Leicestershire County Council

Network Management Plan

2014-2026

Foreword

Peter Osborne CC

I have great pleasure in presenting Leicestershire County Council's Network Management Plan.

Leicestershire is a prosperous, diverse and attractive County. Working with partners, including the Leicestershire Together Strategic Partnership and the Leicester and Leicestershire Enterprise Partnership we have a key role to play in ensuring that it remains so. Essential to achieving this is a transport system that enables the efficient movement of people, materials and goods.

This Network Management Plan explores the challenges that we face, and explains how we will manage and maintain our highway network so that it delivers an effective transport system for the people and businesses of Leicestershire.

Peter Osborne CC

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Introduction

Safe and dependable transport is essential to our society and economy. The Government's 2004 White Paper The Future of Transport emphasises the importance of the active and co-ordinated management of the road network. Government has introduced, and continues to introduce a variety of policies to achieve this, making road transport more efficient and effective, keeping it safe and reducing greenhouse gas and other emissions.

Car ownership and use is continuing to grow in the UK. As a result traffic congestion is an increasing problem in most urban areas. Congestion threatens the economic well-being of many towns and cities, as well as affecting the quality of life of those who live and work there.

Leicestershire County Council is the local highway, traffic and street authority for Leicestershire. We are responsible for managing the traffic using our road network. By effectively managing the transport system we can provide more consistent, predictable and reliable journeys for the movement of people and goods. This helps to tackle congestion and environmental pollution and improves safety and accessibility for all road users.

Managing the road network, so that we get the most from it, is vital to the future prosperity of Leicestershire. The Economic Assessment for Leicester and Leicestershire concluded that our transport system has a key role to play in helping local economic prosperity and growth. Given the impact of congestion on the economy a strategic approach is required, one which considers the causes of congestion, the impacts, the challenges and the possible solutions.

This Network Management Plan (NMP) is a key document in helping us to achieve this. It sets out our strategic approach to managing and developing the highway network. Its implementation will help to ensure that we have a transport system that is fit-for-purpose both now and in the future, helping us to deliver both national and local objectives.

Our NMP sets out how we will fulfil our network management duty. It explores:

- the challenges that we face
- the needs of road users, highway authorities and utility companies
- the causes of congestion
- the impacts of congestion (both now and in the future)
- policies to deal with congestion
- the transport services that we deliver
- how Leicestershire's transport system (road and bus network) will be managed in order to help tackle congestion
- what we can do to address congestion

The actions that we will be taking to implement the Network Management Plan are shown at appropriate points throughout this Plan (indicated with AP*). They are also summarised in the Appendix A Action Plan.

The policies that we have introduced, or will be introducing, to manage the network are shown at appropriate points throughout this Plan. These are summarised in Appendix B.

Executive Summary

Introduction

The road network is used by a wide range of people, including car and lorry drivers, bus passengers, pedestrians, cyclists and equestrians. The network enables the efficient, effective and safe transport of people, goods and services, helping people get to and from such things as home, work, leisure and education.

Future challenges

The Government recognised the significant challenges facing the highway network in its 2013 paper Action for Roads: A Network for the 21st Century. This explained the importance of roads to the economy, reiterated the need for investment and set out detailed plans to improve management of the whole network.

Our transport system therefore not only needs to deal with existing pressures, it also needs to evolve so that it can deal with future challenges. These challenges include:

- the recession and reduced funding
- population growth
- increases in traffic volumes and congestion
- climate change

The recession and reduced funding

We recognise that an effective transport system is vital to support the economy and population growth.

However, we have limited resources available to spend on transport investment. This means

that there will be less money for new transport infrastructure, for maintaining the road network and for helping to support the bus network.

This could affect how our transport system operates and could influence the way that people choose to travel. Given the limited funds that are available to us it is important that we:

- make the best use of what we already have
- work with others to provide joint solutions
- think flexibly and imaginatively about how we can achieve our objectives
- prioritise measures to those that will help the economy the most, and which will provide the greatest benefit.

Population growth and congestion

Population growth will increase the number of vehicles on our road network, which is predicted to make congestion worse. The environmental impacts of congestion, and the impact that it has on quality of life, is also of concern to many residents and road users. Air quality and noise pollution are often raised as problems where congestion occurs.

A 2007 congestion study estimated that congestion costs the East Midlands economy £935 million a year. To minimise this cost congestion needs to be managed effectively. However, the provision of new roads to accommodate predicted increased numbers of vehicles is often impractical or undesirable, particularly in our towns and cities.

It is therefore vital that we maximise the effectiveness of our network, so that it can cope with congestion more effectively. This will minimise the impact of congestion on the economy, residents and road users.

Climate change

Road networks are prone to the impact of climate change. Flooding, frost, snow and heat (which can cause road surfaces to melt) can cause significant disruption to all road users.

