THURROCK COUNCIL

Thurrock Traffic Management Plan: 2012 - 2026

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First refresh due by June 2015

SMALL FISH

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1 Introduction

1.1 Executive Summary

The Traffic Management Act 2004 introduced a new network management duty for local traffic authorities. As a result it is now a requirement for the Council to manage the highway network to secure the expeditious movement of traffic. Thurrock Council, with strategy consultants, Small Fish, has developed this Traffic Management Plan in order to both help it manage congestion and to show how it is complying with the general purpose and specific requirements of the Traffic Management Act 2004. It therefore set outs the traffic management issues the Borough faces and what the Council plans to do to address those issues.

In developing the Traffic Management Plan, a comprehensive analysis of the policy background was carried out. This found that tackling congestion should be a priority given the adverse impact congestion has on CO_2 emissions and particularly on economic productivity and competitiveness. Furthermore, the need to promote economic growth is a key strategic challenge for the Council and it is accepted that congestion can be a barrier to job creation and attracting inward investment. The importance of this is multiplied in Thurrock because of the Borough's role in delivering significant regeneration and growth as part of the Thames Gateway. The plans for regeneration and growth in Thurrock are set out in the Council's *Local Development Framework*, with a spatial focus on the Thurrock Urban Area and at London Gateway.

In order to gain an understanding of how best to deliver this policy background, a thorough analysis and review of the available evidence relating to congestion was carried out. In analysing the evidence and policy context, the following *key* issues and challenges were identified and these will be addressed through this Traffic Management Plan:

- Information on roadworks and congestion incidents in general is currently patchy;
- There are a number of causal factors related to congestion, including capacity/traffic flow, Road Traffic Accidents, and roadworks;
- The forecast increase in traffic as a result of the growth and regeneration is likely to lead to an increase in congestion along certain routes, such as the A13 and A1306;
- Traffic flows on certain roads, such as the A13, are very high, suggesting that the evident frequent delays on these roads will adversely impact on the journeys of a larger number of vehicles;
- Thurrock has a large proportion of the road network within Flood Risk Zone 3. It is possible that incidences of roads flooding and disrupting traffic will increase in the medium to longer term as a result of climate change;
- Some routes, notably the A13, have existing major congestion problems which seem to be increasing and are forecast to worsen with the planned growth and regeneration; and

- Congestion problems on the M25 results in traffic diverting onto local roads in Thurrock, which causes local congestion.

There are a number of ways to tackle congestion. These can be grouped, as described in the *Thurrock Transport Strategy*, as:

- Delivering a targeted programme of measures to encourage a modal shift to more sustainable modes of transport such as walking and cycling;
- Managing the existing network so as to improve its efficiency; and
- Delivering additional highway infrastructure where the other two approaches are not adequate.

The Traffic Management Plan focuses on the second of these and in this context the plan includes a number of operational policies. These policies aim to address the issues identified and will guide investment and implementation decisions over the coming years. The key operational policy areas are:

- Revising the network of Traffic Sensitive Streets and use this as the focus of measures and actions to tackle congestion;
- Delivering affordable small-scale engineering solutions on those Traffic Sensitive Streets which are congested;
- Critically, enhancing the role and function of the Essex Traffic Control Centre, in terms of providing better congestion information, managing traffic through Urban Traffic Control systems and disseminating congestion information to the travelling public and businesses;
- Improving the co-ordination of planned roadworks so as to minimise their impact on congestion; and
- In the medium to longer term, developing contingency plans for Traffic Sensitive Streets at risk of flooding

In order to focus and galvanise action in the short term, the Traffic Management Plan includes a delivery plan which sets out high, medium and low priority measures and actions. High priority items include:

- Planning for the Olympics by keeping clear those key routes critical for the games;
- Holding a range of discussions with Essex County Council and the Essex Traffic Control Centre to investigate how better use can be made of the existing service and what the options are for enhancing the service provided;
- Revising the Traffic Sensitive Streets network;
- Improving congestion information and analysis, and identifying more definitively where congestion frequently happens;
- Addressing HGV traffic on the A126 London Road; and
- Developing clearance plans at key pinch points in order actively to clear an incident via a fully automated intervention strategy.

Other measures currently either medium or low priority might get promoted to a higher priority as the plan gets delivered. For example, the development of a permit scheme has, because of the high cost involved, been made a low priority. However,

if the high priority items prove insufficient to improve the management of congestion, it is the sort of measure that could be revisited.

1.2 Background

The growth and change Thurrock needs to accommodate is significant. It is at the heart of the Thames Gateway, Europe's largest regeneration programme, with half of the outputs being delivered in Thurrock, bringing many opportunities, but also challenges. Thurrock needs to plan to accommodate up to 18,500 new homes over the period 2001 to 2021 and up to a further 4,750 dwellings to 2026 and beyond in order to provide a 15-year supply, as well as 26,000 new jobs. The London Gateway deep sea container port development and further development at Lakeside and Tilbury docks are both highly significant. The pressure for development and the need to ensure good quality open space compete and the Council and its partners take a strong lead in maintaining the correct balance between protecting the rural environment and enabling growth in employment and housing.

In the shorter term, the hosting of the 2012 Olympics will have an impact on Thurrock. The A13, which runs through Thurrock, is part of the Olympic Route Network for Olympic events at Hadleigh in Essex, and Lakeside will be used as a Park and Ride site to serve the main Olympics complex at Stratford, East London.

This snap shot of Thurrock shows how well connected Thurrock is. There has been a link between the transport system and prosperity throughout history. Transport's key economic role is to support the success of highly productive economic centres in the global marketplace and to enable the efficient movement of goods and people. The connectivity of the transport system as a whole in Thurrock is therefore critical in enabling people to get to work and for the freight sector to deliver goods. However, good connectivity can often result in congestion, which causes frustration and delay and has a significant adverse impact upon the local economy. Additionally, the environmental and health impacts of stationary or slow moving traffic is felt in terms of poor air quality, leading to associated health problems, particularly for people with respiratory disease. Congestion can also contribute to climate change by increasing carbon dioxide emissions from transport. Furthermore, congestion affects the quality of life for residents and visitors by contributing to the general degradation of public spaces.

Tackling congestion will play a key role in improving Thurrock's productivity and competitiveness, reducing business costs and supporting economic growth. It will also contribute to better quality of life by improving journey experience and should reduce CO_2 emissions as long as the reduction in congestion does not lead to any further growth in traffic. As the overarching transport plan for Thurrock, the *Thurrock Transport Strategy: 2008 – 2021* (to be refreshed in 2012 to cover the period to 2026) contains a strategy through which to reduce congestion by aiming to (in priority order):

- Deliver a targeted programme of measures to encourage a modal shift to more sustainable modes of transport such as walking and cycling, particularly in the urban area;
- Managing the existing network so as to improve its efficiency; and
- Delivering additional highway infrastructure, where modal shift and network efficiency improvements are insufficient.

This Traffic Management Plan is focused primarily on the second priority, that of managing the existing network and dealing with the traffic presented on it.

With regard to the first priority, Thurrock Council was successful in securing £5m from the Department for Transport's Local Sustainable Transport Fund in 2011. This will be invested in transport improvements primarily in the Thurrock Urban Area with a view to delivering a modal shift away from car use. This in turn will result in economic benefits as a result of reduced congestion and CO_2 benefits as a result of reduced traffic. This will be supplemented by the on-going improvements the Council implements for sustainable modes of transport, such as improvements to bus stops, cycle routes and footways.

With regard to the final priority of additional highway infrastructure to increase capacity on the roads, the Council has an on-going programme of delivering small scale improvements, but key major improvements that are being developed or implemented by the Council or the Highways Agency include:

- M25 widening between junctions 27 and 30 (already being delivered by the Highways Agency);
- M25 junction 30/31 (postponed until after 2015); and
- A13 from the A128 to the A1014, and the A1014 from the A13 to London Gateway (part of the improvements associated with the London Gateway port development).

Furthermore, The Department for Transport and Highways Agency will be working with key partners, including Thurrock Council, over the coming years to address the issue of congestion at the Dartford Crossing. Whilst this is very much a work in progress, the priorities of the Council and the Local Economic Partnership[1] are:

- Reducing congestion at the existing Thames Crossing through 'free-flow charging'; and
- Maintaining the current level of concessions for residents of Thurrock (and Dartford) and regular users to encourage local mobility across the river.

If there is a proven need after taking account of these measures then the case for increasing the capacity on the river crossing should be explored, including:

- By enhancing the existing infrastructure to provide for separate capacity for local traffic distribution to relieve pressure;
- By planning and building a new river crossing linking in to existing highways infrastructure wherever possible expanding or upgrading as appropriate; and
- By building new highways infrastructure only where absolutely necessary.

[1] Covering Essex, Kent and East Sussex

Included amongst a package of secondary priorities for the Local Economic Partnership are improvements to the A13.

Under the Traffic Management Act (2004), the Council has a duty to keep traffic, including pedestrians, moving. This duty has a particular resonance in Thurrock. Many parts of the road network suffer from significant traffic delays, and this is forecast to worsen with the level of growth being delivered.

Although there is no specific requirement within the Traffic Management Act 2004 for Thurrock Council to produce a Traffic Management Plan, the Council considers that by doing so it can demonstrate its commitment to the duty and at the same time provide an extremely useful document that not only sets out what the Council is doing to address congestion[2], but which also acts as a valuable management tool for guiding the improvements and processes necessary to keep traffic moving. This document will therefore be used to drive and manage network improvements between 2012 and 2026, albeit with regular reviews along the way to ensure it remains fit for purpose.

1.3 Policy Context

A thorough review of the policy background found that tackling congestion should rightly be a priority for the Council given the adverse impact congestion has on CO_2 emissions and particularly on economic productivity and competitiveness. This was fully recognised in the Thurrock Transport Strategy, which set an approach towards tackling congestion through a combination of modal shift to reduce traffic, improved network management (the focus of the Traffic Management Plan), and new highway infrastructure.

Furthermore, the need to promote economic growth is a key strategic challenge for the Council and it is accepted that congestion can be a barrier to job creation and attracting inward investment. The importance of this is multiplied in Thurrock because of the Borough's role in delivering significant regeneration and growth as part of the Thames Gateway. The plans for regeneration and growth in Thurrock are set out in the Council's *Local Development Framework*, with a spatial focus on the Thurrock Urban Area and at London Gateway. There is therefore a clear need to develop a Traffic Management Plan to enable the Council to meet these challenges as well as to demonstrate how it meets the requirements of the Traffic Management Act.

The following sections describe the policy context in more detail.

[2] The Council's approach to demand management, which focuses on reducing traffic volumes, is set out in the Local Transport Plan. The Traffic Management Plan is concerned only with the traffic that is presented on the network, not with efforts to reduce that traffic.

1.3.1 Traffic Management Act 2004

The Traffic Management Act 2004 introduced a new network management duty for local highway authorities. As a result it is now a requirement for the traffic authority to manage the road network to secure the expeditious movement of traffic on the highway network and to facilitate the same on the network of others. The main purpose of the Traffic Management Act is to deal efficiently with the traffic presented on the network, both now and in the future, and tackle the related causes of congestion and disruption on the highway. The Traffic Management Act also makes it clear that the network management duty relates not only to vehicular traffic, but to pedestrians, cyclists and other road users.

The Act sets out a number of specific requirements. **Appendix A** covers how this Traffic Management Plan aims to meet these requirements.

1.3.2 New Roads and Street works Act 1991

This was the main item of legislation that enabled local authorities to co-ordinate street works by utility companies with a view to minimising traffic disruption, including the duty to co-ordinate and the duty to maintain a 'register'. The legislation also allows highway authorities to:

- Establish permit schemes, under which promoters of street and highway works must obtain a permit to allow the works to be executed; and
- Levy 'overrun charges' where street works are not completed within an agreed, reasonable period of time.

1.3.3 Creating Growth, Cutting Carbon Making Sustainable Transport Happen. The Local Transport White Paper 2011

In its 19th January 2011 Local Transport White Paper, the Government set out its policy direction on local transport. The White Paper sets the Government's approach to shorter local journeys (trips of five miles or less) with the intention to support its wider goals of promoting economic growth and reducing carbon. It also establishes that creating economic growth and tackling climate change by reducing CO_2 emissions are the primary objectives at the national level for transport and argues that by offering sustainable travel options, local authorities can change people's travel behaviour to favour sustainable modes.

1.3.4 Draft National Planning Policy Framework

The Government has published a draft National Planning Policy Framework that sets out its policies for different aspects of land use planning in England. The Framework states that where practical, encouragement should be given to transport solutions in facilitating development which support reductions in greenhouse gas emissions and reduce congestion. The planning system should therefore support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport. To this end the objectives are:

- Facilitate economic growth by taking a positive approach to planning for development; and
- Support reductions in greenhouse gas emissions and congestion, and promote accessibility through planning for the location and mix of development.

1.3.5 The Greater Essex Integrated County Strategy

The strategic focus of the Integrated County Strategy includes promoting economic growth and development in the Thames Gateway South Essex area and the key town of Thurrock itself. Its vision for the Thames Gateway South Essex area is 'to undertake a major economic, social, and environmental transformation of the urban areas in the sub-region through a programme of large scale regeneration, employment-led development and transport improvements, so that its local economy, quality of life of residents, and its natural and built environment are significantly improved'. Relevant key priorities include enhancing connectivity to jobs and services, and delivering reliable and predictable journey times and reducing congestion and crowding on transport networks.

1.3.6 Thurrock Local Development Framework

The transport policies in the Local Development Framework aim to reduce the forecast growth in traffic as a result of the housing and jobs growth, especially in the urban area. The Local Development Framework supports the delivery of additional highway capacity, including through the use of technology and information, but only where modal shift will be insufficient to address congestion. As part of ensuring the deliverability of the LDF, the Council commissioned Colin Buchanan and Partners to identify and estimate the cost of infrastructure required to deliver the planned growth. This included identifying road links and junctions that would be over-capacity and congested as a result of the forecast traffic growth.

The Local Development Framework also sets out that the Council will work with partners to deliver improvements to national and regional transport networks to ensure growth does not result in routes being above capacity. Priority will be given to routes that provide access, especially for freight, to Strategic Employment Sites, the ports at London Gateway, Tilbury and Purfleet, and regeneration areas.

1.3.7 Thurrock Transport Strategy 2008 – 2021

Although the strategy element of the Council's third Local Transport Plan is shortly to be refreshed to take the time horizon to 2026, the fundamental policies and objectives are unlikely to change significantly. The strategy for tackling congestion is to, in priority order:

- Deliver a targeted programme of measures to encourage a modal shift to more sustainable modes of transport such as walking and cycling, particularly in the urban area;
- Managing the existing network so as to improve its efficiency; and
- Delivering additional highway infrastructure, where modal shift and network efficiency improvements are insufficient.

The strategy also sets out the types of route that should have priority for network management or infrastructure improvements. Priority should be afforded to:

- Economically Important Routes, which are those where the adverse impact of congestion on the economy could be expected to be much greater than similar levels of congestion on other routes;
- Roads suffering the worst congestion;

- Core walking and cycling routes; and
- Key public transport routes.

Network management improvements could also be delivered around Grays town centre, around South Stifford as a result of the traffic study, and around Lakeside as part of the Local Development Framework.

In Thurrock, the M25 and A13 are routes of national and regional importance. Adverse traffic conditions on these routes often have a knock-on effect on local roads, leading to localised gridlock on occasion and impacting negatively on economic productivity. The Dartford Crossing adds an additional element of traffic risk, as the bridge and the tunnels are more sensitive to accidents and congestion.

The strategy sets out policy measures to improve network management and efficiency:

- Enforcement of parking and waiting restrictions as badly parked vehicles can reduce network efficiency;
- Co-ordination of street works and ensuring that road works are scheduled for times when the least disruption will be caused;
- Real time driver/traveller information, such as to direct motorists away from congestion, including making use of the Essex Traffic Control Centre;
- Rationalisation of road signs to improve direction signing and reduce sign clutter; and
- Working in conjunction with Essex County Council to use Urban Traffic Management and Control as a way of monitoring, operating and controlling traffic signals.

1.3.8 Transport Asset Management Plan

The Thurrock Transport Asset Management Plan helps the Council to meet a number of statutory duties, such as the Traffic Management Act 2004. The Thurrock TAMP shows that the Council is in a good position with some of its transport assets in terms of their condition, such as roads. However, it recommends giving a greater priority to other asset groups, notably street lighting, drainage and traffic signals.

1.3.9 Shaping Thurrock Community Strategy 2011- Towards Thurrock's Centenary

The vision sets out that the Council and its partners want 'Thurrock to be at the dynamic heart of the Thames Gateway, a place of ambition, enterprise and opportunity, where communities and businesses flourish'. To achieve this vision, they have identified five priorities with related objectives. One of these priorities in particular relates to the Traffic Management Plan, which is the priority to 'encourage and promote job creation and economic prosperity'. Objectives that relate to this are:

- Delivering new sites for employment to create jobs over the next 25 years;
- Improving infrastructure to enable delivery of new employment, housing and community facilities; and
- Collaborating with key partners to deliver major regeneration projects.

2 Evidence and Issues

2.1 Evidence

In determining the issues and developing objectives to tackle them, it was first necessary to analyse evidence pertaining to traffic management and congestion incidents in Thurrock. This evidence is fully outlined in **Appendix C**, but is summarised in the following sections below.

2.1.1 Traffic Growth

Overall traffic levels have grown by 3% in Thurrock since 2002. This is predominantly accounted for by significant increases in goods vehicles, particularly Light Goods Vehicles (LGV), but is tempered by significant decreases in buses and two wheeled motor vehicles. Traffic levels continued to increase through 2008, but fell in 2009 and again 2010. This traffic growth pattern is likely to correspond with economic fluctuations; traffic levels grew steadily throughout the economic boom years from 2002 – 2008, but began to fall as soon as a recession took hold in 2009.

When looking at the five-year trend of growth the majority of vehicle classes have decreased, showing that most of the 10 year growth can be accounted for between 2001 and 2008. The average annual rate of traffic growth for all motor vehicles is around 2%. However, this should be treated with caution given the significant swing between growth and decreases from 2009 onwards.

2.1.2 Traffic Composition

In Thurrock, the majority of traffic flows arise from cars at 74%, with another 25% comprised of goods vehicles. Regional composition shows 79% of traffic flows are comprised of cars and 20% are goods vehicles, highlighting the scale of Thurrock's logistics economy. Thurrock's traffic composition has remained relatively unchanged throughout the past 10 years, albeit with some marginal shifts from heavy goods vehicles towards light goods vehicles.

2.1.3 Traffic Spatial Distribution

The spatial distribution of annual average daily traffic flows for all vehicle classes throughout Thurrock identifies that those roads with the highest traffic levels include the M25, the A13 and to a lesser extent the A1306 and A1089.

As a result of the local logistics economy, there are high levels of Heavy Goods Vehicles (HGVs) on the road network and HGV traffic has grown in Thurrock by 5% between 2002 and 2010. However, HGV growth has slowed down in recent years, with five-year growth at -2%, likely to be a result of the economic downturn. Spatially, HGV flows are highest in Tilbury approaching the port, the industrial waterfront areas in Purfleet, the M25 and along the A13, particularly at the junction with the Dock Approach Road to Tilbury.

2.1.4 Future Traffic Growth

The planned expansion of 23,250 dwellings and provision of 26,000 jobs by 2026 will put enormous pressure on Thurrock's transport network. Transport Modelling undertaken by Colin Buchanan on behalf of Thurrock Council in 2010 highlighted numerous parts of the highway network (not including the M25) that are expected to be over or approaching capacity in 2021 and 2025 against a baseline scenario leading to queuing, increased journeys times and obstructed traffic flows.

In the 2006 baseline year, only four junctions and four links were reported as being above capacity (above 100%) in the base case, whereas a number of junctions and a further four links were reported as being above the desired capacity of 85%. The following junctions were found to be above capacity under existing traffic flows and this can be used to determine where congestion in Thurrock currently occurs:

- B186 Stifford Hill/B186 Pilgrims Lane (Junction 12) in the North Stifford area
- A126 Stanley Road/A126 Clarence Road Grays town centre (Junction 106)
- A126/Devonshire Road (Junction 103) in the South Stifford Area
- A13/A1012 (Junction 14)

In 2021, the main changes to the highway network are likely to arise from the planned growth in jobs and housing in the Local Development Framework. This causes an increase in congestion along the A13, with the greatest increase being between the A128 and A1014 (between Junctions 23 and 24). The main changes in junction congestion are also along the A13, with Junctions 14 (A1012) and 24 (A1013/A1014) in particular needing attention.

The morning peak hour only has a limited impact on the rest of the highway network. The only junctions that have been identified as requiring attention in the morning peak hour, other than those that were identified in the baseline case are Junction 3 (A1090/A126 /Purfleet Bypass) in Purfleet and Pilgrims Roundabout (Junction 13).

As with 2021, the main changes to the 2025 highway network are considered to be from the planned growth in jobs and housing. This again causes an increase in congestion along the A13, with most links on the A13 within the area of study being above desired capacity. Again, the worst section is between the A128 and A1014 (between Junctions 23 and 24).

The main changes in junction congestion are also along the A13, with Junctions 14 (A1012), and 24 (A1013/A1014) in particular needing attention. Elsewhere, Junction 11 (B1335/B186 South Rd/B186 Stifford Hill), in South Ockendon, requires attention in addition to the junctions that were identified as requiring attention in the base case.

It should be noted that in addition to on-going traffic management measures, both efforts to promote modal shift away from car use and the provision of additional highway capacity will both help to address these challenges. With regard to modal shift for example, key developers have or will have operational travel plans to target modal shift. DP World/ London Gateway and Lakeside both have significant travel plans in place or under development. Furthermore, as part of planned growth the council reaches agreement with developers as to the required highway improvements necessary to mitigate the adverse impacts of increased traffic caused

by the development. DP World/ London Gateway for example will be improving both The Manorway and parts of the A13. Furthermore, developers often implement their own means of traffic management. DP World/ London Gateway will, for example, use a vehicle booking system for HGVs accessing the port area.

2.1.5 Journey Times and Speeds

Journey times along local authority managed A roads (therefore not including parts of the A13 and the M25 and A1089) in Thurrock are 21% faster than regional journey times and 34% faster than national journey times. Although journey times were improving between 2007/08 and 2009/10, they have reduced in the past year by 2.6%, showing a possible worsening picture of congestion in terms of local journeys times compared to a national and regional reduction of only 0.4% and 0.6%, respectively.

