as vehicles can only filter left while no vehicles in front are waiting to turn right or go straight on.	low	low	3

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
28	Increase the time allowed for pedestrians to cross the junction	The current timings allow pedestrians enough time to cross in safety. Adding time would cause traffic to queue for longer and could exacerbate air quality problems. Negative impact on air quality.	low	zero	0
29	Adjust traffic sensor on Melton Hill as it appears to be broke	Signals were checked and no error found. Timings have been altered to make signals more efficient. No action required.	Already implemented		
30	Pedestrian sequences hold up traffic especially at weekends - get a policeman to direct traffic at the weekend to prevent queues building up and let pedestrians across less often.	Could increase efficiency of through traffic at peak time but would not attract police support as not a priority for police action. Would be costly as on-going police presence required. Excessive delays for pedestrians likely to lead to people crossing against signals with consequent safety issues. Would not be in line with encouraging walking to reduce use of private transport. Would not reduce traffic volume. Option 31 outlined below would effect the same outcomes and is more realistic.	high	low	1
31	Remove the ability to turn right (see also 14f) or go straight on from the direction of Melton Hill	Would reduce queuing at the lights, especially when left turn filter running. Would reduce traffic flow as people would find other routes, which would help air quality at this junction. However, banning the straight on manoeuvre would impact on operation of the Thoroughfare. Either traffic would have to travel along LimeKiln Quay to enter, increasing traffic from this direction, or flow in Thoroughfare may have to be reversed. If flow reversed, lights would then have to accommodate an additional phase to allow traffic to exit the Thoroughfare. Flow into Thoroughfare is light during the day due to access restrictions in force (8% of total flow entering junction from Melton Hill).	low	medium	6
32	Stop the right turn from St John's Street into the Thoroughfare	Traffic flows on St John's Street are approximately a third of those on Melton Hill/Lime Kiln Quay and air quality on the road is currently within the standards. About 7% of the traffic from St Johns Street turns right into the Thoroughfare. However, if this were prevented, motorists are likely to then use Sun Lane, turn right and add to the traffic on Melton Hill approach. This would not alter the traffic using the area of the junction where the air quality problem exists (the Melton Hill arm) and have no impact on air quality.	low	zero	0
33	Alter the filter lights so that they can be seen better	No evidence of motorists not being able to see lights however, some incidents of drivers at front of queue not realising the filter has come on but not significant.	low	zero	0

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
34	Remove traffic lights and have an enter in turn system, move the pedestrian crossing elsewhere	Would operate very similarly to a roundabout - see 23	low	low	3
35	Give more time to Lime Kiln Quay Road traffic to eliminate queuing here.	Lights have been altered to move traffic efficiently through the junction. Allowing extra time for Lime Kiln Quay could delay Melton Hill, especially if the traffic turning left on the filter were behind vehicles waiting to turn right or go straight on. Improving efficiency through the signals would not reduce overall traffic flow. Need to monitor efficiency of signals. Air quality on Lime Kiln Quay Road is within the standards set and therefore any alterations which would increase queues in the area of concern (Melton Hill) would have a negative impact. A more successful solution may be a system to detect queue build up on whichever arm of the junction and to make adjustments to traffic light timings accordingly – see Option 37.	low	zero	0
36	Traffic lights should be altered on Saturdays to reflect long queues that build up on Lime Kiln Quay Road	Modern traffic signal installations allow signals to be programmed to react to changes in traffic flow and adjust the light timings accordingly. Such a system could improve the efficiency of the lights to reduce queuing. However, increasing the efficiency of the signals could make this a more attractive route to drivers and increase the volume of traffic using the junction. May be helpful in conjunction with other action to hold up traffic elsewhere. Air quality on Lime Kiln Quay Road is within the standards set and therefore any alterations which would increase queues in the area of concern (Melton Hill) would have a negative impact. A more successful solution may be a system to detect queue build up on whichever arm of the junction and to make adjustments to traffic light timings accordingly – see Option 37.	medium	low	2