Dealing with this disruption and damage can be very costly. The future impact and cost of climate change can be predicted. These predictions take into account such things as future population growth, changes to technology, demographics and energy sources.

For our road network to operate efficiently and effectively, both now and in the future, it needs to be resilient to the impact of climate change.

Summary

To ensure that the network remains fit for purpose in the future, and is able to deal with all of these challenges, the highway authority, along with its partners, must continue to maintain and improve the network.

Whilst a Network Management Plan (NMP) is not mandatory, the government does encourage highway authorities to prepare a plan. Given the opportunities and benefits that it provides, which include benefits to the economy, users of the highway network and service delivery, we are fully committed to the implementation and delivery of our NMP.

Our NMP sets out how we will ensure that our network remains fit for purpose, both now and in the future. The overall aim of the NMP is to provide a holistic approach to network management in Leicestershire. This will help to deliver positive outcomes for our local economy and quality of life for the people who live, work or travel through our County.

The NMP covers the whole of Leicestershire, excluding Leicester City (Leicester City Council) is responsible for producing its own plan). We will continue to work with our partners and neighbouring authorities to co-ordinate the smooth movement of traffic. Focusing on further improving our collaborative working with Leicester City Council and Highways Agency.

Leicestershire County Council has an important role to play in helping to minimise the impact of these challenges. As the highway authority for Leicestershire (excluding Leicester City) we have a range of duties and powers under which we maintain and improve the highway network and manage the activities that takes place on it (further information is provided in Chapter 2).

Chapter 1
An introduction to Leicestershire's highway network

The aim of this chapter is to explore the challenges that could have an impact on the highway network, both now and in the future.

Introduction

The ability to travel offers all of us very real benefits. Extending this mobility is important to building an inclusive society. For instance people used to work near to where they lived, but commuting longer distances has now become far more commonplace. It is now an accepted part of life that people travel further, both for work and social reasons.

A well managed transport system must be flexible enough to deal with changes to the way that people travel. It must also be able to deal with future challenges so that it can continue to support the economy. The Government recognises the importance of a well managed transport system to the economy. In 2004 the Traffic Management Act placed a network management duty on all local traffic authorities to secure the expeditious movement of traffic on their road networks, and to assist adjacent highway authorities to do the same.

The 2004 Act suggests that local authorities could achieve this by taking a range of actions, including by securing a more efficient use of their road network and/or tackling road congestion (or other disruptions to the movement of traffic).

Our Network Management Plan (NMP) explains how we will do this. The NMP is seen as a key element in the delivery of our third Leicestershire Local Transport Plan (LTP3), which aims to ensure that Leicestershire remains a prosperous, safe and attractive place to live, work and visit.

Traffic congestion involves queuing, slower vehicle speeds and longer unpredictable journey times, preventing the free movement of traffic. This slows and disrupts journeys

and affects the operational efficiency of businesses, resulting in an impact on the economy, the environment and people's quality of life.

Congestion can be caused by a number of different factors, including:

- Too many vehicles for the road
- New development causing additional traffic
- Obstacles in the road (for instance parking)
- Inappropriate traffic on inappropriate roads
- Planned events (short-term or longer-term), such as general road works, utility company road works, public events, plant access during construction works
- Unplanned events (short-term or longer-term), such as severe weather, accidents, emergency road works, traffic signal (traffic lights) malfunctions or damage to utilities during other works
- Conflict between different types of road user, particularly in town centres.

In an economic climate where the provision of new road infrastructure is often not practical (either because it is too costly, impractical and undesirable), the management of the existing transport system becomes more important.

Leicestershire now

The Economic Assessment for Leicester and Leicestershire concluded that the transport system, of which Leicestershire's road and bus networks forms part, has a key role to play in helping local economic prosperity and growth (an effective transport system enables people to travel to/from work, leisure, services and employment etc, employers to more easily access employees, businesses to transport their supplies and services to operate effectively).

The Leicester & Leicestershire Enterprise Partnership (LLEP) was formed in May 2011 (approved by the Government in October 2010), and covers the geographical area of Leicester and Leicestershire. The LLEP is a partnership of Leicester and Leicestershire local authorities, the business community, universities and other partners.

The LLEP:

- Leads economic development and regeneration activities, driving forward economic growth, **by** identifying opportunities and challenges facing local businesses and people
- Aims to make Leicester and Leicestershire a destination of choice by promoting the area as a place to do business, work and live
- Provides strategic leadership to deliver sustainable economic growth through investment in enterprise and innovation, employment and skills and infrastructure including transport and housing.

The LLEP's Economic Growth Plan (2012-2020) has identified 17 strategic objectives and priorities, which have emerged as critically important to enable the economy of Leicester and Leicestershire to grow. Of these 17 strategic objectives and priorities there are 3 that focus on planning and transport:

- Increase the availability of fit-for-purpose high quality employment land and premises
- Ensure transport infrastructure supports future economic growth
- Increase the provision of a range of quality housing to support economic growth.