Average journey speeds in Thurrock are 27% faster than regional journey times and 53% faster than national journey times. Again, although journey speeds were generally improving between 2007/08 and 2009/10, they have reduced in the past year by 2.7%, showing a possible worsening picture of congestion in terms of local journeys times compared to a national and regional slowing of only 0.3% and 0.8%, respectively. This, coupled with increasing journey times may indicate that Thurrock's roads are becoming congested at a faster rate than elsewhere.

Congestion on Thurrock's strategic road network (M25/A1089 and parts of the A13) also shows a worsening picture of congestion. Although there has been a reduction in congestion indicators from Aveley to Tilbury, there has been a 1% reduction in speed and a 9% increase in delays per 10 miles from Tilbury toward Aveley between 2006 and 2009. Traffic along this route is likely to increase significantly with planned growth, impacting further on congestion, particularly when the new London Gateway port opens. Further congestion along this route may have economic impacts across the region and the UK.

2.1.6 Public Transport

Bus punctuality in Thurrock has improved over the past five years, with the percentage of buses starting routes on time has increased between 2007 and 2011 (to September) – from 83%% to 86%. However, despite good levels of bus punctuality, there remain locations in Thurrock where buses are regularly held up as a result of congestion.

2.1.7 Incidents

Incidents of congestion can be caused by unplanned events (such as the weather, vehicle breakdowns, Road Traffic Accidents and general queuing as a result of high traffic flows) or planned events (such as planned roadworks, football matches or Christmas markets). In Thurrock, the Essex Traffic Control Centre tallies and reports these incidents regularly, including by sending the Council monthly reports.

According to these monthly reports, between September 2010 and August 2011, 695 congestion incidents were reported as unplanned in Thurrock, 78% of which were reported as general queuing incidents (mainly as a result of high traffic flows) and 22% which were accident related. However, detailed analysis of those unplanned incidents occurring in August 2011 found that around one third of those incidents

reported as general queuing incidents were in fact caused by planned roadworks, such as at Sadlers Farm on the A13, and so not unplanned at all. The data is therefore a little unreliable. Nevertheless, it is the case that many incidents are unplanned and are 'general queuing' related to high traffic flows.

Anecdotal evidence indicates that the worst road for disruption caused by emergency, un-planned street works is the A126 London Road, due to emergency repairs to old gas supply infrastructure. Another road often affected by emergency street works is South Road in Ockendon, which is often used by drivers as an unofficial diversion route when the M25 is congested. Emergency street works along this road can then cause very severe disruption. Emergency roadworks by utilities also cause considerable congestion on routes around Lakeside, especially during the Christmas period.

Planned incidents are those that are known to cause congestion and delay in advance, such as events and road closures for maintenance purposes. From the Essex Traffic Control Centre data, between September 2010 and August 2011, 41 congestion incidents were reported as being caused by planned events on Thurrock's road network, with 59% of these related to road works and 41% attributed to other events (including football matches). However, the Council know (see above) this is likely to an underestimate for roadworks as incidents caused by planned roadworks, such as at Sadlers Farm on the A13, are often misreported as 'general queuing' incidents. Further Thurrock Council does not inform ETCC of its planned roadworks or events, and so many could be reported as unplanned incidents under 'queuing'. The most common month for planned incidents was October 2010 (17), of which 14 were football match related, often on a Monday.

2.1.8 Road Traffic Accidents

Road Traffic Accidents can cause significant delays. In 2010, there were 426 Road Traffic Accidents in Thurrock, including three accidents resulting in four fatalities. The number of Road Traffic Accidents has dropped significantly over the past five years by 18% since 2006. The severity of Road Traffic Accidents is also an important consideration in traffic management, as the more serious (or even fatal) the accident, the more delay is likely to be felt.

It is also important to consider the road classification where the majority of accidents take place, as high incidence of accidents on A roads or the motorway are more likely to cause delay to a greater number of people as these roads often have the highest number of traffic movements. In Thurrock the majority of Road Traffic Accidents occurred on A roads in 2010. Although many were also on unclassified roads, any delays on these roads are less likely to cause significant traffic management issues.

Spatially, the clustering of Road Traffic Accidents is also necessary to consider in order to understand where contingency plans or traffic management measures may be required either to reduce the number of accidents or to deal efficiently with subsequent traffic management issues caused by the Road Traffic Accidents. The majority of Road Traffic Accidents occurred on the A13, followed by the M25 and the A126. Unfortunately, these roads also have the highest number of annual average daily traffic flows, meaning the Road Traffic Accidents on these roads are likely to

cause the greatest number of traffic management incidents and issues resulting from delays.

The speed limit on the roads where accidents take place is not only correlated to the degree of injuries likely to be sustained, but is also likely to impact on traffic and journey times, particularly if taking place on high speeds roads. The largest number of Road Traffic Accidents in Thurrock in 2010 took place in 30mph speed limit zones, closely followed by 70mph speed limit roads.

2.1.9 Flood Related Incidents

Weather can play a role in causing traffic delay during adverse weather events and as such warrants consideration in planning for traffic management. In particular, flood events can lead to severe traffic disruption across the transport network. Thurrock is relatively low lying with large swathes of land classed as being in high risk flood zone. In addition to existing flood conditions, climate change may further exacerbate weather related traffic incidents. The UK Climate Impacts Programme (2009) show that, on a local level for Thurrock, annual mean temperature increases are predicted, although there appears to be very little seasonal variation within these temperature increases. The Thurrock area is likely to experience no changes in *overall* annual precipitation, but there may be significant increases in winter rainfall and significant decreases in summer rainfall. This is likely to lead to drier summers and wetter winters. Due to Thurrock's position in relation to flood risk, increased flooding from increasing winter precipitation currently poses a threat to Thurrock's existing transport network.

2.1.10 Motorway Incidents

The Highways Agency follows an Emergency Diversion Routes Operation Toolkit, published in 2004, when incidents occur along the motorway. Due to the location of the M25 running through Thurrock, when incidents occur on certain parts of the M25, traffic will be diverted on to roads managed by Thurrock Council.

2.1.11 Economic Impacts

According to the 2008 study called 'The Transport Economic Evidence Study' (TEES) by Steer Davies Gleave on behalf of the East of England Development Agency, one of the largest traffic flows between the region's 'engines of growth' (those areas where economic growth is focussed) is between the Thames Gateway and the London Arc (an area to the north of London). This traffic will mainly use the A13 and M25 within Thurrock. The report also found that all flows from the other 'engines of growth' to the Thames Gateway suffered from moderate to high congestion. The report also found that the Strategic Road Network in Thurrock (A13, A1089, and the M25) would suffer from significant increases in congestion by 2021, including stretches where it might exceed a 20% increase, such as on the A1089 and the A13/M25 junction. Furthermore, productivity losses as a result of congestion in 2021 were expecting Thurrock to be amongst the worst affected in the region.

2.2 Issues and Challenges

In analysing the evidence and policy context, the following issues and challenges were identified and these will be addressed through this Traffic Management Plan:

- Information on roadworks and congestion incidents in general is currently patchy and unreliable. More data could be collected and more comprehensive analysis conducted so as to more accurately identify problems and their causes;

- There are a number of causal factors related to congestion and delays, including capacity/traffic flow, Road Traffic Accidents, roadworks, high numbers of HGVs, and events or activities on the highway. This suggests a range of interventions will be required. Furthermore, some key routes seem to be particularly susceptible to congestion caused by a range or combination of causal factors, such as the A13 and A126;

- Although evidence on traffic speeds and journey times suggests that traffic flow and congestion have a complex relationship, the forecast increase in traffic as a result of the significant growth for which Thurrock is planning (especially at Lakeside and London Gateway) is likely to lead to an increase in congestion along certain routes;

- A large proportion of Thurrock's traffic is composed of goods vehicles, which tend to be very time/punctuality dependent. This suggests that any delays encountered by numerous good vehicles on roads in Thurrock could have a disproportionately adverse impact on the economy. Forecast traffic growth is expected to cause worsening congestion on a number of roads with high HGV flows, such as the A13, potentially exacerbating the economic impact, especially for growth areas such as London Gateway;

- Traffic flows on certain roads, such as the A13, are very high, suggesting that the evident frequent delays on these roads will adversely impact on the journeys of a large number of vehicles. Forecast traffic growth is likely to cause greater congestion at a number of links and junctions on these high traffic flow roads, again particularly the A13;

- Current good traffic speeds and journey times on local roads compared to elsewhere needs to be retained, particularly against the background of forecast traffic increase;

- Very few Road Traffic Accidents or congestion incidents in Thurrock are caused by adverse weather conditions, suggesting that existing practices, such as gritting, work well;

- Very few congestion incidents in Thurrock are caused by poor parking, suggesting that the existing practice and enforcement are working well;

- Road Traffic Accidents are a significant cause of congestion incidents, especially on particular routes such as the A13;

- Thurrock has a large proportion of the road network within Flood Risk Zone 3, with the associated risk of disruption and safety caused by flooding. It is likely that incidents of roads flooding will increase with climate change;

- Bus journey reliability has been getting better. This is important both to promote modal shift and because buses carry more passengers per vehicle than cars and so any delays will adversely impact on more people. Certain congestion hot-spots are evident, however, where buses regularly get held up;

- Some routes, notably the A13, have existing major congestion problems which seem to be getting worse and which are forecast to get even worse; and

- Congestion problems on the M25 sometimes results in traffic being diverted onto local roads in Thurrock, which causes local congestion, especially if other factors such as roadworks on those diversionary routes are concurrent.

3 Traffic Management Strategy

3.1 Aims and Objectives

The purpose of this Traffic Management Plan is to meet the requirements of the Traffic Management Act and address the issues and challenges identified from the evidence analysed. As outlined in **Section 1.3.1**, the mainstay of the Traffic Management Act is to keep traffic flowing. The overall aim for this Traffic Management Plan is outlined below.

AIM

To facilitate traffic flows and reduce the number and duration of congestion incidents through an effective network management regime.

In meeting this aim, the following objectives have been developed:

1. To reduce the number of congestion incidents and disruption related to:
   - Roadworks;
   - Road Traffic Accidents;
   - Events; and
   - Parking.
2. To continue to minimise incidents, delays and safety issues related to severe weather
3. To maintain and, where possible, improve journey times and speeds and therefore improve journey reliability
4. To make the best and most effective use of data collection and information analysis

To meet these objectives, a number of policies have been developed. These set out how the Council will broadly carry out its network management duty, and what the priorities are. The policies will also guide the on-going decisions the Council makes regarding network management. These policies and how they will be implemented are described below.

3.2 Operational Route Hierarchies

Route hierarchies categorise roads according to their functions and capacities. For example, at the national level, roads are classed into several different categories depending on their strategic importance. However, at an operational, local level, the use of the national road classification does not necessarily reflect local circumstances and operational needs. As such, there is sometimes a need to develop several different route classification systems, designed for different end purposes, such as growth, maintenance, etc. For example, the Thurrock Local Development Framework (LDF) has defined a route hierarchy for preventing increases in traffic flows and therefore congestion caused by new access roads from development sites onto key routes.

Additionally, the *Thurrock Transport Strategy* prioritises several different types of transport improvements on the basis of Economically Important Routes, which identify where the adverse impact of congestion on the economy could be expected to be much greater than similar levels of congestion on other routes. The identification of Economically Important Routes took into account:

- Levels of commuting;
- Levels of HGV activity;
- The LDF route hierarchy;
- The location of current and future major employment areas; and
- Their regional economic importance.

In addition to the route hierarchies outlined above, there is also a need to identify 'traffic sensitive streets' for traffic management purposes, where roadworks and other incidents can create unacceptable delays and disruption at specified times.

Policy TMP 1: Traffic Sensitive Streets

In order to effectively manage the transport network and keep traffic moving the Council will identify a revised network of 'traffic sensitive streets' which draws on criteria from the current DfT guidance as well as the Street Works Regulations 2007. This will be used to identify where traffic management measures to reduce congestion will be prioritised.

The criteria the Council will use in determining Traffic Sensitive Streets is whereby the street:

- is one on which at any time the traffic flow is greater than 500 vehicles per hour per lane of carriageway; or
- is one on which more than 25% of the traffic flow in both directions consists of heavy commercial vehicles and where the traffic flow at any time is greater than 100 vehicles per hour per lane of carriageway; or
- is a bus route.

Furthermore, the Traffic Sensitive Street Network must include all Economically Important Routes.

Thurrock Council currently holds a list of Traffic Sensitive Streets, but this dates back to 1995 and now requires updating. In order to achieve this, Thurrock Council will need to identify those roads within the Council's control in accordance with the criteria outlined above. Once this task is complete, the Council will use this information to help prioritise where to deliver traffic management measures in Thurrock.

In 2011, the Department for Transport decided that from April 2012 responsibility for roads classification and aspects of the Primary Route Network would be devolved to local highway authorities. Under the new system:

- Local authorities will have control over roads classification decisions in their area, determining which roads should be 'A' roads, 'B' roads, etc.;
- Local authorities will be able to set the roads used by the Primary Route Network ('A' roads with green signs), while central government retains oversight of the whole system;

- Central government will continue to look after the strategic road network.

Because a number of changes have been made to the road system in Thurrock over the years it is evident that some roads will need to be reclassified. It will make sense to do this at the same time as revising the network of Traffic Sensitive Streets.

3.3 Small Scale Engineering

Through the use of simple minor traffic management and engineering interventions, there should be many opportunities to review and simplify the way the road network functions in the Borough with a view to making it operate more efficiently and seamlessly.

Policy TMP 2: Small Scale Engineering Solutions
The Council will implement low cost small scale traffic management and engineering solutions in the first instance. This will be carried out on the Traffic Sensitive Streets network. The Council will prioritise those Traffic Sensitive Streets that are subject to the more severe and persistent congestion problems. Where small scale engineering solutions would prove ineffective in managing congestion, higher cost solutions will be sought. A priority will be given to those streets where congestion adversely impacts on bus reliability.

It is likely that small scale engineering measures will be carried out on a route or corridor basis to ensure consistency along those routes. It must be remembered that the Traffic Management Act aims to keeping a free flow of all road users. Therefore the requirements of different user groups (motorists, bus passengers, freight operators, businesses, cyclists and pedestrians) will be balanced and traffic management, parking/loading and bus lane restrictions need to be adapted to best meet them, without introducing widely varying approaches that will inevitably lead to confusion, such as different times for the operation of bus lanes.

The Council will be looking at developing a suite of measures which could simplify the road network and help to promote the smooth flow of traffic along the worst affected Traffic Sensitive Streets, especially for buses. This simplification may come in the form of reviewing the length and operating times of a bus lane, looking at the enforcement and operating times of parking bays, or looking into the way road markings have been applied on the approach to key junctions. It should also include an opportunity to review the traffic signs along a route to see whether they are confusing or can be improved and whether any measures, such as clearance orders, need to be introduced to enable buses to pull into their stops.

3.4 Urban Traffic Management and Control

Improving the efficiency of the existing transport network may reduce the need to provide new highway infrastructure, providing better value for money in managing congestion and improving Thurrock's economic productivity.

Urban Traffic Management and Control (UTMC) is a type of Intelligent Transport System which can be used as a way of monitoring, operating and controlling the transport network through a central computer to improve network efficiency. The

Council currently work in partnership with Essex County Council and subscribe to their UTMC services, known as the Essex Traffic Control Centre (ETCC). ETCC provides both the back office functions related to network control and management, along with the public interface for travel information and journey planning advice. Thurrock Council is currently signed up to a basic level of service from the facility, which enables the Council to monitor the network, report on incidents and liaise with other agencies. It also provides the Council with a monthly incident report which shows the location of incidents, the causal factors and other information.

A variety of different data sources feed into the system, allowing operators to view data and react to incidents through both manual and automatic interventions. Many congestion incident and accident information within the Borough is reported to the ETCC via the police and the Highways Agency, as well as Thurrock Council. Essex County Council uses a range of additional technologies to provide the ETCC with traffic information via Automated Number Plate Recognition, CCTV, and other technology systems, although these are not used in Thurrock.

Urban Traffic Control (UTC) is a term used to describe the technique of co-ordinating traffic signals, normally through a centrally located computer. Thurrock Council has nine junctions that have UTC fitted, although currently these UTC devices are only utilised for fault detection and reporting rather than for congestion or incident management. As such there is significant scope to expand the functionally of the Council's UTC network as well as the Council's use of ETCC for understanding and managing congestion incidents along the Council's transport network.

Policy TMP 3: Urban Traffic Management and Control
The Council will look to improve the role and function that the Essex Traffic Control Centre plays in managing traffic in Thurrock by maximising the use of the Council's Urban Traffic Control system as well as extending the availability and collection of data and information on congestion and incidents. The use of 'clearance plans' will be given a priority.

In doing so, the Council will also make best use of all possible existing data sources for traffic management purposes, such as UTC, CCTV and Automated Number Plate Recognition, where available. Data collected and information received from all sources pertaining to congestion and incidents will be used to identify persistent congestion problems through a regular programme of monitoring and analysis.

Better understanding of congestion and incidents will enable the Council to develop proactive plans for managing traffic and keeping the Thurrock's transport network free flowing, particularly on Traffic Sensitive Streets. For developing better traffic management plans, the Council will consider using Thurrock's UTC system and ETCC to actively manage congestion and incidents through the development of clearance plans in order to actively clear an incident via a fully automated intervention strategy. A clearance plan is a thought out traffic management intervention which is programmed into the ETCC. If a particular road or junction becomes congested, the operator can activate the automated intervention, such as changes to the traffic signal settings. It is likely that J31 of the M25 will greatly benefit from such a clearance plan. The Council will also consider using ETCC to provide

active route management, directing traffic off of a congested major route and onto a parallel major route.

3.5 Information Provision

The provision of information on congestion and incidents to motorists and other road users can be a powerful tool through which to manage congestion. Major planned roadworks are shown on a map on the Thurrock Council website. This includes planned works being delivered by the Council as well as utility companies and others. Links on the website provide further details on these planned works, such as start and finish times and an estimate of the likely severity of the disruption.

As the ETCC monitors on-going congestion incidents, it can also provide real time travel information to road users and improved co-ordination with the Highways Agency on trunk road and motorway operations as well as the Council's neighbouring authorities of Essex County Council and Southend-on-Sea Borough Council. This information on incidents and congestion is disseminated to the media and passed onto motorists through radio, website maps, personal GPS/Satnav systems, and Variable Message Signing (VMS) on the A13, and emails to stakeholders such as bus operators. However, some aspects are limited, such as VMS as it is only installed on the A13. Potentially many parts of the Thurrock road network and therefore the travelling public would benefit from improvements to real-time information provision.

The ETCC also contacts the Regional Traffic Control Centre and the National Traffic Control Centre to inform them of incidents on Thurrock's network that could impact on theirs. This action accords with the Traffic Management Act requirement to not cause congestion on other transport authority roads.

Policy TMP 4: Information Provision
In order to make the most effective use of information on congestion and incidents for traffic management purposes, the Council will review the way in which it disseminates information to motorists and other road users. This review will consider a range of technological and interactive information platforms.

To deliver this policy, the Council will investigate using ETCC to reach a wider audience of drivers and road users though a diverse range of technologies. These technologies will provide road users with real-time information about on-going incidents, thereby enabling them to choose alternative routes or means of travel.

Currently, active management of incidents in Thurrock is limited as very little VMS technology is available, with the exception of some on the A13. Where feasible, the Council will introduce additional VMS to provide drivers with real-time information relating to parking availability, traffic related incidents and accidents, as well as disruptions, such as planned events and road works, and suggested diversionary routes. The Council will particularly look at using ETCC's UTMC technology to divert traffic off one strategic road onto another during times of congestion or delay by means of VMS, text messaging and public announcements.

Providing travellers with information on planned events ahead of time is a key way of minimising the disruption as it enables alternative routes to be chosen. Advanced roadside warnings are put in place for roadworks, usually one month before the works are due to start. The utility companies are responsible for this if they are to carry out the works. The more important planned events in the Borough are currently shown on a map on the Council's website so as to provide information to the public. However, the Council will investigate working more closely with the Essex Traffic Control Centre to display the planned events on the Essex Traffic Control Centre website rather than separately on its own. This should enable people to make more informed decisions about their journeys. The Council will also continue to notify the bus operators whose services are affected by any road closures or roadworks and continue to disseminate information to key interested parties such as DP World and Port of London Tilbury. The Council will investigate whether this can be carried out more efficiently using the ETCC

Thurrock hosts a number of special events that are either ad-hoc or that take place regularly, including:

- Horndon Feast & Fayre, High Road, Horndon on the Hill in June;
- Tilbury Remembrance Day, Civic Square, Tilbury in November; and
- Aveley Christmas Market, High Street, Aveley in December.

The Council will continue to require advanced notice of these so that it can raise awareness of the temporary changes to traffic arrangements, thereby allowing people and businesses to make alternative arrangements. The Council will raise awareness amongst the general public of temporary road closures for example by placing a notice at the site, displaying the notice on the website as well as advertising it in the local paper. Similar arrangements are made for other types of notice. The Council also notify bus operators and other interested parties, as well as neighbouring local authorities if it might affect them.

3.6 Unplanned Events and Incidents

Disruption and congestion on the highway network has a number of causes. Many of these causes are incidents and events, some of which are planned in advance, such as programmed roadworks or football matches, whilst others are unplanned such as Road Traffic Accidents, major public safety incidents, or poorly parked vehicles. It is important to minimise the risk of unplanned events occurring and for when unplanned incidents do occur, it is important for the Council to have contingency plans to enable it to deal with it effectively so as to minimise the disruption caused.

3.6.1 Road Traffic Accidents

The *Thurrock Transport Strategy* contains a comprehensive strategy for reducing the overall number of Road Traffic Accidents on Thurrock's transport network, with a particular focus on reducing the number of people who are killed or seriously injured. However, Road Traffic Accidents are likely to continue to occur. As well as being a concern in their own right, Road Traffic Accidents often cause congestion and delays.

Policy TMP 5: Managing Traffic From Road Traffic Accidents
Priority will be given to managing traffic congestion arising from Road Traffic

Accidents on Traffic Sensitive Streets, where they clearly cluster at certain locations or along certain stretches, and where the incidence of them frequently causes congestion.

In order to give a spatial dimension to delivering this policy, the Council will overlay a five year trend of accident hotspots onto Traffic Sensitive Streets (**Policy TMP1**) to determine where Road Traffic Accidents are likely to cause the most amount of disruption. This will be updated annually. Working in partnership with the police and the Highways Agency (where relevant), the Council will then use the maps created from the exercise above to prioritise and develop traffic management plans and set response times for keeping traffic flowing as and when Road Traffic Accidents occur.