37	Install queue detectors on signals to alter timing changes to reduce queues on the junction of Lime Kiln Quay Road, Thoroughfare and St John's Street	Such a system would reduce queue lengths and improve the efficiency of the lights. However, increasing the efficiency of the signals could make this a more attractive route to drivers and increase the volume of traffic using the junction. May be helpful in conjunction with other action to hold up traffic elsewhere. It is intended to install a queue detection system called MOVA at the lights during summer 2009.	low	medium	6
38	Replace pedestrian crossing at lights with a puffin crossing so that it can detect whether people are waiting to cross or not and change the phasing of the lights accordingly	Would reduce interruptions to the signals by unnecessary pedestrian calls i.e. where someone has pressed the call button but subsequently crosses in a gap in the traffic or where the call has been put in by someone walking past with no intention of crossing. Would reduce driver frustration. No evidence that this occurs frequently at the junction.	medium	Low	2

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
39	Reconfigure the junction so that traffic can only go left from Melton Hill, right and straight on from Lime Kiln Quay Road, and reverse the flow in the Thoroughfare	Traffic from Melton Hill and Lime Kiln Quay Road could flow together, removing the need for one of the traffic signal cycles, except for when there is a need for the pedestrian crossing to operate. However, there would still be a need for traffic to exit St Johns Street, so this cycle would have to remain (the right turn from St Johns Street would be removed as traffic would not be able to enter the Thoroughfare). However, traffic queues would be introduced on the Thoroughfare with traffic waiting to exit, which would mean that an additional cycle would have to be introduced to allow this traffic to exit. The arrangement would reduce traffic queues caused by traffic seeking to go straight on or right from Melton Hill but the additional phase in the signals for Thoroughfare traffic may well negate this benefit. Detailed junction modelling would be needed to see if this would have any effect on air quality.	medium	low	2
<b>Public transport</b>					
40	Park & Ride scheme from Woodbridge Airbase going into Woodbridge for vehicles from the peninsula.	Additional bus services would remove some vehicles entering Woodbridge and possibly some using the junction. All buses would travel via the junction and add to emissions here so would depend on how many cars the buses took off the road as to whether this has a total positive or negative impact. Would need a bus frequency of every 10-15 minutes so costly.	high	Low	1
41	Use smaller buses for routes that go via this junction	Size of buses tends to be commensurate with their use and which route the buses subsequently link into. Also, companies tend to purchase stock that can be used on various routes. Likely to have little effect as engine emissions very similar between small and larger buses. More important is the age of the bus and not the size so need to target this – see Option 43.	high	zero	0
42	Park and Ride scheme into Woodbridge from A12 - maybe even tie in with the Martlesham Park and Ride	Would help reduce overall traffic in the town from visitors/those working in the town travelling from the south and is a possibility. Buses from this site wouldn't use the junction as would enter and exit from the South. As most parking is located south of the junction, it would have little effect on the junction as private traffic would not have travelled via this direction.	medium	zero	0
43	Work in partnership with Bus Operators and the Passenger Transport Unit to investigate improvements to buses using the junction.	Option of setting up a Bus Quality Partnership has been investigated and does not appear to be the best way forward for Woodbridge. Instead work with the Bus Operators to see if anything can be done to help reduce emissions at the junction (cleanest buses on fleet used on routes that go through the junction), and work with Passenger Transport unit at Suffolk County Council to promote bus patronage and look at options regarding future bus contracts.	low	medium	6

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
44	Increased information and public awareness regarding public transport – i.e leaflet drops	Passenger Transport Officer for SCC advised that public awareness is currently poor, there is a website but no-one knows about it. Could do a leaflet drop to all houses at a low cost or other publicity campaigns. Could try and encourage more people onto public transport this way.	low	low	3