In Leicestershire the responsibility for managing the transport system is divided between:

- The Highways Agency (HA) - responsible for motorways and those A roads that have national or regional significance, such as the A42 and A46
- Leicestershire County Council (LCC) - responsible for all other publicly maintained roads in Leicestershire. We manage and maintain over 4,100km (2,500 miles) of roads and 3,000 (1,875 miles) of Rights of Way.

Travel to work data, contained within Chapter 8 of the Economic Assessment, confirms the importance of Leicester City for the supply of jobs to County residents. There is also an increasing commuter pattern from the City into the County. This results in complex commuting patterns across the County, as people travel by car, bus, bike, train and on foot between the City and County for work.

Freight and distribution are important to the economy of Leicestershire. There are a number of major industrial and warehouse distribution complexes in the County that lie within, or close to, the 'golden triangle' (formed by the M1, M6, M69). The effective operation of the County's transport system is therefore important to the reliable movement of materials and goods.

A strong message from the business community is that the reliability of journey time, both for road and public transport trips, is often more of an issue than reducing journey time. Both employees and businesses want certainty over how long a journey will take. Similarly residents of Leicestershire want journeys that are reliable, predictable and, as much as possible, stress free.

For residents that live on congested roads, or in busy pedestrian areas like town centres with lots of traffic, air quality and noise pollution can also be a concern (this issue is explored further in Chapter 6).

Leicestershire in the future

Over the past two decades the population of Leicester and Leicestershire has grown faster than the regional and national rate. At least 80,000 new houses need to be built in Leicester and Leicestershire by 2026 to accommodate growth, largely as a result of the growing population and the need to meet changing housing needs.

These changing housing needs include meeting the requirements of an ageing population (the number of people aged 75+ is projected to more than double between 2006 and 2031) and the increasing number of people who are living on their own.

Recent employment forecasts suggest that the greatest employment growth in Leicestershire over the next ten years will be in the business services, transport, wholesale and retail sectors. There is also an ambition to increase the number of jobs in more creative and high-tech industries, such as research and development, and certain business sectors, such as business and management consultancy services. The location of this growth will impact on the transport system.

LTP3 evidence indicates that by 2026 growth could significantly increase congestion. In some cases journeys could take twice as long as they do at present, affecting car drivers, bus users and the movement of materials and goods. A busier, more congested road network is also more prone to substantial and widespread disruption in the event of road works or unplanned events such as accidents or emergency repairs. In transport terms the impacts of growth is one of the most significant challenges that we face.

Our ability to be able to build new infrastructure to offset the impacts of population and economic growth is likely to be limited, as funding levels are likely to remain relatively restricted. In the medium term an increased level of highways maintenance activities will be charged to our capital funding. This will impact on the level of investment available for highway improvements. Therefore, funding for future highway network improvements, such as new junctions and roundabouts, will require greater pursuit of external funding source such as Government grants and developer funding.

In the longer term, even with an improved financial situation, evidence indicates that it will not be possible to keep providing new infrastructure / road space to a scale that meets the predicted level of demand. The reasons for this include:

- the scale of the infrastructure is still likely to be unaffordable
- it is likely to be socially unacceptable (for instance people don't want new roads to affect them)
- it is likely to be environmentally unacceptable (for instance its impact on green space, older buildings and wildlife habitat)
- there are national and local priorities to cut carbon emissions (it is undesirable to encourage increasing numbers of vehicles)
- there are national and local priorities to improve health (we want to encourage more people to walk and cycle).

With regard to the environment, we recognise that climate change could have a big impact on our services, including how our road network operates in the future.

The key predictions for climate change in the UK are set out in the UK Climate Impacts Programme 2009 http://ukclimateprojections.metoffice.gov.uk:

- annual average temperatures will increase
- summers will become hotter and drier
- winters will become milder and wetter
- soil will become drier
- snowfall will decrease
- heavy and extreme rainfall will become more frequent

The effects of climate change on our policies and standards were explored by the 3 Counties Alliance Partnership (3CAP) in 2010. This helped to identify the parts of our road network that were vulnerable to severe weather events.

As the highway authority, we will need to deal with these challenges, so that the network continues to provide for the efficient, effective and safe transport of people, goods and services. Details of how we will do this, and how we will fulfil our network management duty, are set out in the following chapters.

Chapter 2
The legal framework

The aim of this chapter is to explore the national legislation that relates to management of the road network. It also explains our approach to the requirements of the Traffic Management Act 2004 and the network management duty (NMD).

Traffic Management Act 2004

The Traffic Management Act 2004 (the 2004 Act) received Royal Assent on 22 July 2004.