This prioritisation system and advanced planning will reflect the need to address accidents on Traffic Sensitive Streets and work towards reducing traffic disruption and congestion where this has the greatest adverse impact.

3.6.2 COMAH sites

COMAH stands for the Control of Major Accident Hazards Regulations 1999. The COMAH regulations apply to sites where dangerous substances are present. There are a total of 13 COMAH sites within the Borough: eight top tier sites and five lower tier COMAH sites.

The Civil Contingencies Act 2004 imposes a duty upon Local Authorities, amongst others, to assess the risk of an emergency occurring, to plan its response to those emergencies, to validate those plans and participate in multi-agency training and exercises. It also places a duty on them to warn and inform the public about the identified risks and to promote business continuity within the community.

The primary objective of the Council is to protect public safety by restricting access to the area affected. The main role for Thurrock Council's transport teams is therefore to cooperate with the emergency services to identify and manage the road closures and diversions to be implemented if an incident triggers 'off-site' plans and to keep all relevant parties updated and aware of the incident and the transport measures that have been implemented. Road closures and diversions have been agreed with emergency services for all COMAH sites. The Council would contact the Essex Traffic Control Centre and the Highways Agency. Essex Traffic Control Centre and the Highways Agency are able to provide advanced motorway sign information in the Borough on the M25 and A13 informing motorists of an incident and the need to avoid affected roads. The Council itself directly informs bus operators.

This information for motorists, HGVs and bus operators should enable the Council to partly meet its objective of keeping traffic moving and enabling community and business continuity. Nevertheless, it is likely that such an emergency will result in traffic disruption and delays. However, the need to restrict access to affected COMAH sites to protect public safety takes precedence over this.

3.6.3 Civil Parking Enforcement

Poorly parked vehicles, including those being loaded or unloaded, can significantly reduce the efficiency of the highway network. Very badly parked vehicles, particularly lorries, can block a whole lane of traffic, resulting in major delays at peak times.

The Council has been responsible for enforcing parking, loading and waiting restrictions in the Borough since 2005 when the Council took over responsibility from Essex Police. Parking offences then became 'contraventions' and are no longer classified as criminal offences. Through this decriminalisation of parking, the Council aims to encourage sensible and safe parking within Thurrock. This in turn should lead to reduced congestion for drivers and pedestrians. It will also allow buses and service vehicles to operate more effectively.

Policy TMP 6: Parking Enforcement

The Council will work towards minimising disruptions and delays caused by contraventions to parking, loading and waiting restrictions. To achieve this, the Council will both improve its overall enforcement efforts and will prioritise enforcement:

- On Traffic Sensitive Streets;
- On bus and cycle lanes, particularly those cycle lanes comprising the core walking and cycling network;
- In known areas of congestion, such as Grays;
- Where persistent contraventions lead to congestion, such as around schools; and
- Based on complaints from members of the public

Where car parking is increased at rail stations, this will be supported by stronger parking controls in the vicinity in order to offset the potential increase in traffic surrounding the station. Efforts will be made to enable buses to access bus stops by restricting adjacent parking where required and enforcing the restrictions.

A team of Civil Enforcement Officers patrol and enforce the on-street parking regulations and the Pay & Display car parks. Generally, much of the enforcement activity will be carried out within the hours of the Controlled Parking Zones. Outside of the restricted hours the Council should focus on double yellow line enforcement. Regular 24-hour enforcement of double yellow lines is carried out as and when necessary.

Grays should be enforced frequently given the on-going congestion problems in the town whilst other town centres and commuter areas will be enforced less often, with the frequency being informed by the level of congestion. Other areas and routes, such as Traffic Sensitive Streets, will be visited on a rota basis or following feedback from the public. Schools in particular will have frequent enforcement visits given the persistent problems of inconsiderate parking, with extra priority being given to those schools where such parking results in delays to traffic.

To help deliver improved and wider enforcement, the use of a CCTV car will be investigated. This would be able to enforce certain restrictions, such as loading restrictions and School Keep Clear. This will improve enforcement considerably, including with parking around schools.

The Police enforce footway parking if the offending vehicle is causing an obstruction. The Council will work with the police to promote efficient enforcement, with priority being given to the core walking and cycling network. In considering whether to allow footway parking a number of factors will need to be taken into account, including the need to keep the footway clear for pedestrians, especially on the core walking and

cycling network, as well as the need to keep the road clear enough to enable traffic to flow without undue delay.

With regard to introducing new parking restrictions, consideration will be given to how this would benefit improving traffic flows. Double and single yellow lines will be implemented where there is a need to improve flow of traffic and visibility. Loading/unloading restrictions will be implemented on Traffic Sensitive Streets where no parking at any time is required and where flows of traffic must be maintained.

3.6.4 Weather Related Incidents

Weather can play a significant role in causing traffic delays during adverse weather events and as such warrants consideration in planning for traffic management. In particular, flood and snow events can lead to traffic disruption across the transport network. The *Thurrock Transport Strategy* aims to address predicted climate change impacts by reducing the vulnerability of the transport network through adaptation measures, therefore helping to minimise the likelihood of disruption being caused on the transport network from incident related weather events. However, there remains a need to consider the impacts of severe weather events on traffic management and to set out detailed operational policies and measures for keeping traffic moving during these events.

Flooding

Thurrock is relatively low lying with large swathes of land classed as being at high risk of flooding (Flood Risk Zone 3[3]). In 2009, a desktop analysis of flood risk vulnerability to the transport network in Thurrock was undertaken, allowing for the identification of key points of current vulnerability to flood risk on the transport network. The results of this assessment show that a significant number of road links are within Flood Risk Zone 3.

In addition to existing flood conditions, it is necessary to consider how climate change may further exacerbate weather related traffic incidents. The Thurrock area is likely to experience significant increases in winter rainfall and significant decreases in summer rainfall. This is likely to lead to drier summers and wetter winters. Due to Thurrock's position in relation to flood risk, increased flooding from increasing winter precipitation currently poses the greatest threat to Thurrock's existing transport network. Increased precipitation and storm surges could lead to increases in flooding of infrastructure, and severe weather events can have a detrimental impact on the number of Road Traffic Accidents.

Policy TMP 7: Managing Flood Events
In order to effectively manage traffic during flood events, the Council will identify which Traffic Sensitive Streets may be at risk of flooding and will employ its Civil Protection Service to develop contingency and diversionary plans for managing traffic along these routes as and when such events occur.

In delivering this policy, the Council will overlay Flood Risk Zone 3 against Traffic Sensitive Streets (**Policy TMP1**) in order to determine where disruption from flooding

[3] Environment Agency

is likely to have the most significant impact on traffic flows. Furthermore, the Council will carry out site visits to confirm the level of risk. Along these routes emergency planning procedures and diversionary routes will be prioritised for development and determined in advance for flooding events. Where flooding of the highway occurs, with implications for safety or serviceability, relevant warning signs should be placed in position as quickly as possible and users advised through the Council's information dissemination practices as outlined in **Policy TMP4**.

Winter Weather

In addition to flooding, the extreme winter temperatures and precipitation experienced throughout the UK over the past few years indicates an increasing need for detailed winter service plans in order to keep traffic moving in cold weather. The Council is responsible for ensuring that, as far as reasonably practicable, the network is open and safe to use during periods of severe weather. In particular, the objectives of the winter maintenance service include minimising delays caused by the presence of snow or ice on the highway, and minimising delays to the emergency services in carrying out their functions.

The winter maintenance service covers the monitoring of weather conditions between 1 October and 30 April to determine when ice and/or snow are likely to affect the adopted public highway network. If ice and/or snow are anticipated the service performs the application of ice prevention materials to the identified roads to reduce the possibility of ice/snow forming. Where ice and/or snow have formed on the highway it also includes treating the identified roads to assist in making them safer to use, including removing snow.

Due to funding availability, it is not possible to carry this out on every road under the Council's control or to ensure that running surfaces are kept free of snow and ice at all times, even on roads that have been treated.

It is therefore important to prioritise routes for treatment, either for precautionary treatment or to treat actual ice or snow. This is detailed in the Winter Maintenance Plan, which is up-dated annually. The number of routes that get treated will depend on many factors, such as funding and the availability of salt.

Policy TMP 8: Winter Weather

In order to minimise traffic disruption from severe weather events, the winter maintenance service will always take account of the following considerations, in priority order:

- Traffic Sensitive Routes;
- Road access routes to hospitals, fire stations and ambulance stations;
- Road Traffic Accidents hot spots related to winter weather (**Policy TMP5**);
- Key routes to schools (if open);
- Bus routes, especially inter-urban bus routes, and access to bus depots and rail stations;
- Road access routes to major communities;
- Road access routes to major waste sites and strategic employment areas; and

- Footways in the vicinity of heavily used shopping centres, schools, GPs, nursing/residential care homes.

In order to deliver this policy effectively the Council will create a mapped network of routes and priorities for the Winter Service Plan. Additionally, the Council will use ETCC in the most effective manner by providing users with advice and information as outlined in **Policy TMP4.**

3.7 Planned Events

Planned events include a range of situations, including planned roadworks, football matches, as well as special events such as Christmas markets. The Council's main approach to reducing the impact of planned events on the road network is to improve cooperation and coordination between the Council, other traffic authorities, utilities and other organisations to ensure works and other events are well planned and opportunities taken to mitigate and reduce traffic disruption. The Council are also keen to develop real incentives for works promoters to apply best practice and reduce the amount of time they spend digging up roads and/or disrupting traffic.

3.7.1 Coordination and Cooperation

The Council has a proactive approach to the planning and coordination of all works, events and key activities on the highway network. The coordination of planned roadworks is important in order to avoid conflicts and enable the Council to minimise the impact of any works or activity in order to reduce any consequential disruption on the highway network. Good coordination often results in planned roadworks being rescheduled where necessary and diversionary routes being set up, including in collaboration with other local authorities.

Although the evidence relating to the impact planned events, especially roadworks, have on congestion is patchy, it is clear that there is an adverse impact and that this should be reduced.

Policy TMP 9: Coordination of, and cooperation on, planned events
The Council will coordinate all roadworks and activities on its highways, applying restrictions where necessary, with a view to minimising disruption and delays to traffic and people. To achieve this, the Council will continue to work with other traffic authorities to ensure that any potential adverse impact on traffic flow on its roads caused by planned events on their roads is minimised and well managed, and that diversionary routes using its roads are agreed in advance. The Council will also work with the utility companies and others to record and share information on planned roadworks, and the Council will cooperate with the main utility companies to develop a Code of Practice to reduce the impact of roadworks.

The Council will use information from a variety of sources as part of its day to day coordination of planned roadworks and activities. Essex County Council chairs a regular meeting with Thurrock Council and Southend-on-Sea Borough Council. Havering Council might attend if there is a relevant item. Furthermore, the following are examples of other stakeholders who often attend:

- Utilities such as British Telecom Open Reach, Virgin Media, EDF Energy, Anglian Water, National Grid Gas, and Transco;

- Essex Police;
- Essex Fire and Rescue;
- Network Rail; and
- National Express.

This meeting is held to share intelligence and information, discuss schemes and arrange diversions and other related coordination matters. The Council feed into this programme the planned events that will take place within the Borough, including its own works, as well as that of utilities, developers and the Highways Agency.

This meeting and less formal day to day contact with other traffic authorities enables the Council to not only reduce disruption on the Thurrock transport network, but also to help those other traffic authorities reduce disruption on their networks as a consequence of planned events taking place within Thurrock. As part of the less formal arrangements outside of the regular meeting, the Council will ensure that the Essex Traffic Control Centre is provided with the necessary details of the planned events within Thurrock. This will enable them to display the information on their website.

The Council works closely with a range of works promoters to gather the necessary information on planned events within the Borough. The Highways Agency or its agents will continue to send frequent updates on schemes. Through this mechanism the Highways Agency will also request permission to use diversionary routes in Thurrock and, if agreed, arrangements will be put in place to restrict works and activities on those routes.

Utility companies will continue to enter their information directly into an integrated asset management system called Symology. When new works are received from utilities the system automatically performs a range of coordination checks, including spatial checks to flag up any potential conflicts with other on-going activities on the highway.

The Council's own planned roadworks are not currently entered into Symology and so coordination can only take place by entering the Council's own planned works onto a spreadsheet and then also transferring all other known works, including transferring the works of utility companies from Symology, into the same spreadsheet. To improve the efficiency and the effectiveness of the coordination process, the Council will move towards entering its own information directly into Symology, as well as information from the Highways Agency, developers and other sources. Greater use of Symology will also enable the Council to coordinate planned events with other regular activities, such as refuse collections.

As well as the more effective and efficient use of Symology, the Council will develop a Code of Practice with the main utility companies. This will need to contain a number of provisions and could be based on the national Code of Conduct launched by the National Joint Utilities Group (NJUG) in 2010. The principles could include the provision of information boards at works sites, carrying out more work outside peak hours, reducing the number of occasions when works over-run their agreed durations, cooperating with joint working, and 'plating' over holes in the road and footways wherever possible.

3.7.2 Restricting Access to the Highway

Disruptions should be reduced by the coordination activities set out above. However, a number of other measures are available to further reduce disruption from the planned events that take place. In order to minimise disruption to traffic and people as a result of the planned events that take place the Council will perform the following measures.

Restrictions are placed on carrying out planned events on Traffic Sensitive Streets (see **Section 3.2**). The restrictions vary depending on the road and can be flexible, but are generally restrictions to avoid works at peak times. It should be noted that such restrictions can only be applied to planned roadworks or events. Utility companies can carry out emergency roadworks wherever and whenever they need to without any restrictions, only being required to provide notification within two hours of starting.

Restrictions will also continue to be placed on the placing of skips, scaffolding and other obstructions in the highway if there are concerns about the adverse impact on capacity, such as where there are double yellow lines. Such restrictions will be quite extensive on vulnerable routes such as the A126 London Road and some other Traffic Sensitive Streets.

The Council will use road pairing whereby roadworks are embargoed on a road that is 'paired' with another road that will be subjected to roadworks. This is to enable road users an alternative clear route. This could be carried out automatically within Symology and so this mechanism should improve further. This is especially important for the diversionary routes used by M25 traffic when the M25 is closed for planned works.

Part 3 of the Traffic Management Act provides the opportunity for a Council, as a Highways Authority, to make an application to the Secretary of State for Transport to introduce a Permit Scheme. Some local highway authorities have already introduced a permitting scheme for roadworks. This means any organisation, including highway authorities themselves, wishing to dig up the road must have a formal permit and the specific permission of the Traffic Manager to do so. The previous noticing arrangements merely required works promoters to inform the highway authority of their intention to carry out road works.

Policy TMP 10: Permitting and Lane Rental
In the medium to longer term, the Council will consider developing a business case for a permitting scheme if other policies and actions set out in this Traffic Management Plan prove insufficient to tackle congestion in the Borough and implementing the scheme if it demonstrates value for money and affordability. The Council will also keep a watching brief on the progress of the Government's lane rental developments.

The permit scheme enables improved coordination of road works by giving highway authorities better information about the works that promoters wish to do earlier, enabling more joint working. It also gives authorities specific powers to refuse or retime works to minimise disruption. The aim is to reduce the volume of activity taking place on the road network at any one time. Emergency repairs are not

affected by the cap but organisations applying for permits for planned works at certain times of year, particularly during the colder winter months, will need to take account of historical increases in unplanned works, such as gas leaks on the A126 London Road. The permit scheme allows the highway authority to levy 'overrun charges' where street works are not completed within an agreed, reasonable period of time.

However, there is currently inadequate evidence of the scale of disruption caused by planned roadworks in Thurrock. This will need to be established with greater clarity in order to determine the likely benefits of the scheme. Furthermore, it is likely that the value for money of any scheme will be greater if the Council works with other local highway authorities as this will almost certainly be cheaper for each participating authority. Although the Department for Transport's business plan commitments about roadworks includes ending the need for government approval of individual local authorities' permit schemes by April 2012, value for money will still be a material consideration for the Council.

Be that as it may, the Council's research into permits schemes, summarised at Appendix B, suggests that there is a high risk of the scheme being unaffordable. Given the prevailing financial climate affecting the Council (and most of the public sector) this measure is unlikely to be considered in the short term. However, if other measures prove themselves to be insufficient to manage the congestion on Thurrock's road network, a permit scheme will be revisited.

The government wishes to pilot a new lane rental scheme. This is where the local authority charges utility companies and others for using the highway. The government indicates that the new pilots will need to focus on the most acute problem areas and the charges must be applied only when works occupy the highway at peak periods, with exemptions from charges at other times. The government proposes that lane rental charges would only apply to streets that have been designated as 'traffic-sensitive' by the highway authority; and charges should only apply at 'traffic sensitive times'. The government believe a new lane rental scheme could be used to, amongst other things, reduce the length of time that sites are unoccupied, hence reducing total works durations. The Council will keep a watching brief on this development before deciding whether to investigate the merits of such a scheme for Thurrock.

3.7.3 The London 2012 Olympic Games

This is mainly concerned with the Olympic Route Network (ORN) for the Mountain Bike Event at Hadleigh Farm, Essex and key bottlenecks such as Junction 31 of the M25.

The ORN is the project designed to assist with meeting London 2012's obligations for Games Family (Athletes, technical officials, dignitaries) journey times to events. The ORN falls into two parts, the Venue ORN, which is the designated route the Games Family will follow to the Venue, and the Alternative ORN which is the designated route should the Venue ORN be compromised.

The Venue ORN is the A13. The Alternative ORN will make use of either the M25 and A127, or the A128 and A127. The Council will ensure a works embargo on this route for the games period. This will include an embargo on works upon the A13 and

any sections of the network that have the potential to affect the ORN. Separately, car parking space at Lakeside will operate as a Park and Ride facility for the Olympics in order to provide access to Stratford. J31 of the M25 is likely to prove a critical junction. Already often congested, it has the potential to cause widespread traffic disruption during the games. Permanent or interim measures to improve traffic management at the junction will be pursued with the Highways Agency and potentially with the Olympic Delivery Authority.

Responses to traffic incidents on the ORN and around Lakeside will be prioritised during the relevant period and the Council will work closely with Essex Police on this. The Council will aim to have a response time of 20 minutes to incidents on the A13. Furthermore, ORN newsletters will be circulated to COMAH sites and key partners such as Lakeside, Port of Tilbury and London Gateway.

The Council will work very closely with Essex County Council, which is taking a lead on the ORN work, as well as the Olympic Delivery Authority, Highways Agency and Essex Police. The Olympic Delivery Authority is funding associated costs.

4 Delivery Plan

The table below outlines the actions and implementation measures that will be required to be carried out in order to deliver this Traffic Management Plan. It identifies which policies within **Section 3** these relate to and shows where they will be delivered. It also indicates the level of priority attached to each action and implementation measure. The level of priority has been determined using a number of variables:

- The level of importance
- The urgency (*e.g.* the Olympics)
- Whether it can make good use of existing arrangements or resources
- Whether other actions or measures are contingent on it

Items identified as being a high priority should have first call on resources made available, and ideally should be delivered in the first year or two years of the Traffic Management Plan in 2012/13 and 2013/14. These high priority items have been set out in priority order so as to indicate which should be carried out first. That is, item 1 should be done first, item 2 second etc. It might be decided that items 4 to 10, on holding discussions with the Essex Traffic Control Centre and Essex County Council, could be carried out at the same time. Medium and low priority items have not been ranked and so are in no particular order.

An attempt has been made to estimate the costs of each high priority item. This is not always possible to do with great accuracy because of the inherent uncertainty, especially for those items which will depend on the outcome of the initial discussions with the Essex Traffic Control Centre and Essex County Council. Medium and low priority items have not been costed. The exception is that an attempt has also been made to provide an estimated cost for developing and implementing a permit system.

The Delivery Plan also identifies clear areas of responsibility within Thurrock Council and its delivery partner, Europa. Items assigned to a specific team within the structure will need to be project managed and delivered by those teams. The table below also outlines where actions and implementation measures are contingent on other items being carried out first.