45	Increased information and public awareness regarding public transport – 'Individualised travel planning / marketing scheme'.	Passenger Transport Officer for SCC advised that public awareness is currently poor. This involves teams of people who go door to door armed with timetables etc and spend time with residents working out alternatives to car travel for them. If done correctly has been seen to produce reduction in car use by 10-15% in some areas.	high	medium	2
46	Divert traffic from the north and the peninsula onto the train at Melton to get into Woodbridge	If a concession was offered to local residents to park at Melton and get the train into Woodbridge we could reduce traffic entering Woodbridge. Would need to increase parking at the station and increase the train service as currently is not a viable option. Are plans to look at train station at Melton and improve its use anyway.	medium	low	2
<b>Other restrictions</b>					
47	Ban motorbikes and large vehicles from using the junction/keep heavy traffic out of Woodbridge.	HGV's need to use the junction to service the Thoroughfare and deliver local supplies therefore we would not be able to ban them from using the junction. Could put on a ban and allow local deliveries only but this would be the majority of the HGVs anyway. There is no evidence of a significant proportion of through traffic from HGVs. Should any future traffic surveys show that they are significant we will rate this option again. Motorcycles are a very low proportion of the traffic flow. Would be very difficult and costly to police such a ban.	Unacceptable		
48	Reverse the flow in the Thoroughfare	Would remove the turning movements into the Thoroughfare that currently delay some of the vehicles along Melton Hill. Vehicles would still queue on Melton Hill to turn right though. Another phase would have to be added into the signals to allow traffic to exit the Thoroughfare, introducing delays to all the other legs.	low	zero	0
49	No access into St John Street - exit only	Would remove some delays for filtering traffic from Melton Hill but would have no effect on Lime Kiln Quay as straight on traffic does not delay other traffic. If all turns into the road were banned, traffic would increase on Sun Lane, which is not a suitable route for any increase in traffic. The use of Sun Lane would have to be restricted which would have a large impact on local residents and a detour of approximately a mile to reach their properties using Pytches Road/Castle Street. Vehicles would still queue on Melton Hill to go straight on.	low	low	3

	<b>Option description</b>	<b>Comments</b>	<b>Cost Rating</b>	<b>Benefit Rating</b>	<b>Cost/benefit rating</b>
50	Pedestrianise the Thoroughfare / increase the restrictions to 8am-6pm.	Could only partially be achieved, as access required for servicing shops and by residents. Only allowing access to these would reduce the abuse of the current restrictions and remove some of the turning movements and traffic from the area. Would reduce some of the traffic using the junction, particularly at peak periods. Likely to be objections from traders and disabled groups.	low	medium	6
51	Police the Thoroughfare restrictions better - car park attendants.	Would reduce the abuse of the current restrictions and remove some of the turning movements and traffic from the area. It would initially involve police time and subsequent repeat visits to reinforce the restrictions.	low	low	3
52	Pedestrianise the whole area only allowing residents and deliveries at certain times	Would remove most traffic and may resolve air quality issues at this junction. However would divert traffic onto more minor routes as residents and visitors sought to gain access to the area. Unacceptable volumes of traffic on the other routes would cause congestion problems along these routes, most of which are bordered by residential properties. Access would still be needed for deliveries, public transport and emergency services. Would sever the link between Woodbridge and Melton. Volume of traffic displaced and the extra mileage involved would give a net increase in emissions in other areas and may well have serious implications for the viability of the town's attractiveness for shopping.	medium	Medium / high	5
	<b>New Road build/road improvements</b>				
53	Block off the road at Melton Hill Council Offices so there can be no through traffic.	See option 52 above. Would remove most traffic from the junction. However, HGV's would still need to use route to enter the Thoroughfare for servicing, buses would need to use route. Displaced traffic would have to use narrow unsuitable roads in the town for access. General disbenefit due to increase in vehicle miles. Not practicable.	medium	Medium/ high	5