The 2004 Act was introduced to reduce congestion and disruption on the road network. It places a duty on local traffic authorities to secure the expeditious movement of traffic, ensuring the smooth movement of traffic on their road network, and those networks of surrounding councils. Authorities are required to make appropriate arrangements for planning and carrying out these duties.

The 2004 Act is split into six parts:

- Traffic Management on Trunk Roads
- Network management duty
- Permits
- Street Works
- Highways and Roads
- Civil Enforcement of Traffic Contraventions

The 2004 Act is what is known as an *Enabling* (or Parent) Act. This is an Act of Parliament which allows (enables) specified people/bodies to change laws, by using appropriate legislation. Delegated (or secondary) legislation can then be used by these people/bodies to change the actual law (for instance by using Traffic Regulation Orders or Statutory Instruments).

Compliance with the Traffic Management Act 2004

We recognise and support the opportunities and benefits that the Traffic Management Act 2004 and network management duty (NMD) provide.

Whilst production of a Network Management Plan is not mandatory, the government does encourage highway authorities to prepare one. Given the opportunities and benefits that it provides, which include benefits to the economy, road users and service delivery, we are fully committed to the implementation and delivery of our Network Management Plan.

This includes the appointment of a Traffic Manager to perform the tasks that are necessary for meeting the network management duty. In Leicestershire the Traffic Manager role lies with the Traffic and Safety Manager (with oversight of all congestion and traffic management activities in the County). Road and street-works co-ordination will be undertaken by the Highways Manager.

Appendix C sets out how we are complying with the network management duty and Appendix I provides contact details for the Traffic Manager.

Network Management Duty

The network management duty (the duty) is part of the Traffic Management Act 2004. It applies to all local traffic authorities. The duty came into force on 5 January 2005. The duty recognises:

- the importance of managing and operating the road network
- the importance of optimising benefits for all road users
- the needs of those who maintain the infrastructure (both of the network itself and of the services within it).

Section 16(1) of the Traffic Management Act 2004 states that:

It is the duty of a local traffic authority to manage their road network with a view to achieving, so far as is reasonably practicable and having regard to their other obligations, policies and objectives, the following objectives –

(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 arrangements for performing the network management duty include:

- Taking any action that we consider will contribute to securing more efficient use of the road network
- Take any action that we consider will avoid, eliminate or reduce road congestion or other disruption to the movement of traffic
- Establishing processes for identifying things which are (or could) cause road congestion or disruption
- Considering possible actions that could be taken to address congestion or disruption
- Ensuring that specific policies or objectives are determined for different roads or classes of roads
- Monitoring the effectiveness of the organisation and processes for tackling congestion and the implementation of decisions
- Regularly assessing the performance of the duty and keeping the effectiveness of arrangements that have been put in place under review.

The Department for Transport (DfT) issued guidance in November 2004, which outlines the highway authority's obligations under the duty. This includes:

- the scope of the duty (main issues and considerations)
- advice on the broad principles of network management
- good practice advice

The DfT recognises that:
the network management duty is one element of an authority's transport activities and should complement other policies and actions

- the local traffic authority should look to embed desired outcomes and appropriate policies and plans under the network management duty within Local Transport Plans to achieve a coherent approach.

Other legislation

As well as the Traffic Management Act 2004 and network management duty we have other legal responsibilities on the highway, which are of equal importance.

We have a range of duties and powers under which we maintain, improve and manage the highway network. These include:

- the Highways Act 1980, which principally covers the structure of the network
- the New Roads and Street Works Act 1991 (NRSWA), which covers utility street works
- the Road Traffic Regulations Act 1984, which regulates the activities of road users.

Further information is provided in Appendix G.

Policy 1

Any measure taken on the network to improve network reliability or resilience should not be at the expense of our other responsibilities or duties as a highway authority.

Chapter 3
The local policy framework

The aim of this chapter is to explore the local policies that support national legislation and objectives, and which have a direct influence on the Network Management Plan.

Leicestershire Together – Outcome Framework

Leicestershire Together is a partnership made up of the County's major public service budget holders, including local councils, the police and the health service. The partnership works together to improve such things as roads, businesses, schools, hospitals and villages/ towns and to help make the people in Leicestershire feel included, richer, safer, better trained, healthier and happier.

The Leicestershire Together Outcome Framework (formerly the Sustainable Community Strategy) contains a set of shared objectives and priorities. For transport the partnership wants to ensure that *our transport system is efficient*, effective and safe and prioritises *economic growth*. To achieve this the partnership aims to:

- *have effective and integrated public and community transport provision, including targeted and innovative travel solutions which meet specific needs, especially for older and young people*
- *encourage more people to walk, cycle and use public transport as part of their daily journey, including to access key services*
- *have a transport system that provides more consistent, predictable and reliable journey times for the movement of people and goods*
- *reduce the number of road casualties*
- *reduce the negative impact of the transport system and our operations on the environment and individuals.*

Local Transport Plan (LTP3)

LTP3 sets out how we will support national and local objectives, and manage and develop the County's transport system in the future.