Note: only High Priority Actions have been costed

#	Policy	What	Where	Who	Estimated Cost/ Cost Type	Contingent items	Priority
1.	N/A	Implement embargo on A13 and A128 planned works during the Olympics events at Hadleigh	A13 and A128	Traffic Section and Planned Maintenance, Europa	£1k - revenue		High
2.	N/A	Arrange contingency plans for J31 during the Olympics, potentially actively managing traffic signals	J31 (M25)	Integrated Transport, Thurrock Council External Consultant/ ETCC	£10k - revenue (could be a lot more in capital if any signal technology needs updating or installing)		High
3.	N/A	Set incident response times for the A13, A128 and routes around Lakeside during the Olympics	A13, A128, Lakeside area	Streetworks, Thurrock Council	Staff time only		High

#	Policy	What	Where	Who	Estimated Cost/ Cost Type	Contingent items	Priority
4.	TMP3	Identify with Essex County Council/ETCC ways of making better use of the existing contractual arrangement with ETCC[4]. This could include: • making better use of the monthly incident reports to identify issues in an on-going analysis; • improving the accuracy of the monthly incident reports by correcting mis-recording of causal factors; • informing ETCC of planned events in Thurrock so that they can be shown on the ETCC website map (this could enable the removal of the separate map on the Thurrock website) The improved use and accuracy of the monthly incident report could inform actions/deliverables in this delivery plan, such as which routes to prioritise for low cost interventions, and a business case for a permitting system	N/A	Integrated Transport, Thurrock Council External consultant ETCC/ECC	£2k – revenue if external consultant used Additional costs to pay ETCC should be nil as it should fall within the current arrangement of £30k pa		High
5.	TMP3	Discuss with Essex County Council/ETCC the adequacy of existing signal technology[5]. This can be with regard to using it to actively manage congestion and incidents, potentially through the development of clearance plans or timing plans in order to actively clear an incident via an intervention strategy, especially for the A13 and J31 of the M25.	N/A	Integrated Transport, Thurrock Council Europa Traffic Signals ETCC/ECC	£2k - revenue Costs to pay ETCC would be incurred if and when clearance plans are developed – see 16		High

[4] Currently Thurrock Council has signed up to ETCC's Option 1 for service provision. This action aims to make best use of this option
[5] This action reflects part of ETCC's Option 3 for service provision

#	Policy	What	Where	Who	Estimated Cost/ Cost Type	Contingent items	Priority
6.	TMP3	Investigate, if necessary, which signals need to be upgraded to improve the level of service. This could link to upgrading of the UTC system at J31, which should be a priority. Further prioritisation of improvements should be informed by work on Traffic Sensitive Streets.	Borough wide, especially Traffic Sensitive Streets and J31	Integrated Transport, Thurrock Council External consultant ETCC/ECC	£5k revenue Capital, cost dependent on outcome of investigations	5	High
7.	TMP3	Speak with Essex County Council/ETCC about providing wider use of VMS and directing traffic off a congested major route and onto a parallel major route[6]	N/A	Integrated Transport, Thurrock Council External consultant ETCC/ECC	£1.5k – revenue if external consultant used Costs to pay ETCC to implement improvements would depend on outcome of discussions – see 19, 20 and 24		High
8.	TMP3	Speak with Essex County Council/ETCC about introducing wider mechanisms to identify congestion incidents[7], such as: • ANPR systems (might need to speak to Essex Police regarding whether its system could be used) • Temporary or permanent CCTV at key	N/A	Integrated Transport, Thurrock Council External consultant ETCC/ECC	£2k – revenue if external consultant used Other costs would depend on outcome of		High

[6] This action reflects part of ETCC's Option 3 for service provision
[7] This is similar to ETCC's option 2 for service provision to Thurrock Council

#	Policy	What	Where	Who	Estimated Cost/ Cost Type	Contingent items	Priority
		junctions			discussions – see also 13		
9.	TMP3	Speak with Essex County Council/ETCC regarding whether the ETCC can automatically notify key stakeholders in Thurrock, such as bus operators and DP World, about incidents	N/A	Integrated Transport, Thurrock Council External consultant ETCC/ECC	£1k – revenue if external consultant used Costs to pay ETCC would depend on outcome of discussions Provisional estimate of £7.5k for ETCC.		High
10.	TMP4	Speak with Essex County Council/ETCC about how to reach a wider audience of drivers and road users through more interactive means of information provision, such as GPS/Satnav, texts and emails	N/A	Integrated Transport, Thurrock Council External consultant ETCC/ECC	£1.5k – revenue if external consultant used Costs to pay ETCC would depend on outcome of discussions. Provisional allocation of £20k to implement measures, but this could be in a future year		High

#	Policy	What	Where	Who	Estimated Cost/ Cost Type	Contingent items	Priority
11.	TMP1	Develop Traffic Sensitive Streets network using TMP1 criteria and review road classifications (A roads, B roads etc.) where changes have taken place in recent years	Borough wide	Integrated Transport, Thurrock Council External consultant or Europa, GIS Team at Thurrock Council	£7.5k – revenue for Traffic Sensitive Streets if external consultant used £7.5k for review of road classifications if external consultant used		High
12.	TMP1	Implement changes to road classifications	Borough wide	Traffic section, Europa	Capital, cost dependent on outcome of review	11	High
13.	TMP3	Investigate how to interpret and use DfT/Traffic Master congestion data	N/A	Integrated Transport and GIS, Thurrock Council and/ or external consultant	£3k – revenue if external consultant used		High
14.	TMP3	Develop congestion monitoring and analysis regime. This should include making use of existing sources of data in the first instance, such as: • The ETCC monthly incident reports; • The DfT/Traffic Master congestion data; • Essex Police ANPR data; and • DfT measures (see Chapter 5). If existing sources of information prove insufficient, consideration would subsequently need to be given to additional sources such as CCTV at key junctions (those for example identified by the work produced by Colin Buchanan and Partners)	Traffic sensitive Streets	Integrated Transport team and/or external consultants	£2.5k – Revenue for existing readily available information if external consultant used Additional costs could be incurred if implementing further congestion monitoring mechanisms such as CCTV	4, 8, 11, 13	High

#	Policy	What	Where	Who	Estimated Cost/ Cost Type	Contingent items	Priority
15.	TMP2	Design and implement HGV improvements/ signing related to A126 London Road. This will need to consider HGV restrictions, with HGVs being diverted onto Devonshire Road instead. Other HGV measures could be further informed by South Stifford traffic study	A126/ Devonshire Road, Traffic Sensitive Streets	Traffic Section of Europa	Capital, depending on measures but likely to be in region of £20k		High
16.	TMP3	Develop clearance plans in order to clear an incident via a fully automated intervention strategy, potentially for the A13 and J31 of the M25	Traffic Sensitive Streets	Traffic Section, Europa and external specialist consultant ECC/ETCC	£10k – revenue. Also some capital costs to upgrade signals if necessary Revenue to pay ETCC – estimated at £10k.	5, 6, 11	High

#	Policy	What	Where	Who	Estimated Cost/ Cost Type	Contingent items	Priority
17.	TMP3	Further develop database of significantly congested roads and junctions. In the first instance this will need to include: • Carrying out a sense check on those sites that Colin Buchanan and Partners assessed as being over-capacity in theory. These were: ○ B186 Stifford Hill/B186 Pilgrims Lane in the North Stifford area ○ A126 Stanley Road/A126 Clarence Road Grays town centre ○ A126/Devonshire Road in the South Stifford Area ○ A13/A1012 ○ A1090/A126/Purfleet Bypass junction ○ Pilgrims roundabout • Carrying out a detailed spatial analysis of the monthly incident reports provided by ETCC. Initial analysis suggests that the A13, A1306 and B186 South Road in South Ockendon experience congestion • Collating these sources with other known information on congestion which has identified the A126 London Road, Grays town centre A126/A1013	Borough wide	Integrated Transport, Thurrock Council or external consultant	£3k – revenue if external consultant	4, 8,13, 14	High

#	Policy	What	Where	Who	Estimated Cost/ Cost Type	Contingent items	Priority
18.	TMP2	Carry out reviews of routes identified by policy TMP2 for low cost engineering measures, including bus priority. Need to prioritise these based on whether they are Traffic Sensitive Streets and have congestion problems, as well as other issues such as air quality or bus unreliability. Review A126 London Road, and Grays Town Centre (A126/A1013) as priorities for years 1/2	Traffic Sensitive Streets	Traffic Section, Europa	£30k – Revenue for reviews of A126 London Road and Grays town centre	11, 17	High
19.	TMP2 & TMP4	Introduce Variable Message Signs on congested Traffic Sensitive Streets where appropriate. This will provide drivers with real-time information relating to parking availability, traffic related incidents and accidents, as well as disruptions, such as planned events and road works and suggested diversionary routes. Likely to include A1306, A13, A128, A1089, Grays Centre	Traffic Sensitive Streets and key routes	Traffic Section, Europa Highways Agency, Essex County Council	Capital	7, 11, 18	Medium
20.	TMP2	Develop options for improving traffic flow around Grays town centre. The use of VMS should be considered.	Traffic Sensitive Streets around Grays town centre	Traffic Section, Europa	Revenue	18, 19	Medium
21.	TMP2	Implement low cost engineering measures on other Traffic Sensitive Streets with significant congestion problems	Traffic Sensitive Streets	Traffic Section, Europa	Capital	18	Medium
22.	TMP2	Implement traffic management improvements for Grays town centre	Grays Town Centre	Traffic Section, Europa	Capital, costs dependent on preferred option	20	Medium

#	Policy	What	Where	Who	Estimated Cost/ Cost Type	Contingent items	Priority
23.	TMP2 & TMP3	Develop route management strategy for the A13, with Highways Agency and Essex County Council. First action will be to discuss the idea with them. Could possibly involve the Local Enterprise Partnership.	A13	Integrated Transport, Thurrock Council Highways Agency and ECC	Revenue	16, 17	Medium
24.	TMP3	Use ETCC's UTMC technology to divert traffic off one strategic road onto another during times of congestion or delay, potentially by means of variable message signing, text messaging and public announcements	Traffic Sensitive Streets	Integrated Transport team, Thurrock Council ECC/ETCC	Revenue Revenue to pay ETCC	7, 11	Medium
25.	TMP5	Analyse 5 year accidents and overlay accident cluster sites onto revised Traffic Sensitive Streets network	Traffic Sensitive Streets	Traffic Section, Europa GIS section, Thurrock Council	Revenue	11	Medium
26.	TMP5	Develop traffic management plans or procedures for keeping traffic flowing as and when Road Traffic Accidents occur. Likely to involve specifying response times for key Traffic Sensitive Streets	Traffic Sensitive Streets and accident cluster sites	Streetworks, Thurrock Council	Revenue/ staff time	11, 25	Medium
27.	TMP9	Investigate the potential for working with the main utility companies to develop Code of Practice for planned roadworks[8]	Borough Wide	Planned Maintenance, Europa	Revenue		Medium
28.	TMP9	Expand use of Symology for planned events, particularly through training of Thurrock Council and Europa staff[9]	N/A	Planned Maintenance, Europa	Revenue		Medium
29.	TMP10	Develop Business Case for a permitting scheme.	Borough Wide	Integrated Transport,	£5k. External specialist resource	Contingent on other	Low

[8] Speak to Essex County Council as they have tried to implement something similar
[9] This could be a separate improvement, or could also be part of introducing either a permit scheme or a Code of Practice

#	Policy	What	Where	Who	Estimated Cost/ Cost Type	Contingent items	Priority
				Thurrock Council	(revenue)	policies and actions proving insufficient	
30.	TMP10	Implement permitting system if business case demonstrates value for money and affordability	Borough Wide	Traffic Section, Europa	Some capital in the region of £17k, but mainly external specialist resource (revenue) in the region of £75k[10]	29	To be determined by business case
31.	TMP6	Produce revised parking strategy[11]	Borough wide	Implementation and Parking Services, Thurrock Council	Revenue/ staff time		Low
32.	TMP7	Overlay Flood Risk Zone 3 onto Traffic Sensitive Streets	Traffic Sensitive Streets within Flood Risk Zone 3	GIS Team, Thurrock Council	Revenue/ staff time	11	Low
33.	TMP7	Develop emergency planning procedures and diversionary routes in advance for flooding events	Traffic Sensitive Streets within Flood Risk Zone 3	Emergency Planning, Thurrock Council	Revenue/ staff time	32	Low
34.	TMP8	Develop winter weather map and review route priorities in the light of revised Traffic Sensitive Streets network and likely funding	Traffic Sensitive Streets and other key winter weather	GIS Team, Thurrock Council Reactive Maintenance, Europa	Revenue and staff time	11	Low

[10] These are very broad estimates as the costs will depend on a number of factors that are as yet unknown
[11] In 2012 the Council plans to implement CCTV car to aid parking enforcement

#	Policy	What	Where	Who	Estimated Cost/ Cost Type	Contingent items	Priority
			routes				
35.	TMP8	Use winter weather map to determine winter weather regime and programme in the light of prevailing budget	Traffic Sensitive Streets	Reactive Maintenance, Europa	Revenue	34	Low

4.1 Prioritisation of Traffic Management Improvement Schemes

Many schemes will be identified proactively through the updating of the Traffic Sensitive Streets network and subsequent prioritization of investigative work on those that are most congested and that impact adversely on bus reliability, in accordance with Policy TMP1 and TMP2. However, it is inevitable that many schemes will emerge on a more ad hoc basis, such as through suggestions by community forums or Members of the Council. There will need to be a system to help prioritise these, and the table below sets this out. Only those locations where there is known or judged to be congestion should be scored using the table below. If congestion is essentially non-existent then no further assessment or prioritization will be needed.

Policy	Question/ criteria	Scale	Scoring/ weighting
TMP1	Is it on the Traffic Sensitive Street network?	Yes	5
		No	0
TMP1	Is it on the network of Economically Important Routes?	Yes	5
		No	0
TMP1 and TMP2	How bad is the congestion[12]?	Severe	10
		Moderate	6
		Slight	2
TMP2	How bad is the congestion's impact on bus reliability[13]?	Severe	5
		Moderate	3
		Slight	1
		Non existent	0
N/A	How bad is the congestion's impact on the Highways Agency's Strategic Road Network?	Severe	5
		Moderate	3
		Slight	1
		Non existent	0

[12] This will be a combined measure of severity (such as at peak times) and persistence (such as for long periods during the day)

[13] This will be a combined measure of the extent of delays to individual buses, and how many buses are affected.

5 Monitoring and Review Framework

5.1 Monitoring

As outlined in previous sections, there is currently significant scope for improving data collection and monitoring on congestion and incidents within Thurrock. The table below outlines data that is currently collected, including the source of that data and its availability. However, there will be a need to revise this monitoring and review framework once several of the policies in **Section 3** (particularly **Policy TMP3**) and their associated actions and measures outlined in **Section 4** (items 10, 13, 15, 16 and 21) have been completed.

Indicator	Source	Availability
Road Traffic Accidents	Department for Transport	Quarterly
Planned Roadworks	Thurrock Council	Continuous
Planned Incidents, by type	ETCC	Monthly
Unplanned events, by type	ETCC	Monthly
Journey Speeds on local authority managed A roads	Department for Transport	Quarterly
Journey times on local authority managed A roads	Department for Transport	Quarterly
Annual Average Daily Traffic Flows	Department for Transport	Annually
Bus Punctuality	Thurrock Council	Annually

5.2 Review

The completion of the data collection, monitoring and analysis programme may necessitate a review the Traffic Management Plan, as this may identify additional issues that need to be addressed or provide more detail as to where implementation measures for managing congestion should be delivered. Additionally, where monitoring shows a worsening picture of congestion incidents, the Delivery Plan should be revised in accordance with the policies outlined in **Section 3.** As a matter of course, the Delivery Plan should be reviewed annually to ensure it remains fit for purpose and refreshed every three years.

Appendix A: Traffic Management Act Requirements

The primary network management duty is about dealing efficiently with the traffic presented on the network, both now and in the future, and the various activities that are causing or have the potential to cause congestion or disruption to the movement of traffic. This is set out within Section 16 the Act, which requires the Council to manage Thurrock's road network with a view to:

a. securing the expeditious movement of traffic on the authority's road network; and
b. facilitating the expeditious movement of traffic on road networks for which another authority is the traffic authority.

The action which Thurrock Council may take in performing that duty includes, in particular, any action which they consider will contribute to securing:

c. the more efficient use of their road network; or
d. the avoidance, elimination or reduction of road congestion or other disruption to the movement of traffic on their road network or a road network for which another authority is the traffic authority; and may involve the exercise of any power to regulate or co-ordinate the uses made of any road (or part of a road) in the road network (whether or not the power was conferred on them in their capacity as a traffic authority).

Section 17 of the Act requires the following arrangements for network management:

1. A local highway authority shall make such arrangements as they consider appropriate for planning and carrying out the action to be taken in performing the network management duty.
2. The arrangements must include provision for the appointment of a person (to be known as the 'traffic manager') to perform such tasks as the authority consider will assist them to perform their network management duty.
3. The traffic manager may (but need not) be an employee of the authority.
4. The arrangements must include provision for establishing processes for ensuring (so far as may be reasonably practicable) that the authority—
    a. identify things (including future occurrences) which are causing, or which have the potential to cause, road congestion or other disruption to the movement of traffic on their road network; and
    b. consider any possible action that could be taken in response to (or in anticipation of) anything so identified; but nothing in this subsection is to be taken to require the identification or consideration of anything appearing to have only an insignificant effect (or potential effect) on the movement of traffic on their road network.
5. The arrangements must include provision for ensuring that the authority—
    a. determine specific policies or objectives in relation to different roads or classes of road in their road network;
    b. monitor the effectiveness of—
        i. the authority's organisation and decision-making processes; and
        ii. the implementation of their decisions; and

c. assess their performance in managing their road network.

6. The authority must keep under review the effectiveness of the arrangements they have in place under this section.

The Traffic Management Act goes on to identify a package of policy measures that could be used, including:

- Better co-ordination of the various works that take place on the highway, including the Council's own road works, utility street works, or issues such as the placing of skips in the highway;
- Better co-ordination of activities that affect the highway, such as refuse collections, freight deliveries, or fairs or other events;
- New powers through permitting schemes to control and manage access to the highway for road work or street works by the council or statutory undertakers; and
- Allowing civil enforcement of certain traffic law contraventions, such as parking offences.

Appendix B: Permit Schemes

As a highways authority, the Council has a duty to manage the increasing demand for travel on its road network as well as the increasing demand for access to the services located underneath the roads, such as gas, water and broadband.

The Traffic Management Act (TMA) 2004 provides Local Transport Authorities (LTAs) with the means of introducing a 'permit scheme'. The Traffic Management Permit Scheme (England) Regulations 2007 set out the process for such applications to be submitted for assessment and approval to the Secretary of State. It is currently only after the Secretary of State has granted formal approval that any scheme has effect. It should be noted however that the in the Department for Transport's business plan there is a commitment to end the need for government approval of individual local authorities' permit schemes by April 2012.

Once a scheme has been adopted the authority can grant permits to certain works promoters to undertake works on the highway. The objective of a permit scheme is to enable highway authorities to better manage activities on their road network, in order to minimise inconvenience and disruption to road users. Because highway authorities have more control over works in their area under a permit scheme, they can for example promote working outside peak hours, or better co-ordination of works between utilities. They can even refuse permits, thereby limiting the amount of roadworks carried out on the same road over the year. Through such capabilities, any authority operating a permit scheme will be able to coordinate and control works on the road, with the aim to improve both the planning and preparation of works.

Permit schemes provide an alternative to the notification system of the New Roads and Street Works Act 1991, (NRSWA), whereby instead of informing a street authority about its intention to carry out works in its area, a statutory undertaker has to book time on the highway by obtaining a permit from the permit authority. Under a permit scheme, the street authority's activities undertaken by itself, its partners or agents are also treated in exactly the same way as a statutory undertaker. A street authority may choose to implement a permit scheme on all or some of the roads under its control.

This should have a number of benefits including:

- Improving journey times and reliability for all road users;
- Reducing the congestion caused by road works;
- Improving the information available on works, including advanced warning and duration; and
- Increasing the planning and control of works to improve safety and reduce damage to the road.

Developing a permit scheme

In developing a scheme, the first step is to develop a business case or feasibility study. This will establish what the objectives are and whether a scheme might be

viable. A business case is also vital to gain member or political support. The business case will need to consider both the regulations in terms of what has to be done, and also the Council's own internal mechanisms.

According to Government guidance, it would be unusual for a permit scheme to be viable that covers Thurrock alone as generally a larger geographical area is required for viability reasons. It would therefore be advisable to investigate opportunities for working in partnership with other local authorities.

As a way of managing their own demand a number of authorities in the East of England are working in collaboration to introduce a permit scheme within their area to improve the coordination of works across their road network. The Joint Authorities are Hertfordshire County Council, Luton Borough Council, Bedford Borough Council and Southend-on-Sea Borough Council and they have developed and are applying for a Common Permit Scheme, which is a functionally identical scheme, to be applied on all the roads within their control. Although it is functionally identical in each area, the scheme will be administered separately by each authority, so there is no sharing of 'back office' functions. There was therefore some sharing of development costs[14], but there will be no sharing of running costs.

Other local authorities such as Kent and Northamptonshire have introduced permit schemes on strategic roads only rather than on all roads. However, the Joint Authorities took the view that many bus routes were off the strategic roads and so the scheme needed to cover all roads.

One option would be to join the Common Permit Scheme. Should Thurrock determine that this type of scheme would support its objectives, then the Council could seek to adopt this Common Permit Scheme. How this is done has not been defined or carried out to date. It is likely that the scheme application would be made to the Secretary of State (if still, required) with a copy of the relevant Common Permit Scheme. The intellectual property rights of the existing authorities for their Common Permit Scheme, *or indeed any other scheme*, would be an item for consideration and discussion, and might involve some costs.

It should be made clear that it is good practice to separate the development of a scheme from making the application for a scheme *(*under the current DfT regulatory process*)*. That is, even if Thurrock Council wanted to join a scheme already approved, such as the Common Permit Scheme, the Council would still need to develop supporting material to justify the chosen scheme design and to meet tests ***currently*** required by the DfT, *e.g. value-for-money (CBA) and EToN compliance.* It would not be easy under the current regulatory regime to simply 'join' the Common Permit Scheme. However, this might change if and when the DfT abandons the need to approve all permit applications.

The may be a number of benefits of joining the Common Permit Scheme. For example:

- It has known compliance with the regulations;

[14] The Common Permit Scheme for the Joint Authorities was developed by TJH Consulting.

- It has established the technical specifications;
- It is considered practical in operation; and
- Joining a scheme that has already been developed will reduce potential costs, implementation timescales and associated risks.

Costs

The costs for the Joint Authority's Common Permit Scheme are set out below.

	Bedford	Hertfordshire	Southend	Luton
One of set up costs (2011 prices)	£82k	£338k	£121k	£81k
One of set up costs with risk and optimism bias (2011 prices)	£113k	£466k	£166k	£112k
Annual repeat costs (2011 prices)	£575k	£4,478k	£471k	£685k
Permit fee income (2011 prices)	£270k	£1,887k	£281k	£335k

It would not be unreasonable to suppose that the running or annual repeat costs for a Thurrock scheme, that was part of the Common Permit Scheme, would be similar to the costs for Southend and Bedford. That is, around £500k per annum. This is because, as explained earlier, the running costs within the Common Permit Scheme are not shared and so fall to each authority independently.

It can be seen that the running costs far exceed the income from permit fees charged to utilities. This is largely because the government sets a limit on the fees that are chargeable. There are other revenue streams, such as fixed penalties for over-running or breaching the conditions of the permit. Some authorities believe that these other revenue streams enable them to recoup the remaining scheme costs. However, there is a risk with this approach as it relies on the scheme not working properly and not delivering the benefits of the scheme in terms of minimising disruption. If the scheme worked well and if contraventions were minimised, then the income from this revenue stream would be small. So, although it is worth bearing this revenue stream in mind and its potential for covering the costs of running the scheme, it would be inadvisable to base the case for the scheme on this uncertain revenue stream.

The set up costs can vary widely depending on what systems and interfaces the Council already has, and how much internal staff time can be allocated to developing the scheme and writing it up. If most of the latter is outsourced to one of the specialised consultancies, then clearly this will increase the revenue costs of developing the scheme compared to the cost of developing it in-house. Preparing the

Cost Benefit Analysis alone, which forms only part of the application, can be expected to cost around £20k.

Running costs could be potentially lower if Thurrock joined a scheme whereby the administration, systems and infrastructure required to run the scheme was shared, unlike with the Common Permit Scheme. Sharing 'back office' functions would enable the running costs to be shared, in theory reducing the annual on-going costs for each authority. However, it is not clear at all how much cheaper this options would be. For example, assuming Thurrock joined a scheme with a large shire authority similar to Hertfordshire, the overall costs of running the scheme could be expected to be in the region of £5,000,000 (see the costs for Hertfordshire in the above table). If Thurrock were to share this cost with the proportion, possibly based on a per capital basis and so paying for around 10% of it[15], then the cost for Thurrock would be £500k; the same as running its own scheme independently.