54	Build a relief road/bypass - possibly following the railway line (assumed parallel to the line).	Would allow the junction to be by-passed. However, may compromise any future duelling of the line to increase the capacity of the rail network. Increased use of the railway is much more sustainable than increasing car use along the A12. Cost of building such a road likely to be very expensive - land, flooding risk etc.	Unfeasible		

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
55	Create an exit from the SCDC car park into Deben Road so that council traffic bypasses the junction (would be an exit only and not an entrance)	<p>Would remove some traffic, especially if operated as 'in' mornings, 'out' afternoon. Likely to be expensive - land, construction, may require traffic control at junction with Lime Kiln Quay Road. Extra signals could be used to control queuing on Lime Kiln Quay on the approach to the junction.</p> <p>The Council's Property Services Department and Planning Section looked into this idea many years ago. The Railway Inspectorate had safety concerns regarding times when there would be a number of vehicles entering/ exiting the Council's car park causing queues on Sun Wharf. Queues here could potentially block traffic coming over the level crossings and cars may get stuck on the railway tracks. The Highways authority also had concerns about the junction with Lime Kiln Quay Road and possible queues at peak times. The Council could investigate this option again but it would require a full report which would be costly and the likelihood is that the Railway Inspectorate would again be against the proposal. In addition the Council is currently not sure of the lifespan of the offices at Melton Hill due to the local government review currently being undertaken.</p> <p>The Council has also investigated an exit via the new Deben Mill development but were not granted permission for this from the developers.</p> <p>This is therefore not an option to explore at this time.</p>	Not considered further		
56	Put a mini-roundabout at Pyches Road and Hamblin Road junctions	These could make Melton Hill a less attractive route by introducing delays along the route from Melton traffic signals to Thoroughfare. However, it would make it more attractive for traffic from the Wood's lane roundabout into Woodbridge, seeking to avoid the Woods Lane traffic signals. At Hamblin Road would reduce facilities for pedestrians. At present the signals at this junction introduce gaps in traffic flow leading to the Quayside, increased traffic would be detrimental for pupils walking to the new school.	medium	zero	0
57	Alter the use of Sun Lane so it is not a cut through	This is likely to increase the use of the traffic signal junction as traffic accessing the residential area off Sun Lane would then have to use St Johns Street, adding to the right turning movements and consequently delays to traffic filtering left.	low	zero	0
58	Create a link road from Bentwaters to the A12 that isn't via Melton crossroads	Would reduce vehicles through Melton crossroads (east/west traffic) but would have limited effect on Lime Kiln Quay junction (north/south traffic). Some traffic from Bentwaters probably does use Woodbridge rather than the A12 but a direct link from Bentwaters would do little to remove vehicles from the south east area. The number of vehicles likely to use such a road would be very limited and the cost would be high both in money terms and environmentally. It would be unlikely ever to receive funding.	Unfeasible		

	<b>Plans/policies</b>				
60	Green Travel Plans for Schools - create them where there are none and update existing ones	Rolling programme in county to ensure all schools have a Green Travel Plan by March 2010. New school on Pytches Road has Travel Plan. Evidence of existing reduced vehicle use. Once all schools in area have Travel Plan some reduction in vehicle use. Group being set up to look at schools Green Travel Plans and air quality and how to bring them together, we'll give our support to this for schools in Woodbridge.	low	low	3
61	Increases scrutiny of new planning applications for this area, particularly for housing	Ensure that development is either near sustainable facilities or includes provision for building/linking to them. Use minimum parking standards and include clauses in leases to restrict car ownership. Would slow down the rate of growth in local traffic but would not reduce current traffic. This will be considered through the Local Development Framework but is also on-going under existing Council policies. Consultation with the key people is the critical issue.	low	low	3
62	Create a Green travel Plan for SCDC	Would help reduce some car use, particularly local trips. Would have most impact during peak periods. SCDC Green Travel Plan in early stages of construction.	low	low	3