LTP3 was formally adopted by the County Council on 1 April 2011. It is a key strategic document which directs the work of the highways and transportation branches of the Environment & Transport department. It is split into two parts: the-long term strategy (setting out what we want to achieve to 2026) and short-term (3 year) implementation plans (setting out what we will do to deliver the strategy).

The Economic Assessment for Leicester and Leicestershire concluded that our transport system has a key role to play in helping local economic prosperity and growth. A strong emphasis for LTP3 is to support Leicestershire's economy.

A poorly functioning, congested and/or unsafe transport system will hamper existing business, discourage inward investment and have a negative impact on the economy, health and the environment.

An effective transport system is therefore vital to our economy. LTP3, and the measures that help to deliver it, will ensure that our transport network is effectively managed, maintained and, where possible, improved.

LTP3 will enable us to offer improved outcomes to the people of Leicestershire by:

- contributing to the delivery of the strategic objectives for the Leicester & Leicestershire Enterprise Partnership's Economic Growth Plan (2012-2020), ensuring transport infrastructure supports future economic growth.
- contributing to the delivery of the strategic outcomes for Leicestershire Together (the economy, health and environment). LTP3 reflects the transport outcomes of *Leicestershire Together* (formerly the *Sustainable Community Strategy*).
- delivering an efficient and accessible transport system will play a significant role in supporting the economy by:
  - enabling businesses to access key markets
  - enabling businesses to transport goods efficiently
  - enabling businesses to access a wide labour market
  - enabling people to access work
  - enabling people to access shops and services.
  - enabling people to access education, ensuring a continued labour market for businesses
- reducing CO_2 emissions and improving health, supporting the strategic outcomes of Leicestershire Together.

Our LTP3 long-term vision for our transport system summarises what we'd like to achieve:

Leicestershire to be recognised as a place that has, with the help of its residents and businesses, a first class transport system that enables economic and social travel in ways that improve people's health, safety and prosperity, as well as their environment and their quality of life.

Our long-term strategic transport goals have been designed to allow us to respond to the challenges that the authority faces. These are:

- Goal 1: A transport system that supports a prosperous economy and provides successfully for population growth.
- Goal 2: An efficient, resilient and sustainable transport system that is well managed and maintained.
- Goal 3: A transport system that helps to reduce the carbon footprint of Leicestershire.
- Goal 4: An accessible and integrated transport system that helps promote equality of opportunity for all our residents.
- Goal 5: A transport system that improves the safety, health and security of our residents.
- Goalgoal 6: A transport system that helps to improve the quality of life for our residents and makes Leicestershire a more attractive place to live, work and visit.

This Network Management Plan (NMP) is seen as a key element in the delivery of LTP3. The NMP's main aim is to deliver, at a minimum, goals 1 and 2 of LTP3. The delivery of these goals will contribute to the delivery of the other LTP3 goals.

The Transport Asset Management Plan (TAMP) sits alongside the Network Management and supports LTP3 goal 2, and also contributes to the other LTP3 goals. More information on the TAMP can be found in Chapter 4.

The table below summarises the national legal framework, our local Policies and Plans and the partnerships that help to deliver them.

National legal framework	Local Policies and Plans	Partnerships
(sets out national legal requirements) Traffic Management Act 2004 requires the expeditious movement of traffic. Includes the network management duty Highways Act 1980 principally covers the structure of the network New Roads and Street Works Act 1991 (NRSWA) covers utility street works Road Traffic Regulations Act 1984 regulates the activities of road users Equality Act 2010. includes the Public Sector Equality Duty	*(set out how we will comply with the national legal framework and deliver national and local objectives)* The Leicestershire Together Outcome Framework (formerly the Sustainable Community Strategy). LTP3 sets out how we will manage and develop the County's transport system to support national and local objectives. The Leicestershire County Council Network Management Plan 2014 - 2026 Transport Asset Management Plan (TAMP) Rights of Way Improvement Plan (RoWIP)	*(help to deliver national and local policies, plans and objectives)* Leicestershire Together The Leicester & Leicestershire Enterprise Partnership (LLEP) The Leicester and Leicestershire Transport Board (LLTB) Midlands Highways Alliance (MHA)

Chapter 4
Aims and objectives

Overview

The aim of this chapter is to explore what we are trying to achieve with our Network Management Plan (NMP). It builds on preceding chapters, which provide background and context. The overall aim of the NMP is to provide:

A holistic approach to network management in Leicestershire. This will help to deliver positive outcomes for our local economy and quality of life for the people who live, work or travel through our County.