[15] The population of Hertfordshire is around 1.1million. Thurrock has a population of around 150,000, so around 13.5% of Hertfordshire's.

Appendix C: Full Evidence Base

Traffic Growth

The Department for Transport has estimated annual average daily traffic flows (ADDF) for each local authority area using information from both manual and automatic counts each year since 1999, and this data can be used to indicate traffic volumes within a local authority area. As can be seen in **Figure 1** below, overall traffic levels have grown by 3% in Thurrock since 2002. This is predominantly accounted for by significant increases in goods vehicles, particularly Light Goods Vehicles (LGV), but tempered by significant decreases in buses and two wheeled motor vehicles. Traffic levels continued to increase through 2008, but fell in 2009 and again 2010 (**Figure 2**). This traffic growth pattern is likely to correspond with economic fluctuations; traffic levels grew steadily throughout the economic boom years from 2002 – 2008, but began to fall as soon as a recession took hold in 2009.

When looking at the five-year trend of growth the majority of vehicle classes have decreased, showing that most of the 10 year growth can be accounted for between 2001 and 2008. The average annual rate of traffic growth for all motor vehicles is around 2%. However, this should be treated with caution given the significant swing between growth and decreases from 2009 onwards.

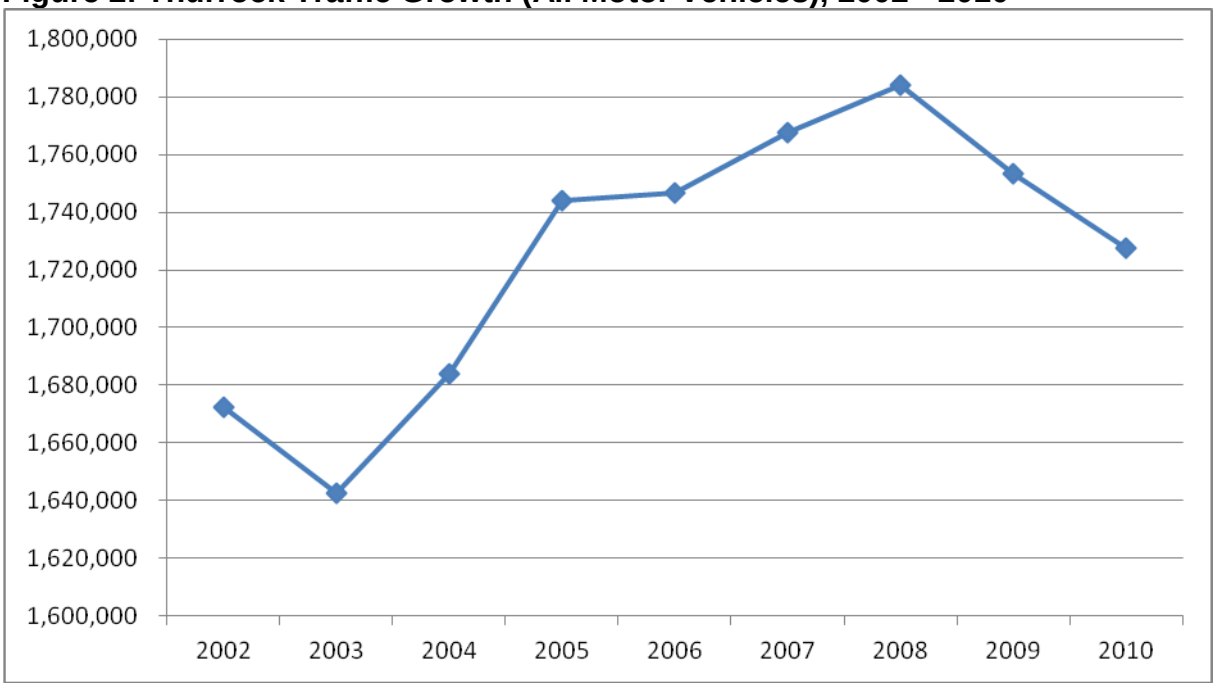
Figure 1: Annual Average Daily Traffic Flows (AADF) Thurrock, 2002 - 2010

	All MV	HGV[16]	Bus	Car	LGV[17]	2WMV[18]
2002	1,672,370	193,423	9,417	1,256,390	194,684	18,456
2003	1,642,727	203,776	8,133	1,208,505	200,072	22,241
2004	1,684,097	205,473	8,335	1,238,610	211,846	19,833
2005	1,744,175	207,894	8,676	1,290,515	218,007	19,083
2006	1,746,768	205,985	8,451	1,295,216	219,122	17,994
2007	1,767,655	207,205	8,666	1,293,812	239,557	18,415
2008	1,783,964	202,401	8,068	1,311,747	244,203	17,545
2009	1,753,358	195,916	7,731	1,305,195	227,342	17,174
2010	1,727,570	202,498	8,316	1,278,504	222,211	16,041
Annual Average Rate of Change	**2%**	**3%**	**-1%**	**2%**	**3%**	**-1%**
5 Year Growth (2006 – 2010)	**-1%**	**-2%**	**-2%**	**-1%**	**1%**	**-11%**
9 Year Growth (2002 – 2010)	**3%**	**5%**	**-12%**	**2%**	**14%**	**-13%**

Data Source: DfT, *Annual Average Daily Traffic Flows 2010*, 2011

[16] Heavy Goods Vehicle
[17] Light Goods Vehicle
[18] Two Wheeled Motor Vehicle

Figure 2: Thurrock Traffic Growth (All Motor Vehicles), 2002 - 2010

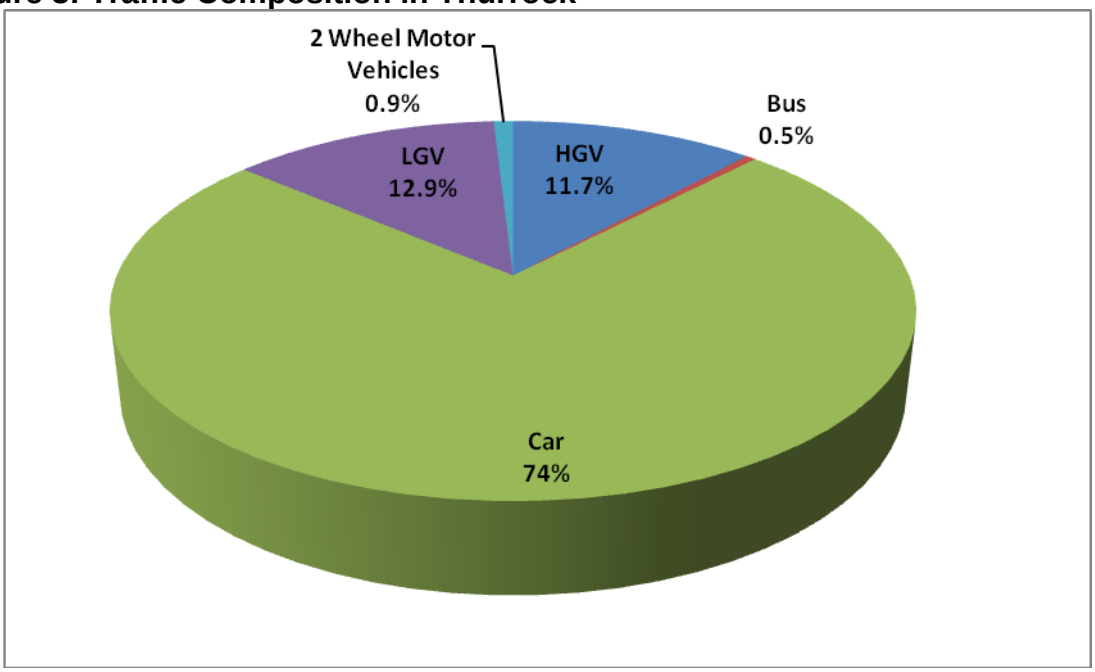


Data Source: DfT, *Annual Average Daily Traffic Flows 2010*, 2011

Traffic Composition

In Thurrock, the majority of traffic flows arise from cars at 74%, with another the remaining 25% comprised of goods vehicles (**Figure 3**). Regional composition shows 79% of traffic flows are comprised of cars and 20% are goods vehicles, highlighting the scale of Thurrock's logistics economy. Thurrock's traffic composition has remained relatively unchanged throughout the past 10 years, albeit with some marginal shifts from heavy goods vehicles towards light goods vehicles.

Figure 3: Traffic Composition in Thurrock



Data Source: DfT, *Annual Average Daily Traffic Flows 2010*, 2011

Traffic Spatial Distribution

The spatial distribution of annual average daily traffic flows for all vehicle classes throughout Thurrock are shown in **Map 1**, **Appendix D**. It identifies that those roads with the highest traffic levels are those comprising the strategic road network, including the M25, the A13 and to a less extent the A1306 and A1089.

Thurrock is traditionally an area of port-related activity, heavy industry, cement manufacture and mineral extraction, and much of its river frontage is highly industrialised. The development of Shellhaven, with a proposed quayside 2.3km long, and a 283 hectares (700 acres) commercial centre, will be the largest of all the new container ports in the country capable of handling the equivalent of 3.5 million 20 foot containers each year. The port and a logistics park, together with warehousing distribution and associated businesses will provide for some 16,500 new jobs by 2021.

As a result of the local logistics economy, there are high levels of Heavy Goods Vehicles (HGVs) on the road network. HGVs are large and take up more road space than cars and light duty vehicles, further limiting road network capacity and impeding traffic flows. HGV traffic has grown in Thurrock by 5% between 2002 and 2010. However, HGV growth has slowed down in recent years, with five-year growth at -2%, likely to be a result of the economic downturn. Freight traffic is likely to grow significantly as a result of the London Gateway port development. Spatially, HGV flows are highest in Tilbury approaching the port, the industrial waterfront areas in Purfleet, the M25 and along the A13, particularly at the junction with the Dock Approach Road to Tilbury. Annual average daily traffic flows for 2010 from DfT, shown in **Map 2**, **Appendix D**, further illustrate the extent and magnitude of HGVs on the network in Thurrock.

Anecdotal evidence for congestion incidents or ‘hot spots’ from Thurrock Council officers, based on a scale of 1 to 5 (with 5 being severe and 1 being slight) includes:

- Junctions 30 and 31 on the M25, usually due to capacity problems. Score: 5 ;
- Routes around Lakeside, resulting from intermittent capacity problems such as some weekends and around Christmas. Score: 2;
- Grays town centre around Thameside junction, resulting from capacity issues due in part to the configuration of the traffic management system in the area. Score: 4; and
- A126 London Road, due to utilities roadworks and high HGV flows. Plans are currently being considered to introduce a HGV limit and rerouting HGVs up Devonshire Road. Regarding roadworks, ageing gas pipes which need emergency repairs, especially in winter. Often there are 4 or 5 roadworks at the same time over short distances. Score: 3 or 4.

Future Traffic Growth

The planned expansion of 23,250 dwellings and provision of 26,000 jobs by 2026 will put enormous pressure on Thurrock's transport network. Based on TRICS data for the South East, Thurrock will need to accommodate at least 55,000 additional daily car trips from new dwellings in Thurrock by 2016 and 92,000 by 2021. Transport Modelling undertaken by Colin Buchanan on behalf of Thurrock Council in 2010 highlighted numerous parts of the highway network (not including the M25) that are expected to be over or approaching capacity in 2021 and 2025 against a baseline scenario leading to queuing, increased journeys times and obstructed traffic flows.

Map 3, **Appendix D** shows the spatial distribution of the links that were over capacity (red and orange) and approaching capacity (yellow) in 2006, the baseline year of the study. The majority of links and selected junctions are either well below capacity or approaching the desired maximum capacity of 85%. Only four junctions and four links were reported as being above capacity (above 100%) in the base case whereas a number of junctions and a further four links were reported as being above the desired capacity of 85%. The following junctions were found to be above capacity under existing traffic flows and this can be used to determine where congestion in Thurrock currently occurs:

- B186 Stifford Hill/B186 Pilgrims Lane (Junction 12) in the North Stifford area ;
- A126 Stanley Road/A126 Clarence Road Grays town centre (Junction 106) ;
- A126/Devonshire Road (Junction 103) in the South Stifford Area; and
- A13/A1012 (Junction 14).

Additionally, several junctions were identified as being above *desired* capacity and these can be found in:

- Grays Town Centre (Junctions 17, 104 and 105);
- Chafford Hundred (Junctions 15 and 102);
- on and around the A13 near Orsett (Junctions 23 and 28); and
- South Ockendon (Junction 11).

In the 2021, the main changes to the highway network arise from the planned growth in jobs and housing. As shown in **Map 4**, **Appendix D**, this causes an increase in congestion along the A13, with the greatest increase being between the A128 and A1014 (between Junctions 23 and 24). The main changes in junction congestion are also along the A13, with Junctions 14 (A1012) and 24 (A1013/A1014) in particular needing attention.

The morning peak hour only has a limited impact on the rest of the highway network. The only junctions that have been identified as requiring attention in the morning peak hour, other than those that were identified in the baseline case are Junction 3 (A1090/A126/Purfleet Bypass) in Purfleet and Junction 13 (Pilgrims Roundabout).

As with 2021, the main changes to the 2025 highway network are considered to be from the planned growth in jobs and housing. This again causes an increase in congestion along the A13, with most links on the A13 within the area of study being above desired capacity, as shown in **Map 5, Appendix D**. Again, the worst section is between the A128 and A1014 (between Junctions 23 and 24) which would need to be widened to at least 3-lane to accommodate the growth in traffic.

The main changes in junction congestion are also along the A13, with Junctions 14 (A1012), and 24 (A1013/A1014) in particular needing attention. Elsewhere, Junction 11 (B1335/B186 South Rd /B186 Stifford Hill), in South Ockendon, requires attention in addition to the junctions that were identified as requiring attention in the base case.

Journey Times and Speeds

Average journey times and speeds can provide a useful indication of congestion across a road network. As shown in **Figure 4** below, journey times along local authority managed A roads (therefore not including parts of the A13 and the M25) in Thurrock are 21% faster than regional journey times and 34% faster than national journey times. Although journey times were improving between 2007/08 and 2009/10, they have reduced in the past year by 2.6%, showing a possible worsening picture of congestion in terms of local journeys times compared to a national and regional reduction of only 0.4% and 0.6%, respectively.

Figure 4: Average Journey Times (minutes per mile)

	2007/08	2008/09	2009/10	2010/11
England	2.43	2.40	2.38	2.39
East of England	2.02	1.99	1.99	2.00
Thurrock	1.63	1.54	1.54	1.58

Data Source: Department for Transport, *Congestion on Local Authority Managed A Roads*, 2011

Figure 5 below indicates that average journey speeds in Thurrock are 27% faster than regional journey times and 53% faster than national journey times. Again, although journey speeds were generally improving between 2007/08 and 2009/10, they have reduced in the past year by 2.7%, showing a possible worsening picture of congestion in terms of local journeys times compared to a national and regional slowing of only 0.3% and 0.8%, respectively. This, coupled with increasing journey times may indicate that Thurrock's roads are be becoming congested at a faster rate than elsewhere.

Figure 5: Average Journey Speeds (miles per hour)

	2007/08	2008/09	2009/10	2010/11
England	24.68	25.05	25.20	25.13
East of England	29.73	30.25	30.28	30.03
Thurrock	36.83	39.15	39.13	38.05

Data Source: Department for Transport, *Congestion on Local Authority Managed A Roads*, 2011

Congestion on Thurrock's strategic road network (A13/A1089) also shows a worsening picture of congestion. Although there has been a reduction in congestion indicators from Aveley to Tilbury, there has been a 1% reduction in speed and a 9% increase in delays per 10 miles from Tilbury toward Aveley between 2006 and 2009. Traffic along this route is likely to increase significantly with planned growth, impacting further on congestion, particularly when the new London Gateway port opens. Further congestion along this route may have economic impacts across the region and the UK.

Public Transport

Bus punctuality has in Thurrock has improved over the past five years, as shown in **Figure 6** below. The percentage of buses starting routes on time has increased between 2007 and 2011 (to September) – from 83%% to 86%.

Figure 6: Proportion of Bus Services Running on Time

Year	%
2007	83.2%
2008	80.4%
2009	84.8%
2010	84.3%
2011 (To September)	86.0%

Data Source: Thurrock Council, 2011

However, despite good levels of bus punctuality, there remain locations in Thurrock where buses are regularly held up as a result of congestion. These areas include:

- London Rd (South Stifford): Due to high volume of traffic and also a large amount of roadworks which take place along this road;
- Arterial Road: Caused mainly by problems on M25/Dartford Crossing where traffic flows back into the Borough;
- Junction 30 Roundabout: High Traffic volumes and associated problems with Dartford Crossing;
- Purfleet Station;
- Stanford Station: These can all be delayed due to crossing closures for both passenger and freight services;
- East Tilbury Station; and
- Palmers and South Essex College Thurrock campus: During morning drop off and evening pick up the large number of coaches/buses ferrying students causes congestion around the bus stops.

Incidents

Unplanned incidents are those that occur without any prior warning, such as weather, vehicle breakdowns and queuing, which lead to congestion and delays. In Thurrock, the Essex Traffic Control Centre tallies and reports these incidents regularly. Between September 2010 and August 2011, there were 695 unplanned incidents in Thurrock, 78% of which were general incidents (some of which resulted from roadworks) and 22% which were accident related. Road Traffic Accidents are analysed in more detail in **Section 3.8**.

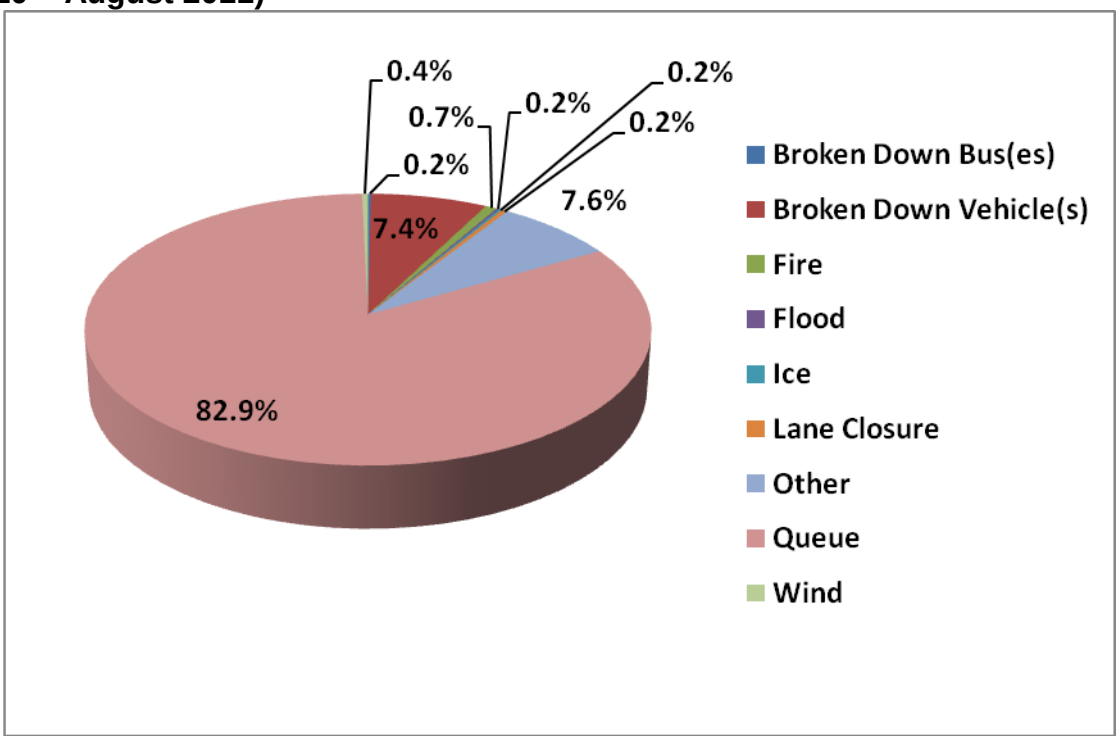
Between September 2010 and August 2011, there were a total of 539 unplanned general incidents (i.e. excluding accidents,) on Thurrock's road network, 83% of which were general queuing, likely to be due to high traffic volumes, much of which is likely to be related to roadworks. The breakdown of unplanned incidents is broken down in **Figure 7** below.

Of the queuing incidents, which represent the vast majority, the highest level of reported queuing occurring in August 2011, and the most incidents logged were on

Thursdays. This may be related to the Sadlers Farm roadworks, as 21 of the queuing incidents were caused by Sadlers Farm improvements. Further analysis of August 2011 incidents shows that Junction 30 (M25/A13) was reported a number of times in the itemised incidents report.

In terms of weather related incidents, it is worth noting that these were relatively rare, particularly considering the severe winter weather condition experiences in December 2010. There was only one ice related incident over the year analysed (in December 2010) and only one flood incident (in January 2011), likely as a result of melting snow. Wind caused two unplanned incidents – once in November 2010 and again in February 2011. Weather related incidents are covered in more detail in **Section 3.9**.

Figure 7: Unplanned Incidents in Thurrock by Type - % of Total (September 2010 – August 2011)



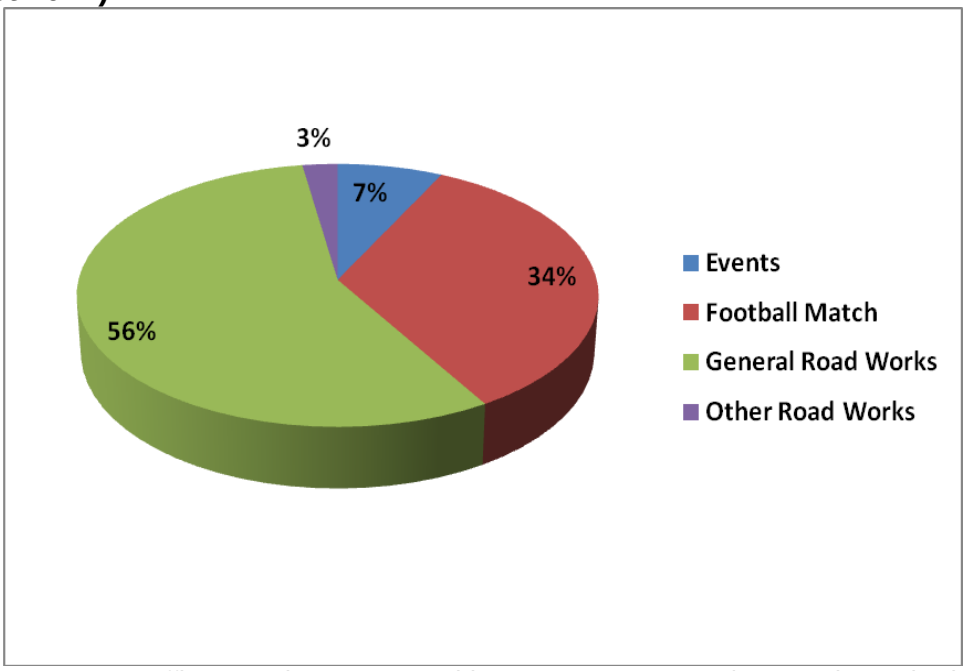
Data Source: Essex Traffic Control Centre, *Monthly COMET Stats 2010/2011 - Thurrock District,* 2011

Anecdotal evidence indicates that the worst road for disruption caused by emergency, un-planned street works is the A126 London Road. This is often due to emergency repairs to old gas supply infrastructure. Often there are 4 or 5 street works within a short distance of each other, the problem being most acute in the winter. The disruption is often very severe, with the congestion backing up to Lakeside Shopping Centre. Another road often affected by emergency street works is South Road in Ockendon, which is also often a diversion route from the A127 to the M25 and as such emergency street works along this road can cause very severe disruption. Emergency roadworks by utilities also cause considerable congestion on routes around Lakeside, mainly at weekends and especially around Christmas.