63	Congestion charging	There is not a significant amount of congestion in Woodbridge to put anything like this in place and there is not a real alternative in the way of Public Transport at this time. If it was only applied to roads that lead to/through the junction it would significantly reduce the amount of traffic but is likely to introduce rat running through other areas of the town unless significant restrictions such as traffic calming are introduced. If introduced on all central roads in the town, it may remove some traffic onto the A12 to circulate the town but is likely to penalise residents. Would be expensive to install and manage.	Unfeasible		
64	Do not allow any more residential development with parking in Woodbridge and only grant permission with non-car use covenants.	Depending on the location of any future housing, this could help restrict long term traffic growth but would have little effect on the current situation. If the housing were aimed at younger buyers it may affect the saleability of property due to the current need to travel to work and lack of suitable public transport links. SCDC Planning Services do not believe that this is a real option, it could be applied to the town centre possibly but not to the wider area.	low	low	3
65	Will the new Army regiments have a Green Travel Plan?	It is unlikely that an area already designated as military will produce a Travel Plan that would be open for public viewing. It would also be difficult to see how regiments would produce a plan for either the serving forces or the families without possible security issues. This is out of our remit, but we can approach them informally to see if they would be willing to put something like this in place.	Not considered further		

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
66	Brief SCDC Planners on Air Quality issues in Woodbridge to increase knowledge - maybe at team meetings	Would help keep issue fresh in the mind and ensure that the impact on Air Quality is considered on planning decisions. Would have little initial direct impact but may help in the longer term. SCDC Planning Services agrees with this option and it could be a topic for Continual Professional Development for Council officers. The main point is ensuring that the consultation processes are in place and working effectively both in relation to individual planning applications and the Local Development Framework.	low	low	3
67	Brief DC Sub-South on Air Quality issues in Woodbridge to increase knowledge	Would help raise awareness of issue and ensure that the impact on Air Quality is considered on planning policy decisions. Would have little initial direct impact but may help in the longer term. The Planning section agrees in principle but thinks that it might be better as a report/presentation to Development Committee or to a joint Development Committee / Green Issues Task Group meeting.	low	low	3
68	Tie Action Plan in with Local Development Framework for the future	Would have little initial direct impact but may help in the longer term by ensuring the traffic impact on the junction was considered. The Planning Section think that tie-in is probably difficult mainly because their work programme seems to be changing all the time and new Regs are expected which may well change things again. Key issue is consultation.	low	medium	6
<b>Other/miscellaneous</b>					
69	Seal up the front of the houses in the affected area and fit ventilation from the rear where the air quality is better.	Would remove problem for residents but is unlikely to be seen as an ideal solution by them. Would not reduce problem, only effect monitoring. SCDC to investigate this option with the Public Sector Housing team.	low	low	3
70	Update the postal districts e.g. so Framlingham does not say Woodbridge afterwards - will help to direct delivery vehicles to correct location and not via Woodbridge	SCDC have approached the Post Office who has confirmed that this is not a viable option. The 'Postal Town' acts as a clearing point for a particular district and is the basic unit of the postal delivery system - it is needed to route mail more efficiently. It is a sorting and routing instruction for the Post Office staff and is not designed for any other use. They would only consider a change if it were operationally necessary and in this case it is not and would not be viable. No further action on this suggestion.	Not considered further		

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
71	HGV's from (Connells) Jewsons add to the problem - assess this.	There is anecdotal evidence that lorries servicing the builders yard delay traffic exiting the signal junction as they manoeuvre into Sun Lane. The impact of these vehicles on other use of Sun Lane for access to the residential area should also be considered. Reducing obstruction of the lane may allow more people to use it for access to the residential area but care needs to be taken not to over use this unsuitable road. As servicing vehicles deliver from Rendlesham/Bentwaters area, it may be possible to discuss delivery times/size of vehicles with the distribution depot. Connells recently taken over by Jewsons. SCDC has contacted Jewsons and concluded that nothing voluntary can be done at this time.	Not considered further		