Policy 2

To deliver a holistic approach to network management we will adopt a series of principles for the highway services that we deliver. These will include:

- Reducing the need to travel by car
- Safeguarding the future operation of our road network
- Ensuring that new development does not detrimentally affect the road network
- Seeking to minimise the delay caused by existing congestion
- Helping to provide more reliable journey times
- Directing traffic to use the most appropriate roads
- Reducing disruption caused by planned events
- Ensuring our road network is better able to cope with unplanned events
- Liaising with neighbouring authorities, and others, about our policies and works
- Focus on improving our collaborative working with Leicester City Council and Highways Agency

To be as effective as possible we need to target our resources at those areas that are most in need, and will provide the greatest benefits.

Evidence is needed to help us make informed decisions. This evidence will help us to understand how the road network operates now, and how it may operate in the future. As with LTP3 our Network Management Plan will be based on robust evidence.

This evidence will be used for many purposes, including:

- reviewing our existing hierarchy plans for the strategic road network
- reviewing our existing hierarchy plans for traffic sensitive streets
- reviewing our existing plans for maintenance
- helping to influence the nature and location of development in the County.

Further information on evidence is provided in Chapter 5

Specific objectives

Asset Management

A significant part of how we meet our network management duty will be how well we manage and maintain our road network. Our Transport Asset Management Plan (TAMP) sets out how our asset management approach will contribute to this.

The TAMP has been developed in accordance with the main objective of the network management duty: to secure the expeditious movement of traffic on our road network. There are close links between the TAMP and the Network Management Plan (for instance the identification of road hierarchies and network resilience). The TAMP provides a planned and proactive approach to asset management, ensuring that we are proactive in planning for the maintenance of the road network.

This asset management approach helps us to deliver our network management duty more efficiently. Based on the priorities identified by the NMP we are able to identify the sections of the road network that are most in need of preventative and adaptive maintenance.

The environment

The environment can affect congestion. The impact that this congestion has on quality of life is of concern to many residents and road users, with air quality and noise pollution often being raised as problems where congestion occurs (this issue is explored further in Chapter 6).

Based on the findings of the Climate Change report we are able to identify the sections of the road network that are most in need of preventative and adaptive maintenance.

In addition, to help deliver LTP3's goal 3 (to have a *transport system that helps to reduce the carbon footprint of Leicestershire*), we will use evidence to investigate the relationship between congestion, air quality and noise to identify what, if any, transport solutions can be introduced to minimise the impact of congestion on the environment and quality of life.

Safety

As well as the impact that road accidents have on people's lives, there is also an economic cost associated with these accidents, which can be quantified. This includes costs associated with the NHS, vehicle and property damage, police, insurance companies and loss of earnings. There are also wider economic costs associated with disruption on the road network.

Our continued emphasis on reducing road accidents in Leicestershire helps to minimise these costs, as well as reducing the disruption that these accidents cause. Our road safety strategy is contained within Chapter 8 of our LTP3, with an update on progress contained within our annual Road Safety in Leicestershire report.

Chapter 5
Network management in Leicestershire

The aim of this chapter is to explore what we have done, and are going to do, to deal with congestion and the challenges that we face, how we are going to help deliver LTP3 and how we will meet the requirements of the Traffic Management Act 2004 and our network management duty.

This chapter is split into four sections:

Understanding the network

Understanding how our network operates and the economic cost of congestion on the road network. This will enable us to make decisions on appropriate traffic management solutions, ensuring that we can encourage economic growth whilst maintaining an effective and efficient transport system.

Planning and development

Encouraging development in the most appropriate location and ensuring that developers provide the necessary infrastructure to reduce any adverse impacts of their development on our network.

Highway management

Managing the network on a day to day basis, co-ordinating planned events and responding to unplanned events, enabling traffic to flow more freely.

Traffic demand management

Encouraging more people to use sustainable transport, such as buses, cycling and walking and using traffic control systems and information to manage congestion and direct traffic to the most appropriate roads.

Understanding the network

Introduction

This section provides information on Leicestershire, our road network, the challenges that our network faces and what we are doing to increase our understanding of how our network operates.

The County

Leicestershire is a diverse county in the centre of England. It:

- Surrounds, and has borders with, Leicester City
- Has borders with 7 neighbouring counties (Derbyshire, Nottinghamshire, Warwickshire, Staffordshire, Lincolnshire, Northamptonshire and Rutland)
- Has a population of just over 600,000
- Covers an area of around 2,000 square kilometres
- Contains seven districts
- has 2,575 miles (4,145 km) of roads in the County which we manage and maintain.

Road, rail and air

We have good transport links with the rest of the country through the M1, M6, M42 and A14.

Bus operators provide services across the County. The majority of these routes are commercial (they pay for themselves). A small proportion of routes are subsidised.