Planned incidents are those that are known to cause congestion and delay in advance, such as events and road closures for maintenance purposes. Between September 2010 and August 2011, there were 41 planned incidents on Thurrock's

road network, with 59% of these related to road works and 41% attributed to events (including football matches). However, this is likely to an underestimate as Thurrock Council does not inform ETCC of planned roadworks, and are therefore typically reported as unplanned incidents under 'queuing'. **Figure 8** below shows the total breakdown of planned incidents by type. The bulk of planned incidents occurred in October 2010 (17), of which 14 were football match related and 12 of which were reported on a Monday.

Figure 8: Planned Incidents in Thurrock by Type - % of Total (September 2010 – August 2011)

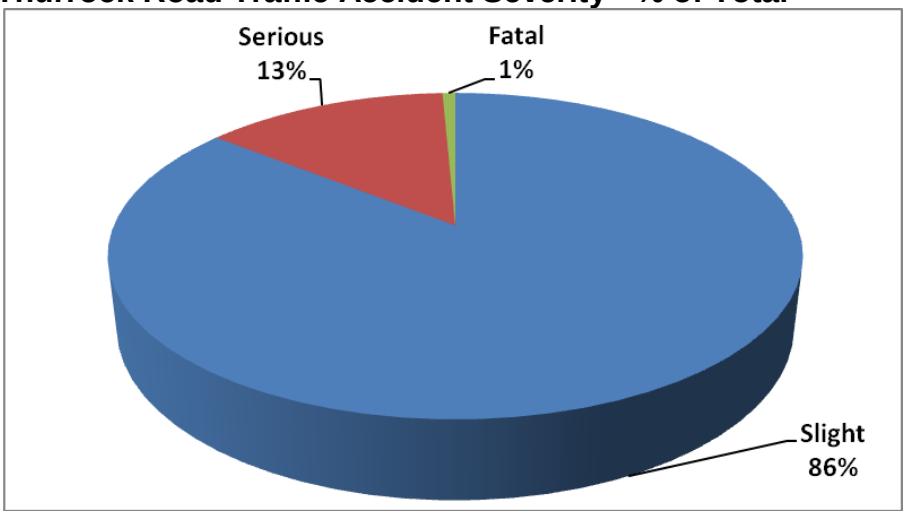


Data Source: Essex Traffic Control Centre, *Monthly COMET Stats 2010/2011 - Thurrock District,* 2011

Road Traffic Accidents

Road Traffic Accidents can cause significant delays, sometimes across the whole of the Thurrock road network if taken place in strategic locations. In 2010, there were 426 Road Traffic Accidents in Thurrock, including three fatalities. The number of Road Traffic Accidents has dropped significantly over the past five years by 18% since 2006. The severity of Road Traffic Accidents is also an important consideration in traffic management, as the more serious (or even fatal) the accident, the more delay is likely to be felt. Analysis of Road Traffic Accident severity (**Figure 9**) shows that the majority of Road Traffic Accidents in Thurrock were considered slight.

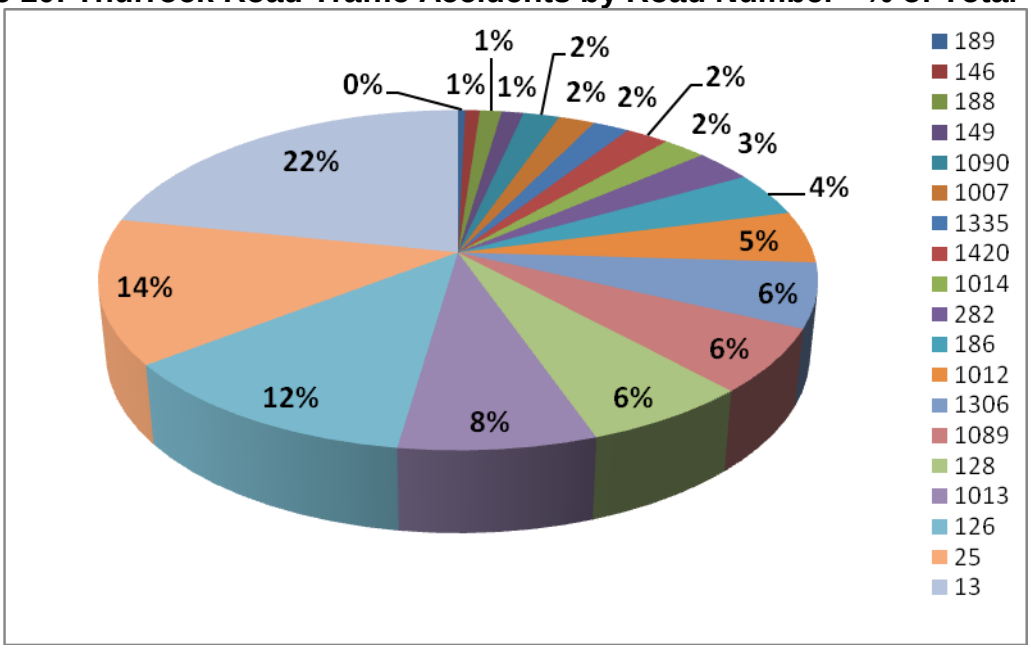
Figure 9: Thurrock Road Traffic Accident Severity - % of Total



Data Source: Department for Transport, *Reported Road Casualties in Great Britain 2010*, 2011

It is also important to consider that road class where the majority of accidents take place, as high incidence of accidents on A roads or the motorway are more likely to cause delay to a greater number of people as these roads often have the highest number of traffic movements. In Thurrock the majority of Road Traffic Accidents occurred on A roads in 2010 (**Figure 10**), followed closely by unclassified roads, where delays are less likely to cause significant traffic management issues.

Figure 10: Thurrock Road Traffic Accidents by Road Number - % of Total



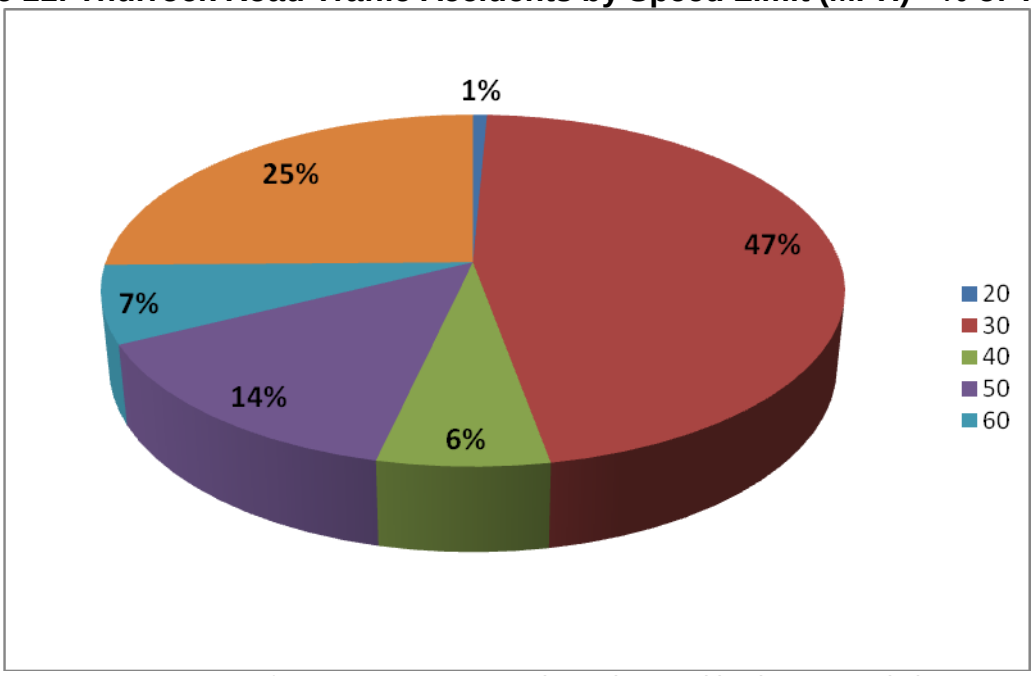
Data Source: Department for Transport, *Reported Road Casualties in Great Britain 2010*, 2011

Spatially, the clustering of Road Traffic Accidents is also necessary to consider in order to determine where contingency plans or traffic management measure may be required either to reduce the number of accidents or to deal efficiently with traffic management issues in the areas following on from Road Traffic Accidents. **Map 6**, **Appendix D** below shows the spatial distribution of accidents in Thurrock in 2010. As can be seen from the map, the majority of Road Traffic Accidents occurred on the A13, followed by the M25 and the A126. Unfortunately, these roads also have the

highest number of annual average daily traffic flows, meaning the Road Traffic Accidents on these roads are likely to cause the greatest number of traffic management incidents and issues resulting from delays.

The speed limit on the roads where accidents take place is not only correlated to the degree of injuries likely to be sustained, but is also likely to impact on traffic and journey times, particularly if taking place on high speeds roads. The largest number of Road Traffic Accidents in Thurrock in 2010 took place in 30mph speed limit zones, closely followed by 70mph speed limit roads (**Figure 11**).

Figure 11: Thurrock Road Traffic Accidents by Speed Limit (MPH) - % of Total



Data Source: Department for Transport, *Reported Road Casualties in Great Britain 2010*, 2011

Weather Related Incidents

Weather can play a significant role in causing traffic delay during adverse weather events and as such warrants consideration in planning for traffic management. In particular, flood events can lead to severe traffic disruption across the transport network. Thurrock is relatively low lying with large swathes of land classed as being in high risk flood zone. In 2009, Small Fish undertook a desktop analysis of flood risk vulnerability to the transport network in Thurrock. This analysis allowed for the identification of key points of current vulnerability to flood risk on the transport network. However, the analysis does not account for the height of the transport network or drainage, and therefore some areas may be less susceptible to risk than identified. The result of this exercise is presented in **Map 7, Appendix D**.

The results of this assessment show that a significant number of trunk and A Road links are within Flood Risk Zone 3. In particular, parts of the M25 are within the flood risk zone, although these are likely to be elevated above flood hazard levels. Other trunk, A and B roads within the Flood Risk 3 zone include:

- A282;
- A13;
- A126;
- A1090;
- A1306;
- A1089;
- A128;
- A1014; and
- A1013.

In addition to existing flood conditions, it is necessary to consider how climate change may further exacerbate weather related traffic incidents. In 2003, the East of England Sustainable Development Roundtable commissioned Living with climate change in the East of England to identify the regional impacts from climate change. Impacts identified include hotter drier summers, warmer wetter winters, 22-82 cm of sea level rise and increases in storm surges size and frequency. Increased precipitation and storm surges could lead to increases in flooding of infrastructure, and severe weather events have a known detrimental impact on the number of Road Traffic Accidents. Increases in temperature can also lead to buckling or melting of road surfaces and rail infrastructure.

Since then, the UK Climate Impacts Programme has reassessed the UK impacts of climate change through the UK Climate Projections project, published in 2009. The results of this study on a local level for Thurrock shown that annual mean temperature increases are predicted, although there appears to be very little seasonal variation within these temperature increases. The Thurrock area is likely to experience no changes in *overall* annual precipitation. However, when looking in more detail at seasonal variation, it becomes apparent that there may be significant increases in winter rainfall and significant decreases in summer rainfall. This is likely to lead to drier summers and wetter winters. Due to Thurrock's position in relation to flood risk, increased flooding from increasing winter precipitation currently poses the greatest threat to Thurrock's existing transport network.

In November 2006, Scott Wilson completed the Thurrock Strategic Flood Risk Assessment (SFRA), which assessed flood risk at a catchment-wide basis in Thurrock in preparation for Thurrock's Local Development Framework. This SFRA considered the planning context and provides the framework for robust and sustainable flood risk management solutions in areas where a balance is required between susceptibility to flooding and wider spatial planning pressures. The results of this study relevant to transport are outlined and summarised in the paragraphs below.

Individual breach results pertaining to flood risk and transport resulting from the SFRA are summarised below:

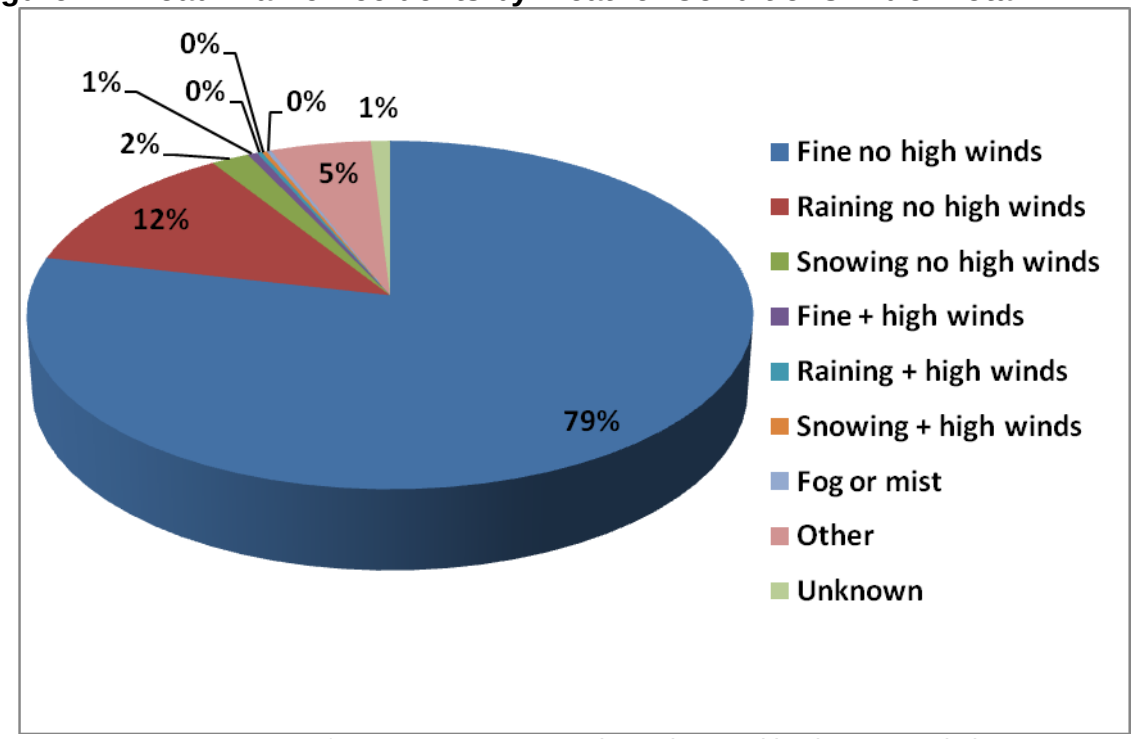
- **Tilbury:** All access roads to Tilbury are blocked at the maximum extent of inundation up to the main roundabout to the north of the town towards Chadwell St Mary. The western access via the A1089 (T) remains flood free for the longest time of the three main access routes into Tilbury. Access to the breach is very difficult because all access roads are inundated.

- **East Tilbury:** Access to East Tilbury is possible via the main access road that is not blocked by inundation resulting from this breach. South of East Tilbury a short section of the road to the Fort is blocked; however access is possible to the fort using secondary roads. Access to the breach is difficult as there is no land based access and flood depths are high surrounding the breach location. Limited access may be possible via the defences either side of the breach.
- **Mucking:** Access to most inundation areas is possible via minor residential roads leading to higher ground. The only route of access to and from the southern corner of the township is via the railway line at Thames Haven Junction.
- **East Thurrock:** Access to Tilbury is very difficult because access roads into Tilbury are blocked by floodwaters and Tilbury itself is underwater. The shallowest inundation is at the edge of the rail line that borders Tilbury.
- **West Thurrock:** Access to areas of inundation is difficult as the A1090 and M25 are inundated as a result of this breach although inundation over the A1090 is mostly shallow with localised areas of depths up to 0.6m. London Road, West Thurrock is also inundated to shallow depths of approximately 0.3m. Inundation over the railway is extremely deep in places (+2.5m).
- **Mardyke:** The Mardyke River does cut across the M25 and the A13 (T) as a result of this breach which would cause disruption to traffic movement and possibly disrupt access in the region.
- **Fobbing Marshes:** The main areas of flood depth are adjacent to the riverfront and stretching inland over south Fobbing Marshes, including the A1014 road and parts of the oil refinery and storage depot.
- **Purfleet:** The A1090, London Road and the M25 are inundated as a result of this breach, which makes access to and from the inundation area difficult. London Road is subject only to shallow inundation, however minor roads running off London Road are within areas of very deep inundation. Access to the breach is very difficult because of the extreme depth of floodwater covering the land behind the breach.
- **Tilbury Docks:** Access to Tilbury is very difficult because access roads into Tilbury are blocked by floodwaters and Tilbury itself is underwater. The shallowest inundation is at the rail line that forms the south-eastern border of the flood extent east of Tilbury. The A1089 (T) and the railway line to the west of Tilbury Station are first crossed approximately 2 hours and 25 minutes after the start of the simulation. The A126 is first crossed at approximately 3 hours. Four hours after the start of the simulation Marshfoot Road is inundated and there is deep flooding of Tilbury Marshes. At this time Fort Road is the only flood free access route to and from Tilbury although the A126 is still passable for vehicles until 4 hours and 30 minutes.
- **Thameshaven:** Access to the oil refinery and storage depot is inundated as a result of this breach however inundation is mostly shallow (less than 0.3m deep) therefore it may be possible for emergency vehicles to access the refinery if required. Access to the breach is difficult because there are no access tracks close to the breach and land close to the breach is inundated. It is possible to get relatively close to the breach via the rail lines to the west of the breach however short distance of deep floodwater lies between the edge of the rail lines and the breach.
- **Grays:** The main areas of flood inundation are adjacent to the riverfront and stretching inland through a residential area to where the railway embankment

acts as a barrier. However, west of Grays Station the embankment level drops allowing water to weir across it in the area of Rosebery Road. Floodwater is also conveyed eastwards from the breach to a point where an open channel drain is culverted through the embankment towards Little Thurrock Marshes. This culvert is simulated with an opening in the embankment which allows the conveyance of floodwater through to the north-east of the railway.

Weather can also have adverse effects in terms of accidents, which then lead to further delays in addition to those imposed by the bad weather. However, as shown in **Figure 12** below 79% of Road Traffic Accidents in Thurrock took place in fine weather, with only 12% occurring in rain and 2% in snow conditions.

Figure 12: Road Traffic Accidents by Weather Conditions - % of Total



Data Source: Department for Transport, *Reported Road Casualties in Great Britain 2010*, 2011

Motorway Incidents

The Highways Agency follows an Emergency Diversion Routes Operation Toolkit, published in 2004, when incidents occur along the motorway. Due to the location of the M25 running through Thurrock, when incidents occur on certain parts of the M25, traffic will be diverted on to roads managed by Thurrock Council. These plans include diversionary routes through Thurrock Council managed roads for incidents occurring on the M25 between Junction 2 and 30 as well as 29 and 30. Detailed plans of these emergency diversions can be viewed in **Map 8**, **Appendix D** (Plans 52, 54, 55, 56).

Economic Impacts

According the a 2008 study called 'The Transport Economic Evidence Study (TEES) by Steer Davies Gleave on behalf of the East of England Development Agency, one of the largest traffic flows between the region's 'engines of growth' (those areas where economic growth is focussed) is between the Thames Gateway and the London Arc (an area to the north of London). This traffic will mainly use the A13 and M25 within Thurrock. The report also found that all flows from the other 'engines of growth' to the Thames Gateway suffered from moderate to high congestion. The report also found that the Strategic Road Network in Thurrock (A13, A1089, and the M25) would suffer from significant increases in congestion by 2021, including stretches where it might exceed a 20% increase, such as on the A1089 and the A13/M25 junction. Furthermore, productivity losses as a result of congestion in 2021 were expecting Thurrock to be amongst the worst in the region.