72	Try and decrease general traffic in Woodbridge as it has increased significantly recently.	This would hopefully be the effect of options chosen for the junction. No cost-benefit analysis therefore needed for this in its own right.	n/a	n/a	n/a
73	Full traffic analysis of all of Woodbridge to see whether whole traffic system in Woodbridge needs altering	Would really be required to give base data for traffic routes and where changes could really effect use of signals i.e. actual percent of traffic using the road as a through route. Would also help to identify where traffic may migrate to and what other roads may need action to reduce moving the problem. Relatively expensive to obtain data but useful in giving proper considered analysis of proposed action. No cost-benefit analysis to be undertaken as obtaining relevant traffic data will be part of our remit for taking the Action Plan forward.	n/a	n/a	n/a
74	Look at measures to reduce traffic queues on the A12 (northbound between Ipswich Road and Grundisburgh Road, southbound between Woods Lane and Grundisburgh Road) to make this more attractive as a route round the town.	Traffic queues on the A12 at peak times could make using the B1438 as a through route attractive. Removal or substantial reduction of the traffic queues on the A12 would make this a more attractive route for through traffic and reduce the number of vehicles using the junction. There is anecdotal evidence only of traffic using this as a through route. Should traffic surveys indicate otherwise we will rate the option again.	medium	medium	4

	Option description	Comments	Cost Rating	Benefit Rating	Cost/benefit rating
75	Look at interrupting the traffic flow along B1438 to make this less of an attractive route but not sufficiently to create rat runs along unsuitable routes in the town.	Measures to reduce the attractiveness of this route to through traffic could help reduce the traffic flow and its effect on air quality. However, these interruptions would need to be seen as reasonable and necessary. Building additional pelican crossings along the route would help increase the time taken for traffic to use the route, would help people cross the road, be seen as reasonable by motorists and would not unduly interfere with traffic so that drivers divert from the road onto unsuitable routes. Possible locations - California junction (could also include crossing for cyclists), near the new health centre, near Pytches Road/SCDC offices. There is anecdotal evidence only of traffic using this as a through route. Should traffic surveys indicate otherwise we will rate the option again.	medium	medium	4
76	Tree planting at Suffolk Place to try and break up any recirculation of pollutants in this area and act as an absorbent for some of the pollutants from the vehicle emissions.	It is possible that emissions from vehicles queuing on Melton Hill at the junction are being picked up by the wind and deposited on the opposite side of the road – within the AQMA – causing the elevated levels recorded here. If the wind flow could be broken up by the use of vegetation this may reduce the recirculation of emissions. Would need to use evergreens and also to look into any particular species which can take up NO <sub>2</sub> . May be possible at Suffolk Place if they were willing but not viable slightly further along the AQMA as the premises border the road here. However, research indicates that in practice this will have a negligible effect.	low	low	2
	Transport Schemes (obtained from LAQM.PG(03)) not included in the list of options already				
77	Testing emissions from cars at the roadside	Could be something that SCDC could bid for Grant funding to do in the future – would be on an informal 'information' basis to start with. Would be hard to find a suitable area to pull over the cars for the test. Will require police presence.	medium	low	2
78	Taxi licensing	SCDC Licensing Section register all taxis in the district. All taxis, in addition to the annual MOT, must have a 6-monthly vehicle check which includes emission testing to the MOT standard. SCDC current standards for mechanical tests are very high and this is deemed sufficient at the current time.	Not considered further		
79	Travel Plans for Businesses	SCC Travel Plan Co-ordinator works with businesses to encourage staff to decrease the number of single occupancy vehicles by encouraging cycling, walking, lift-share etc. If we provide them with a list of businesses in Woodbridge they would be happy to approach them to see if they can help.	zero	low	4