The rail network in Leicester and Leicestershire comprises four distinct elements centred around Leicester. These are:

- The Midland Mainline, with stations at Market Harborough, Leicester, Loughborough, East Midlands Parkway and local Ivanhoe line stations at Syston, Sileby and Barrow
- The South Leicestershire Line, with stations at Hinckley, Narborough, South-Wigston and Leicester
- The Syston and Peterborough Line, with stations at Syston, Melton Mowbray and Oakham (Rutland)
- The Leicester and Burton Line (freight only).

The East Midlands Airport is located in the north of the County. As well as providing passenger services it is the largest cargo airport in the UK.

The challenges

Road traffic congestion is a challenge for urban areas within the County, particularly for County towns, larger villages and those urban areas bordering Leicester City. Population growth could increase the number of vehicles on the road network and make congestion worse.

A 2007 congestion study estimated that congestion costs the East Midlands economy £935 million a year. A strong message from the business community is that the reliability of journey time, both for road and public transport trips, is often more of an issue than reducing journey time. Both employees and businesses want certainty over how long a journey will take. Similarly residents of Leicestershire want journeys that are reliable, predictable and, as much as possible, stress free.

One way to help reduce the cost of congestion is to ensure that the network is managed and maintained effectively. This can help to reduce the impact of congestion on the local economy and the quality of life for people who live, work or travel through our County.

The road network has a finite capacity, so we cannot simply keep building our way out of this situation (the provision of new roads, especially in our towns and cities, is often impractical, unaffordable or undesirable). Our approach will therefore be to focus on making the best use of our existing road network, improving its operational efficiency through the highways and transportation services that we deliver[AP1]. This will enable the network to cope with congestion more effectively, and will minimise the impact of congestion on the economy, residents and road users.

We will also look beyond own boundary, considering how our actions may impact on the network of neighbouring authorities. Cross boundary communication and cooperation are vital to ensure that the whole network assists with the expeditious movement of traffic[AP2].

Evidence

To make the best use of our network we need to understand how the network operates, both now and in the future. This will help us to make informed decisions. For instance knowing where congestion occurs now, where it may occur in the future, why congestion is occurring and what roads are affected, will help us to identify which networks are important and where we need to prioritise measures. Measures may include improvements, safeguarding, co-ordination, traffic sensitivity or adaptation.

A key tool in assessing future demands on the road network is the Leicester and Leicestershire Integrated Transport Model (LLITM). The LLITM is a forecasting tool that indicates future demand for, and likely use of, our transport network. It takes account of such things as projected growth in population, future traffic growth, transport improvements and proposed development. By doing this it identifies where there are existing congestion problems and where there are likely to be problems in the future. We will use LLITM to generate most of our evidence [AP3].

The evidence supporting the Network Management Plan includes present day traffic data (2012) and projected future traffic data (2026). This data has been used to calculate the average daily traffic flows for County roads (further details on the methodology used to produce this information, along with further detail on the output, can be found in Appendix E).

Present day traffic data

Present day (2012) flows are derived from manual classified count data. Evidence indicates that the network is stressed by existing congestion in two areas:

- In and around the principal market towns (Ashby-De-La-Zouch, Coalville, Hinckley, Loughborough, Lutterworth, Market Harborough and Melton Mowbray)
- The southern and western fringes of the Leicester Principal Urban Area (PUA).

The evidence of significant congestion within the market towns and PUA is backed-up by findings from a 2007 6Cs congestion management study, which looked at the economic costs of congestion in the East Midlands.

Another finding to emerge from this evidence relates to our existing carriageway (road) hierarchies (see Table below). These hierarchies have been developed to reflect the actual volume of traffic that uses each road (for instance strategic routes and main distributor roads should carry more traffic than locally important roads). This hierarchy should ensure that the road receives appropriate maintenance regimes, so that it can continue to operate effectively. This local hierarchy may not necessarily be reflected by the roads formal classification (such as A road and B road).

Our evidence indicates that there are some roads where the road hierarchy does not reflect the volume of traffic that uses it. Further investigation is therefore needed to establish the reasoning behind the existing hierarchy of roads and examine the case for reclassifying some routes, so that they reflect the volume of traffic that uses it [AP4].

Category	Hierarchy	Road classification
1	Motorways	Motorway
2	Strategic Routes	Trunk roads and Primary A roads
3a	Main Distributor	Non primary A roads and Heavily trafficked B roads
3b	Secondary Distributor	B roads and Heavily trafficked C roads
4a	Locally important road	Routes linking into the main/secondary distributor network (normally C class roads)
4b	All other metalled roads	All other C roads and The majority of the unclassified network.

More traffic

Less traffic

Further information is provided in the Highway Maintenance Policy and Strategy (Table 1, page 15)

In addition we have the power to control the activities on certain streets by applying specific designations (provided those street meet prescribed criteria). These consist of:

- Protected street (where no apparatus can be placed)
- Streets with special engineering difficulties (which require additional careful consultation, planning and execution of works)
- Traffic sensitive streets (our most vulnerable routes, which are susceptible to high levels of disruption, either at all times or during defined periods).