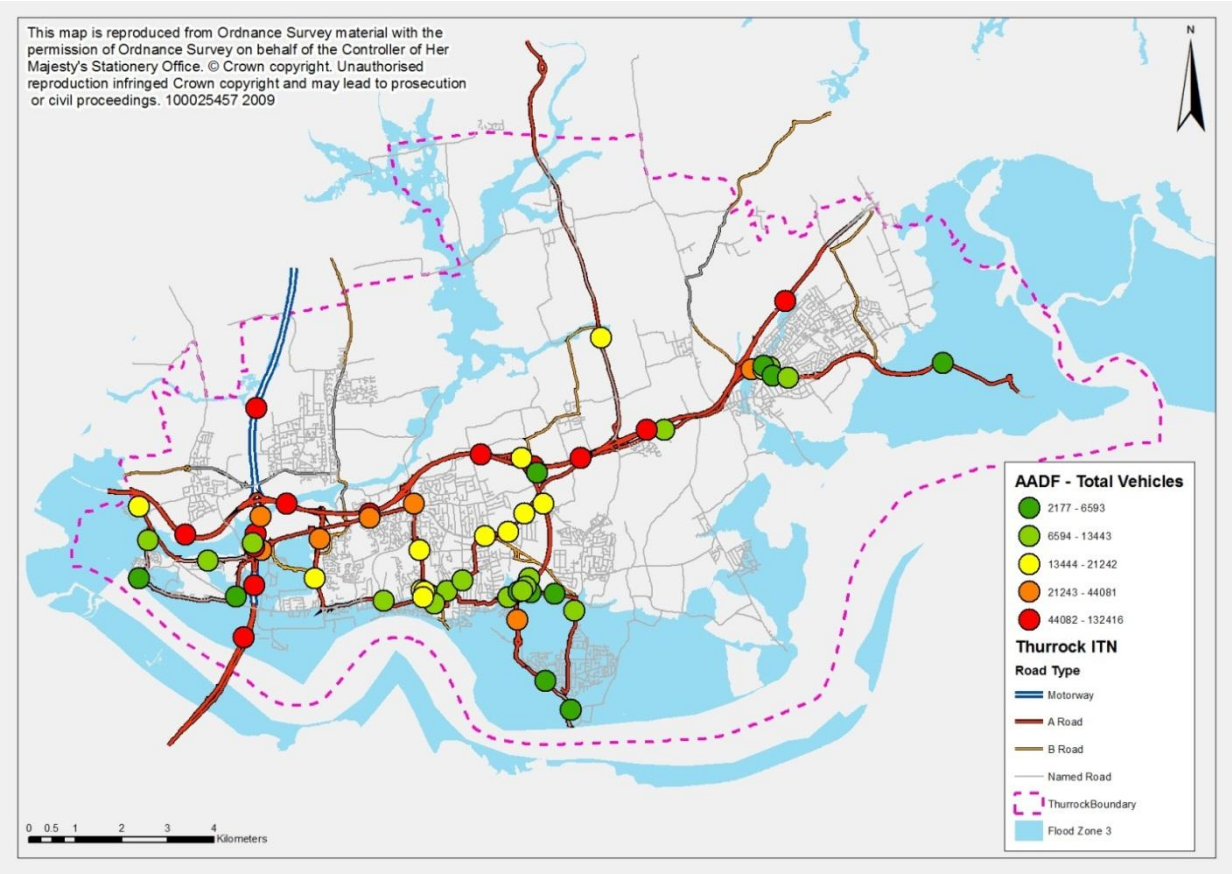
The TEESs identified a number of priority corridors for intervention based on the costs of congestion. These included the London/London Arc to Thames Gateway (A13/A127 and parallel rail routes). In terms of which economic areas were themselves most susceptible economically to congestion constraints, the London Arc shows the most significant impact when both direct and wider economic costs/benefits are considered, whilst the Thames Gateway, Greater Cambridge, Haven Gateway and MKSM show broadly similar levels of impact.

A key conclusion from this element of the work, however, is that whilst there are significant benefits than can be secured through packages of new infrastructure investment, including infrastructure improvements for example to the A13, none of the major investment scenarios had a significant impact on the overall economic costs of congestion and reduced it by, at most, between 8% and 15%. This reflects the widespread and amorphous nature of congestion in the region which is not just focussed on the strategic networks but in urban centres, their hinterlands and on the local networks.

The TEES study therefore pointed to the conclusion that, whilst targeted investment in new infrastructure can have a clear economic benefit, a significant residual economic cost of congestion will remain. Demand-side measures that seek to reduce the overall demand for transport will therefore need to be pursued, together with targeted investment in network management in the urban areas and key economic areas, if congestion and its wider economic costs are to be reduced further.

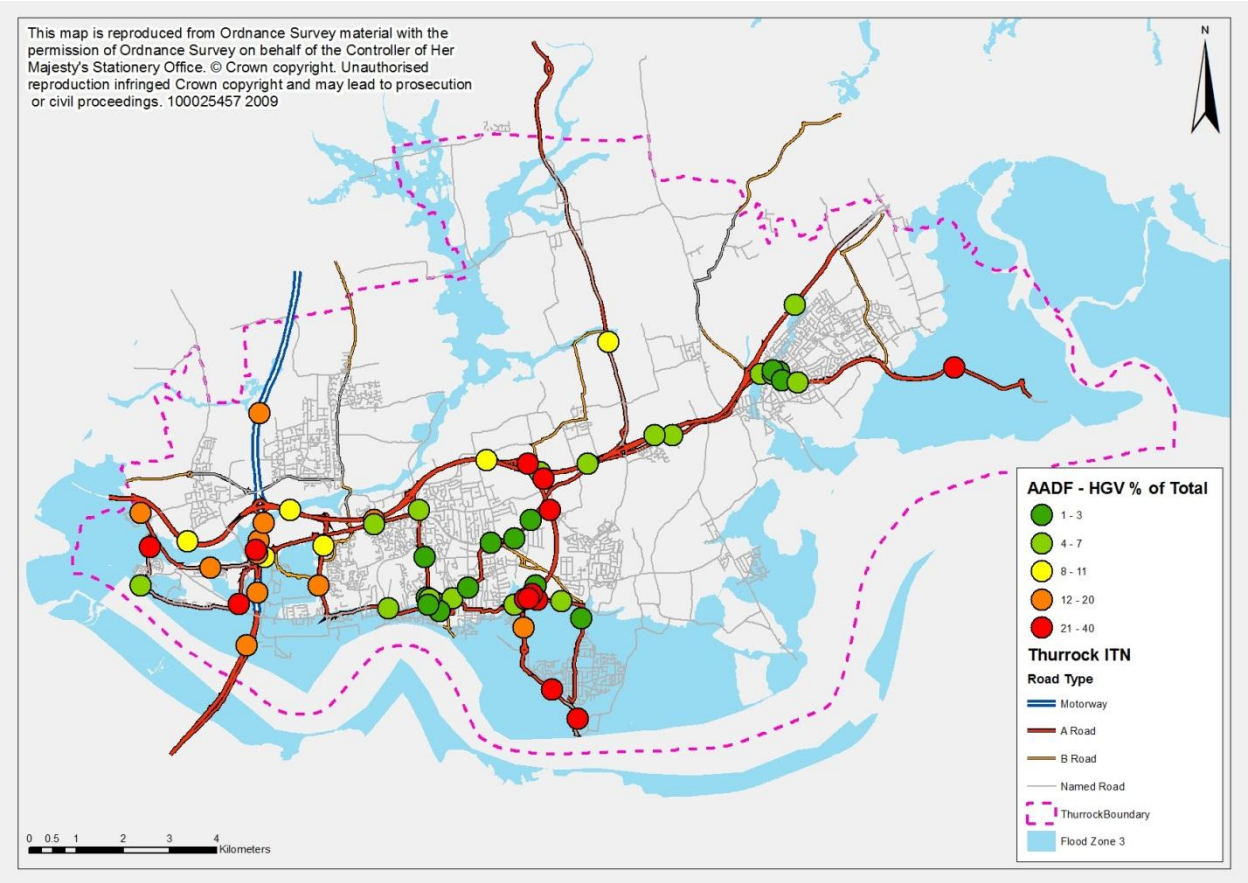
Appendix D: Maps

Map 1: Spatial Distribution of Traffic Flows in Thurrock



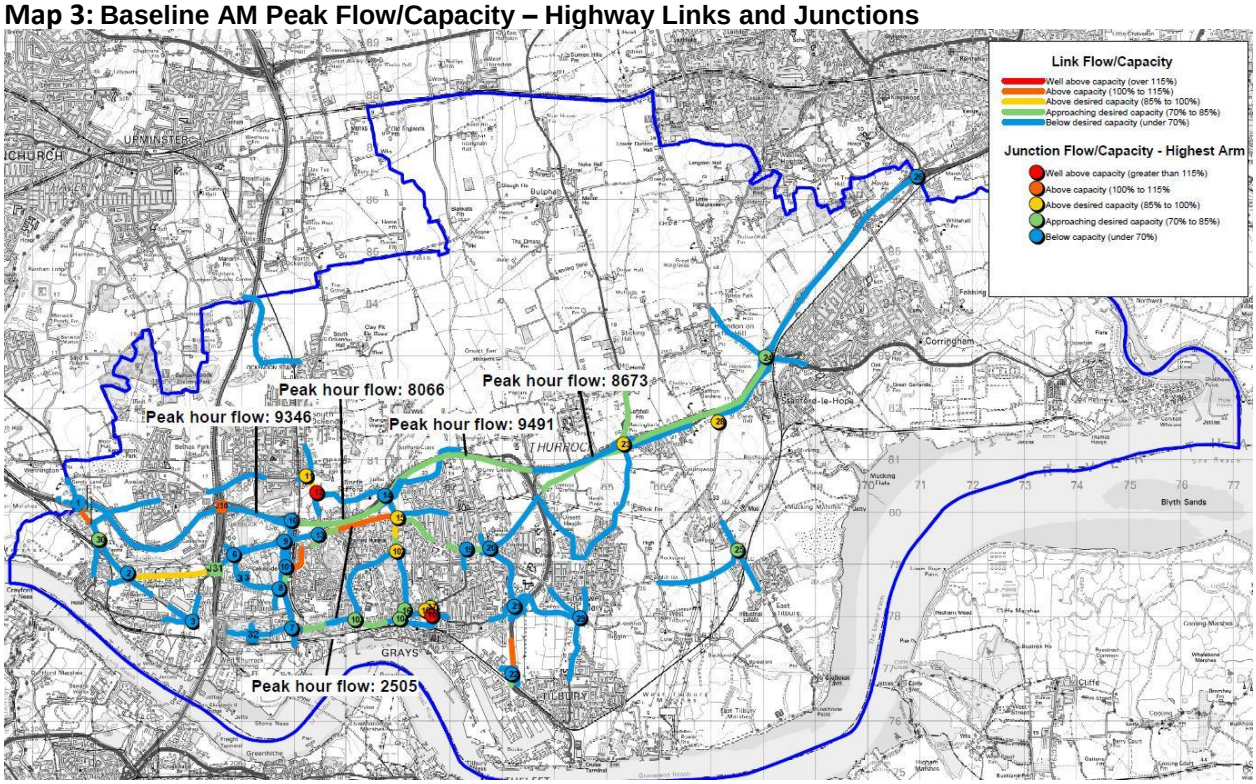
Data Source: DfT, *Annual Average Daily Traffic Flows 2010*, 2011

Map 2: Heavy Goods Vehicles Flows in Thurrock (% of total Annual Average Daily Traffic Flow)



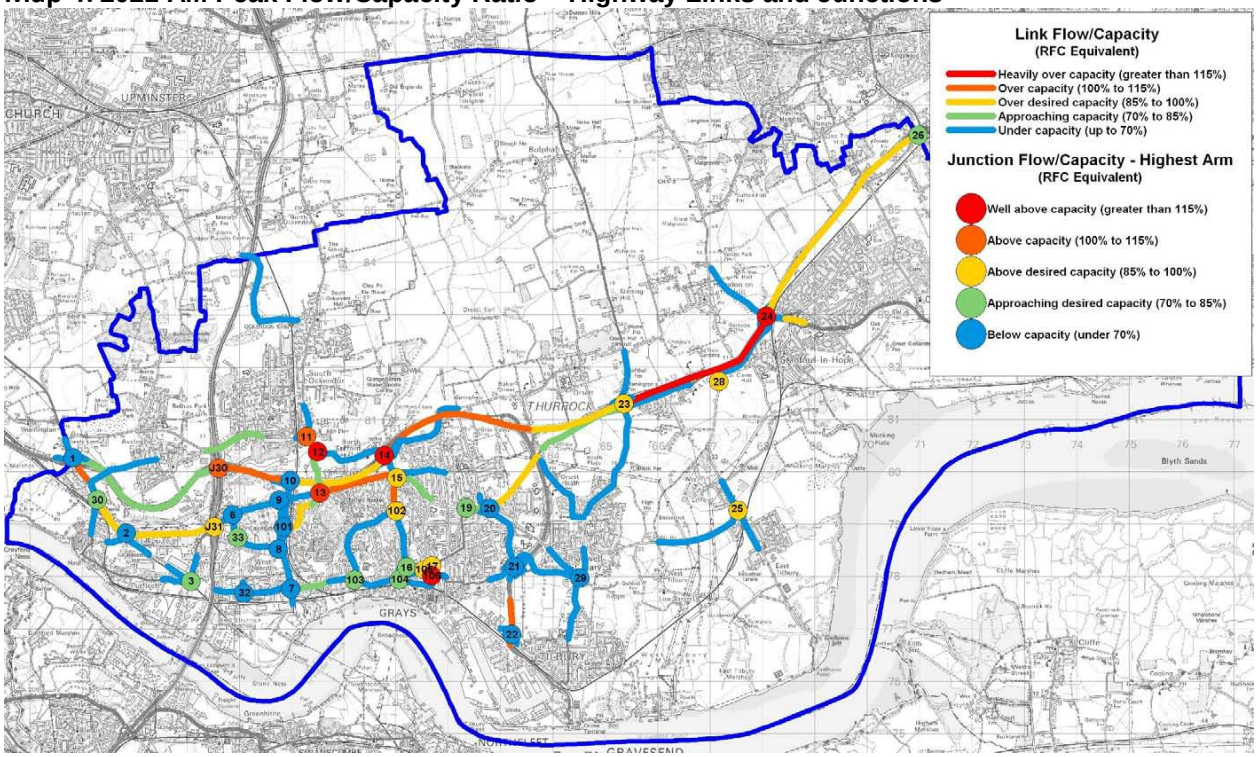
Data Source: DfT, *Annual Average Daily Traffic Flows 2010*, 2011

Map 3: Baseline AM Peak Flow/Capacity – Highway Links and Junctions



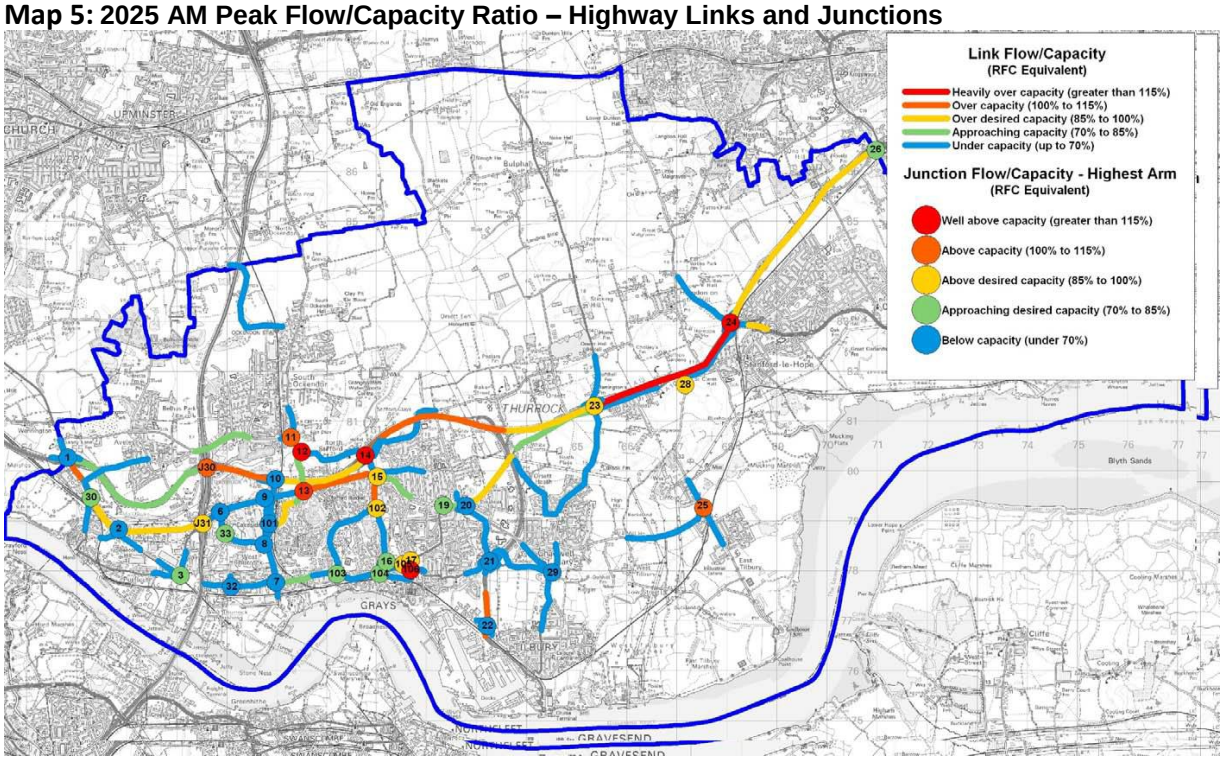
Source: Colin Buchanan, *Thurrock Infrastructure Prioritisation and Implementation Programme 2006 – 2025*,

Map 4: 2021 AM Peak Flow/Capacity Ratio – Highway Links and Junctions



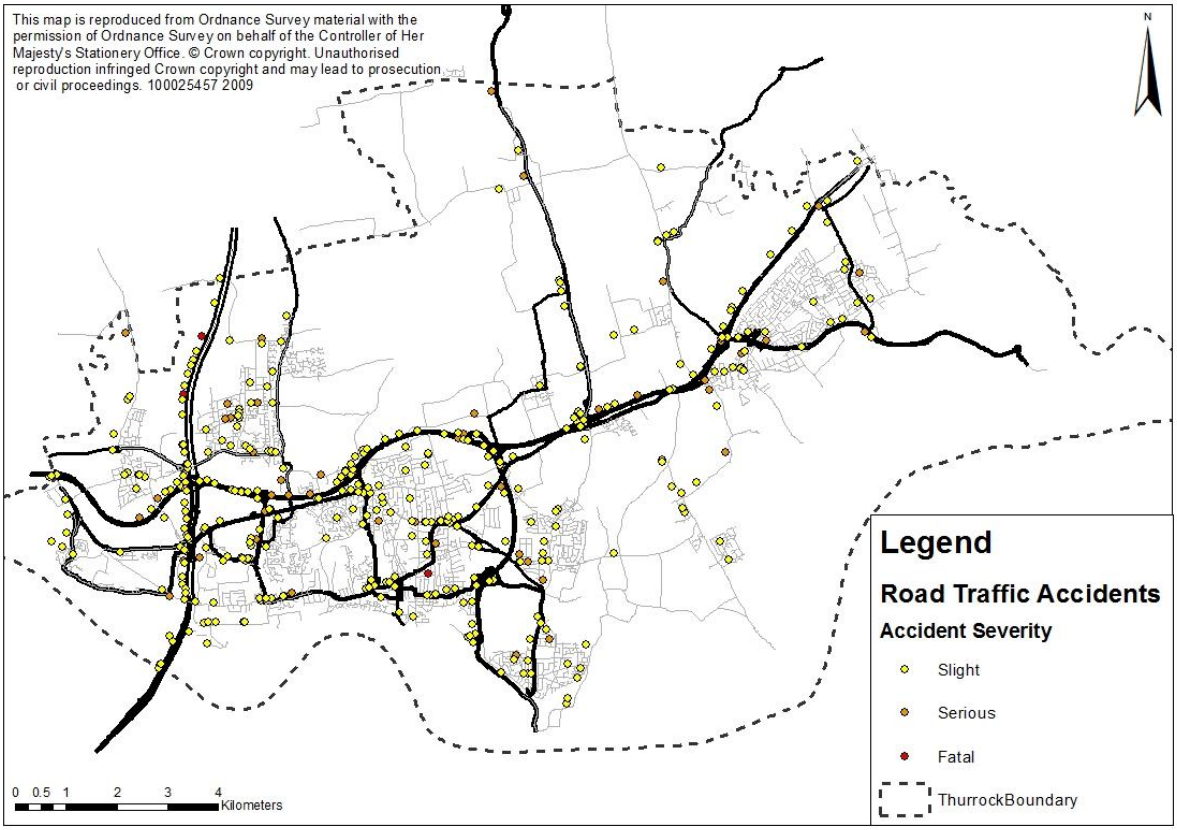
Source: Colin Buchanan, *Thurrock Infrastructure Prioritisation and Implementation Programme 2006 – 2025*, February 2010

Map 5: 2025 AM Peak Flow/Capacity Ratio – Highway Links and Junctions



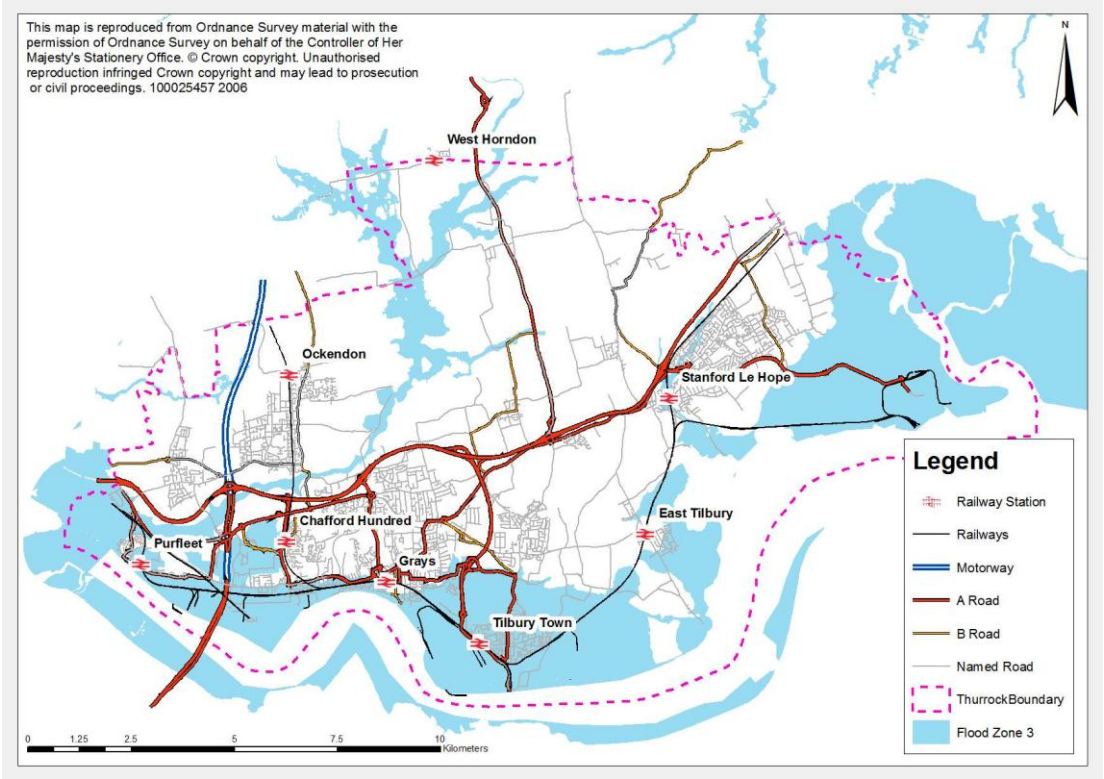
Source: Colin Buchanan, *Thurrock Infrastructure Prioritisation and Implementation Programme 2006 – 2025*, February 2010

Map 6: Road Traffic Accidents Spatial Distribution, 2010

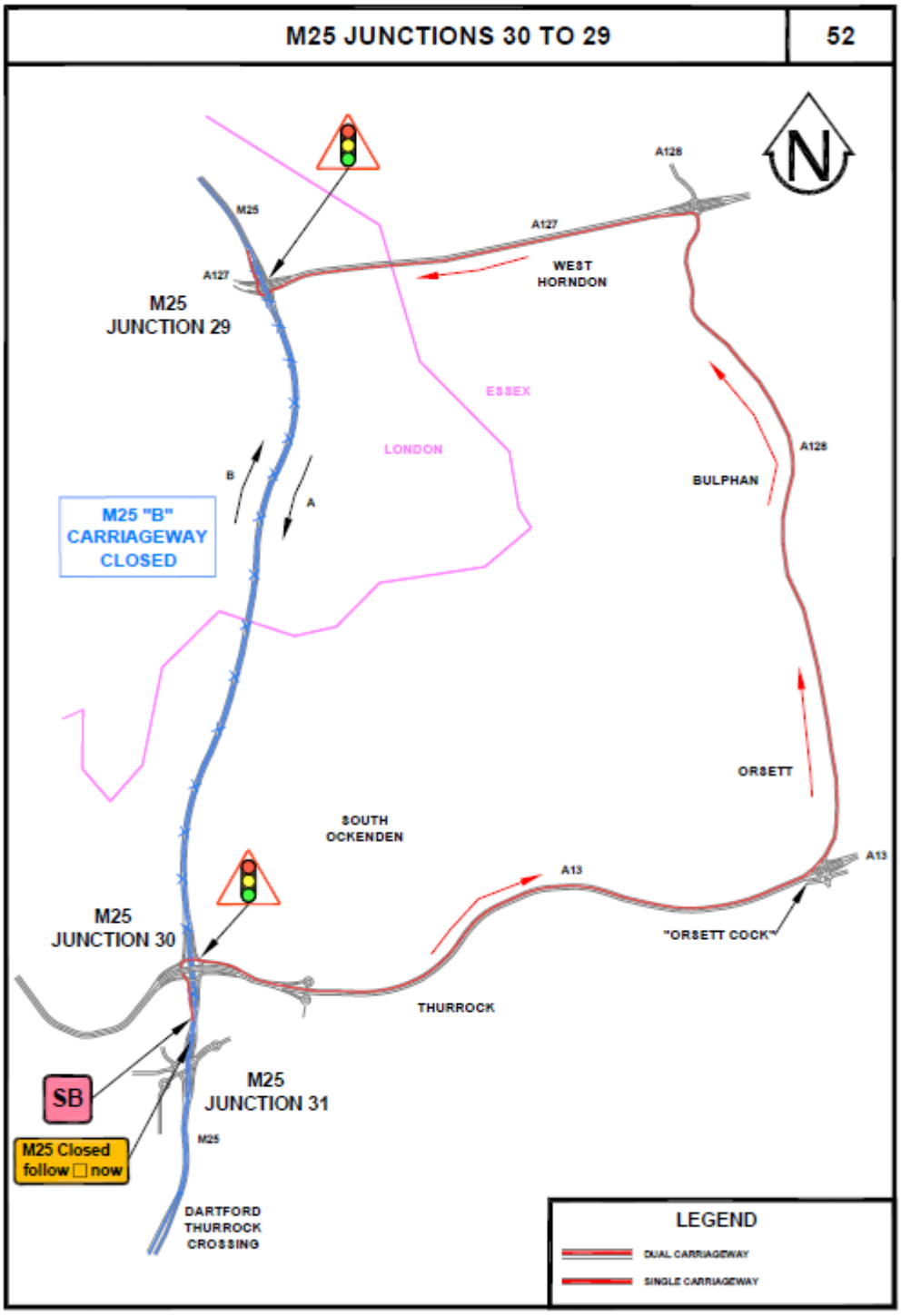


Data Source: Department for Transport, *Reported Road Casualties in Great Britain 2010*, 2011

Map 7: Thurrock Transport Network and Flood Risk



Map 8: The Highways Agency follows an Emergency Diversion Routes Operation Toolkit



M25 JUNCTIONS 30 TO 29	52

Blockage on anticlockwise 'B' carriageway

Close 'B' carriageway at M25 Junction 30 exit slip - sign bin at exit slip.
Open diversion secret sign before exit slip.

Reverse procedure at end of closure.

Diversion Route - follow symbol 

Distance 14 miles / 22 km.

△ Possible congestion at signalised junction M25 Junction 30

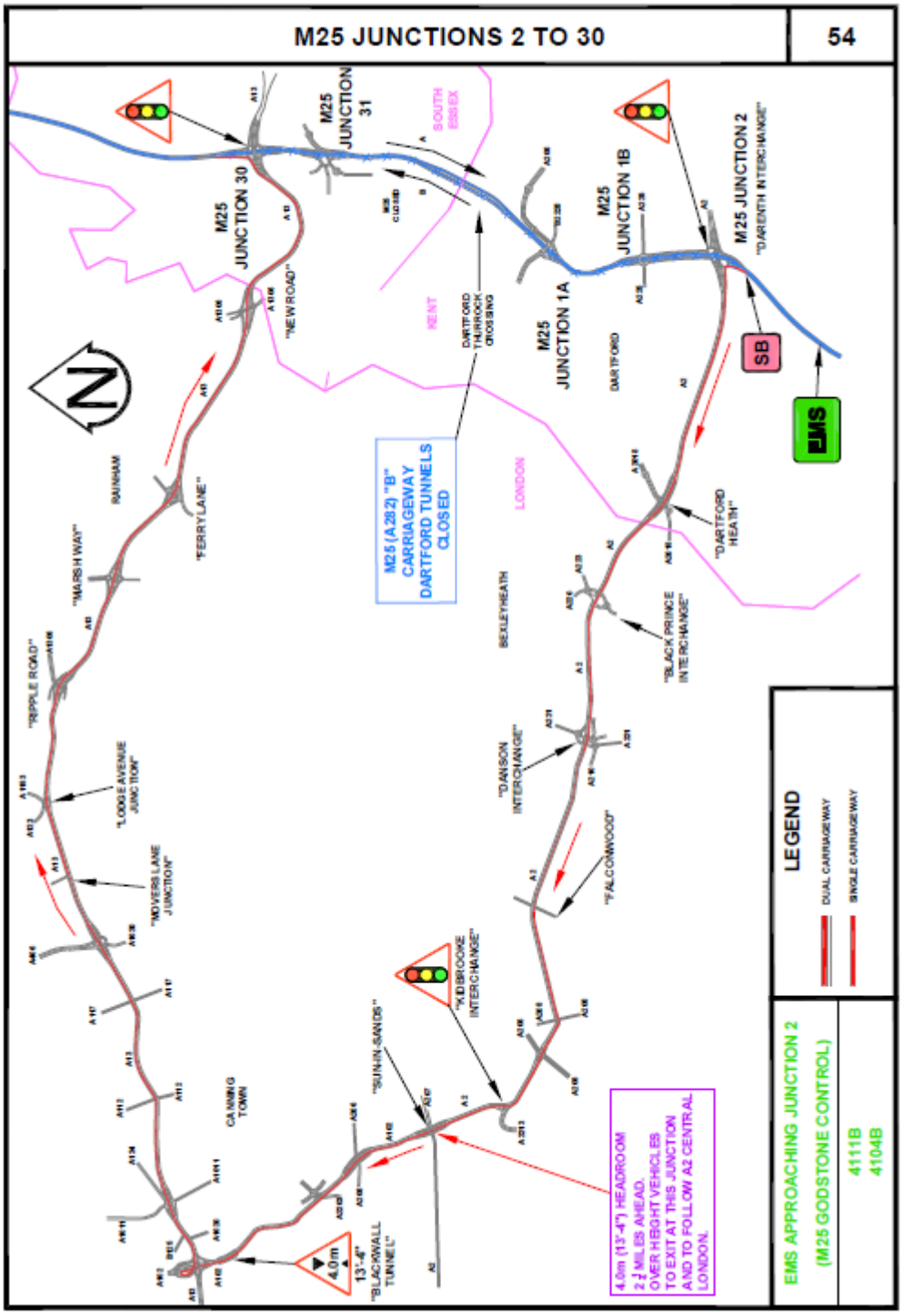
△ Possible congestion at signalised junction M25 Junction 29

From M25 Junction 30 exit slip roundabout take 3rd exit onto A13 towards Tilbury.

At A128 bear left onto exit slip and then take 1st exit at "Orsett Cock" roundabout onto A128 towards Brentwood.

At "Halfway House" roundabout take 1st onto A127 towards London.

Follow A127 and take exit slip towards M25 Junction 29 and then take 3rd exit at roundabout to rejoin M25 towards Stansted.


M25 JUNCTIONS 2 TO 30
54
M25 JUNCTION 30
M25 JUNCTION 31
M25 JUNCTION 1A
M25 JUNCTION 1B
M25 JUNCTION 2
"DARENTH INTERCHANGE"
"NEW ROAD"
"FERRY LANE"
"MARSH WAY"
"RIPPLE ROAD"
"LODGE AVENUE JUNCTION"
"MOVERS LANE JUNCTION"
"SUN-IN-SANDS"
"KINGSBROOKE INTERCHANGE"
"BLACKWALL TUNNEL"
"DANSON INTERCHANGE"
"ALCONBURY"
"BLACK PRINCE INTERCHANGE"
"DARTFORD HEATH"
DARTFORD THURROCK CROSSING
M25 (A282) "B" CARRIAGEWAY DARTFORD TUNNELS CLOSED
SB
JMS
KENT
SOUTH ESSEX
LONDON
DARTFORD
BEXLEYHEATH
CANNING TOWN
RAINHAM
4.0m (13'-4") HEADROOM 2½ MILES AHEAD. OVER HEIGHT VEHICLES TO EXIT AT THIS JUNCTION AND TO FOLLOW A2 CENTRAL LONDON.
LEGEND
DUAL CARRIAGEWAY
SINGLE CARRIAGEWAY
EMS APPROACHING JUNCTION 2
(M25 GODSTONE CONTROL)
4111B
4104B

M25 JUNCTIONS 2 TO 30	54

Blockage on anticlockwise 'B' carriageway

Activate all EMS approaching M25 Junction 2 (M25 Chigwell Control).

Close 'B' carriageway at Junction 2 exit slip - sign bin at exit slip.

Also close entry slip roads to M25 "B" carriageway at junction 1B and junction 1A.

Reverse procedure at end of closure.

Diversion Route - follow symbol 

Distance 27 miles / 43 km.

△ Possible congestion at signalised roundabout at M25 Junction 2 "Darenth Interchange"

△ Possible congestion at A2 / A221 "Danson Interchange"

△ Possible congestion at A2 / Falconwood Interchange"

△ Possible congestion at signalised junction A2 / A2213 "Kidbrooke Interchange"

△ 4.0m height restriction at Blackwall Tunnel northbound

△ Possible congestion at signalised roundabout at M25 Junction 30

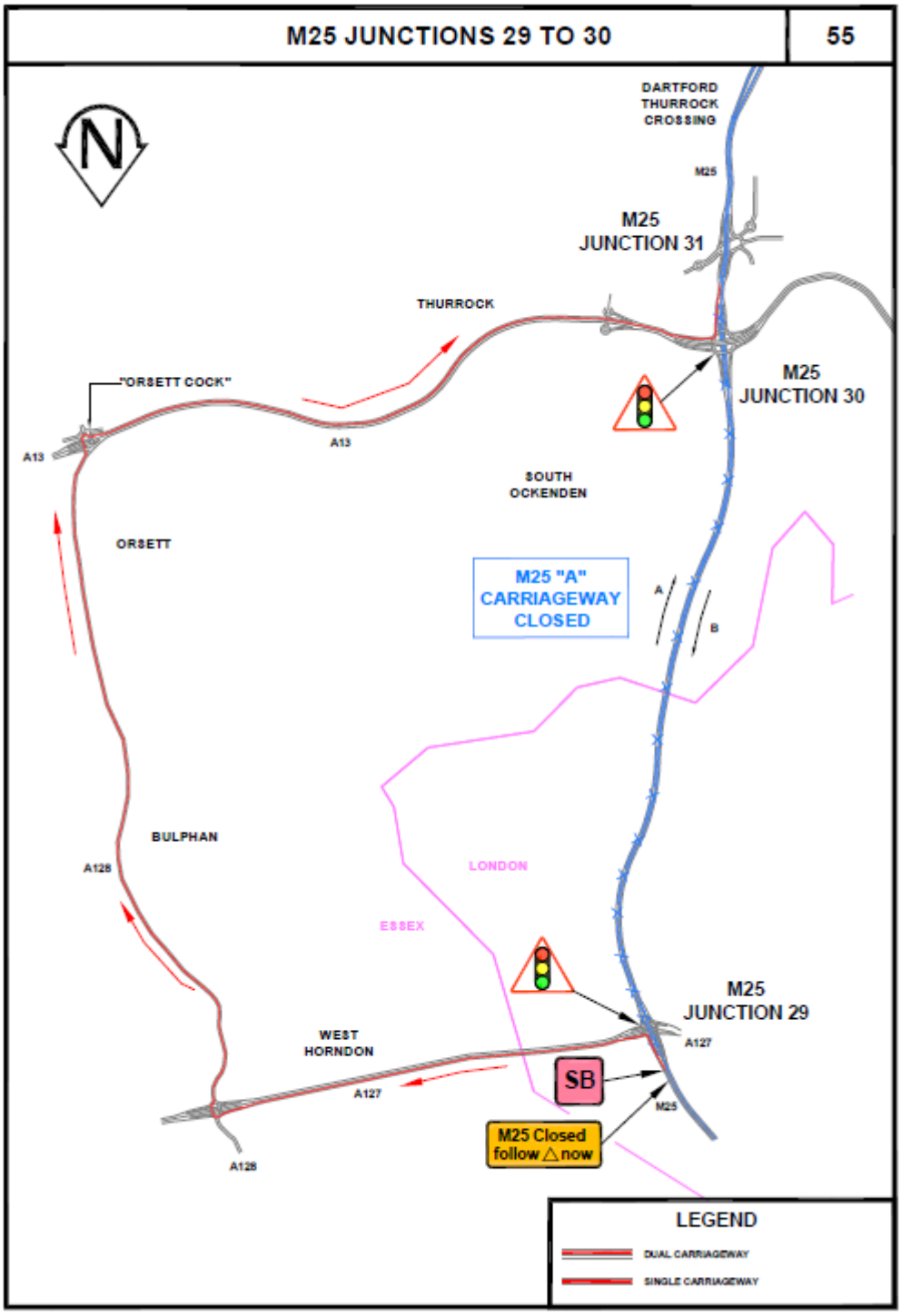
From M25 Junction 2 exit slip to roundabout, take 1st exit onto A2 towards Bexleyheath and Central London.

Follow A2 through "Danson", "Falconwood" and "Kidbrooke" Interchanges towards Central London.

At A2 / A102 / A207 "Sun-in-Sands" Junction over height vehicles (Blackwall Tunnel headroom 4.0m - 2 1/4 miles ahead) to exit and follow A2 Central London. All other traffic to follow A102 through Blackwall Tunnel, then take exit onto A13 and follow A13 towards Tilbury.

Take exit onto A13 and follow A13 towards Tilbury.

Take exit at M25 Junction 30 Interchange and at roundabout rejoin M25 towards Stansted.


M25 JUNCTIONS 29 TO 30
55
N
DARTFORD
THURROCK
CROSSING
M25
M25
JUNCTION 31
THURROCK
"ORSETT COCK"
A13
A13
M25
JUNCTION 30
SOUTH
OCKENDEN
ORSETT
M25 "A"
CARRIAGEWAY
CLOSED
A
B
BULPHAN
A128
LONDON
ESSEX
M25
JUNCTION 29
A127
WEST
HORNDON
A127
SB
M25
M25 Closed
follow △ now
A128
LEGEND
DUAL CARRIAGEWAY
SINGLE CARRIAGEWAY

M25 JUNCTIONS 29 TO 30	55

Blockage on clockwise 'A' carriageway

Close 'A' carriageway at M25 Junction 29 exit slip - sign bin before exit slip.
Open diversion secret sign before exit slip.

Reverse procedure at end of closure.

Diversion Route - follow symbol 

Distance 14 miles / 22 km.

△ Possible congestion at signalised roundabout M25 Junction 29

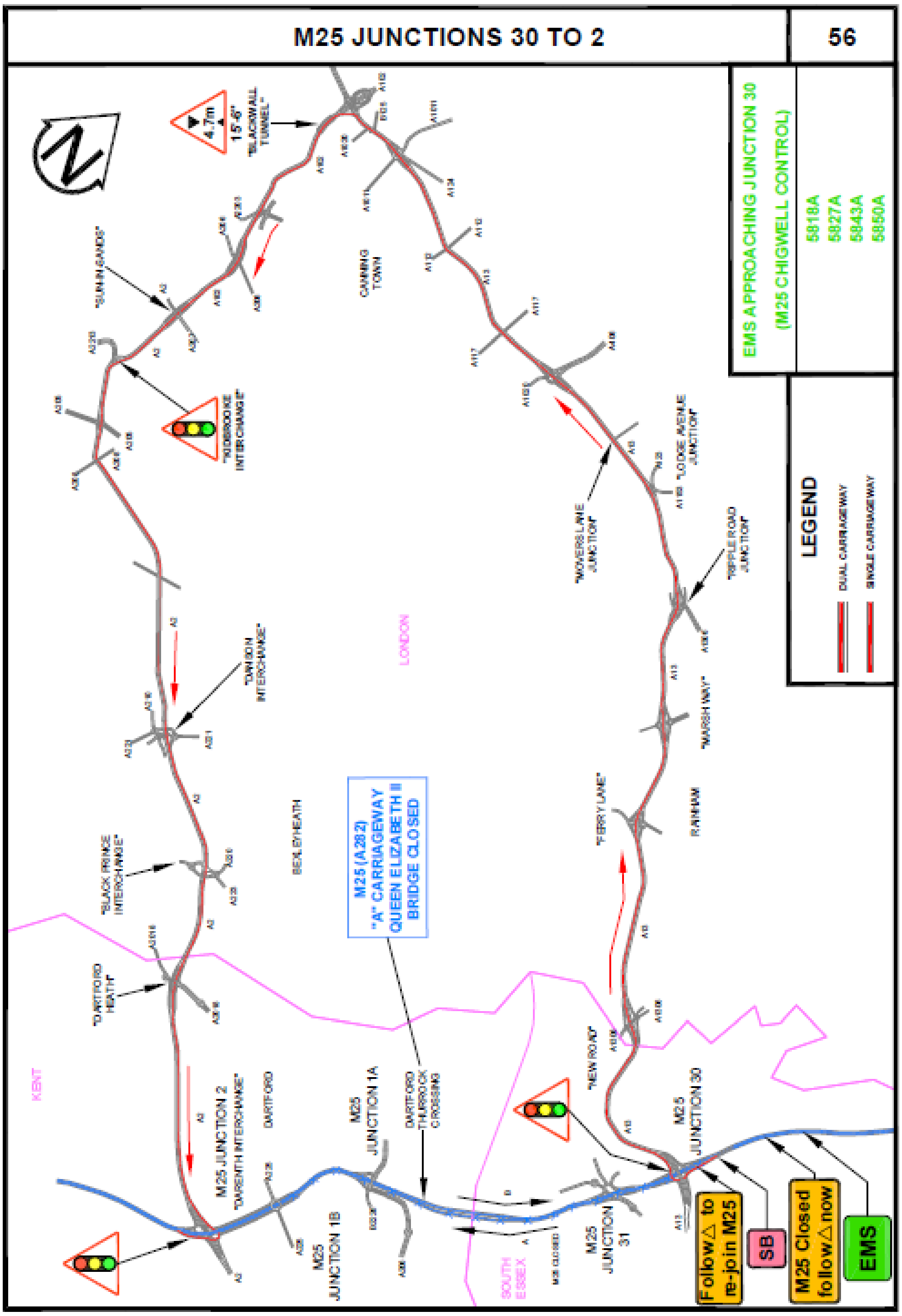
△ Possible congestion at signalised roundabout M25 Junction 30

From M25 Junction 29 exit slip roundabout take 1st exit onto A127 towards Southend.

Take exit at A128 "Halfway House" and then take 3rd exit at roundabout onto A128 towards Tilbury.

At "Orsett Cock" roundabout take 4th exit onto A13 towards London.

Follow A13 and bear left onto exit slip towards M25 and then take 1st exit at M25 Junction 30 roundabout to rejoin M25 towards Dartford Toll Crossing.


M25 JUNCTIONS 30 TO 2
56
EMS APPROACHING JUNCTION 30
(M25 CHIGWELL CONTROL)
5818A
5827A
5843A
5850A
LEGEND
DUAL CARRIAGEWAY
SINGLE CARRIAGEWAY
M25 (A282)
"A" CARRIAGEWAY
QUEEN ELIZABETH II
BRIDGE CLOSED
M25 JUNCTION 30
M25 JUNCTION 31
M25 JUNCTION 1A
M25 JUNCTION 1B
M25 JUNCTION 2
Follow △ to re-join M25
SB
M25 Closed follow △ now
EMS

M25 JUNCTIONS 30 TO 2	56

Blockage on clockwise 'A' carriageway

Activate EMS approaching M25 Junction 30 (M25 Chigwell Control).

Close 'A' carriageway at Junction 30 exit slip - sign bin before exit slip.
Activate diversion sign before exit slip.
Activate diversion sign before end of exit slip.

Also close entry slip road to M25 (A282) "A" carriageway at junction 31.

Reverse procedure at end of closure.

Diversion Route - follow symbol 

Distance 27 miles / 43 km.

△ Possible congestion at signalised roundabout M25 Junction 30

△ 4.7m height restriction at Blackwall Tunnel southbound

△ Possible congestion at signalised junction A2 / A2213 "Kidbrooke Interchange"

△ Possible congestion at signalised A2 / A221 "Danson Interchange"

△ Possible congestion at signalised roundabout at M25 Junction 2 "Darenth Interchange"

From M25 Junction 30 exit slip to roundabout, take 3rd exit onto A13 towards Dagenham and Central London.

At A12 / A102 Interchange take exit onto A102 Southbound towards M25 and Dover through Blackwall Tunnel.

Follow A102 and A2 through "Kidbrooke" and "Danson" Interchanges towards M25 and Dover.

Take exit at M25 Junction 2 interchange and at roundabout rejoin M25 towards Gatwick.