In light of the evidence it would be beneficial to review other areas, such as our traffic sensitive road network. The outcomes of these reviews will influence the TAMP, in terms of our priorities for investment, road inspection frequency etc [AP5].

Policy 3

We will ensure that our hierarchy of roads, and our traffic sensitive road network, remains appropriate in the light of changing circumstances.

Predicted future traffic data

Projected future (2026) traffic flows were obtained from the Leicester and Leicestershire Integrated Transport Model (LLITM).

This data indicates that existing congestion hot spots will become both more acute and widespread within the urban areas in the future (to 2026). Additionally the data suggests that stress and congestion will increase relatively dramatically on the inter-urban sections of the A47 and B4114 corridors between Leicester, Hinckley and the Warwickshire border.

Further work is needed to establish why this may happen. We will also need to gain an understanding of how forecast traffic growth is likely to affect the performance of other parts of the network, once future year traffic data is available. This will need to include most of the other key corridors in the County .

Amongst the general pattern of growth there are a number of areas where the forecast is for the network to experience only a modest traffic increase, no change or even reductions in traffic volumes and congestion. This can largely be attributed to proposed interventions, such as new link roads, which have been designed to mitigate the impact of new developments on the immediate and wider transport networks.

Unfortunately these interventions may not be able to solve all of the traffic problems on the network. In some cases these interventions may not be able to provide sufficient additional capacity to fully accommodate traffic generated by new development and general growth. This means that pressure on the existing network will continue to increase.

Whilst the LLITM model forecasts traffic flows across the whole network, congestion can also happen at a very local level, starting and finishing very quickly (this type of congestion can result from things like inappropriate parking, particularly around schools and events). These causes of congestion, and our response to them, are explored further in the Highway Management Section.

The modelling work will be re-run, and the outputs reassessed, every two years to take account of new proposed development and changing forecasts [AP3].

Improving understanding of our network (study work)

The highway network is not just about the movement of private cars and goods vehicles. It is also vital for walking, cycling and public transport. They are all important in ensuring the efficient movement of people and goods within the County.

Congestion is caused by many different factors (see Chapter 3). Unfortunately, congestion is predicted to get worse as the amount of traffic on our roads increases.

Because of the many different factors that contribute to congestion there is no single best method to tackle or manage it. We therefore need to continue to develop our understanding of the network, the way it is used and how it will operate in the future, so that we can use the most appropriate and effective interventions to tackle congestion.

In order to improve our understanding of how our network functions and the impact that congestion has on it, we will be undertaking a programme of congestion studies. These studies will focus on the County towns and larger urban areas. The evidence generated will help us to develop future programmes of traffic management interventions, aimed at improving network capacity, reliability and resilience AP6.

These studies will target specific geographic areas, taking account of our Local Transport Plan (LTP3) area based approach. There will be a continued focus on Loughborough, Coalville, Hinckley, south-west Leicestershire, and the Leicester Principal Urban Area (PUA). New study areas will be identified as appropriate.

The studies will help us to understand how the local road network operates, what factors impact upon it and what interventions could be made to improve the performance and reliability of the road network. The studies will include:

- Assessment of the function, operation, capacity, use and conflicts of road links and junction
- A review of planned development
- A review of any planned or unplanned events that could affect the road network
- A review of any network resilience issues
- Liaison with neighbouring highway authorities on issues that could affect the road network
- A review of accidents records
- A review of any aspirations or requests.
- A review of any reports of congestion related issues
- A review of existing traffic management measures
- A review of existing parking provision, demand for parking and the impact of parking enforcement
- Consultations with our Traffic Manager, County Councillors, the local district council and other identified key stakeholders, including representatives from the business community.

The outcome from each study will be a better understanding of the issues affecting the corridor or junction. We will then be able to identify the appropriate level of intervention to maximise the effective and efficient use of the road network. Where appropriate, there are a range of measures that could be used to address issues, from low cost traffic management solutions through to major schemes, which could require land acquisition or financial support from external funding.

In some cases we will need to look at the existing roles of certain routes, and consider whether or not we will need to adapt them to serve a more strategic function in the future AP7. Examples might include routes:

- Around the edge of Leicester and its adjoining settlements. As the area continues to expand existing lower class roads might have to play a more important strategic role in providing linkages to, and around, Leicester
- That serve growth elsewhere in the County
- That provide links to places outside the County. We already have evidence to suggest that if traffic cannot make efficient use of the motorway or trunk road network it might transfer back to County roads.

In reviewing our road network, an important consideration will be to look at whether a route is already of a suitable standard to serve a more strategic function or whether we are able, if appropriate, to carry out improvements to bring the route up to a suitable standard AP8.

Planning and development

As discussed in previous chapters there are a number of challenges that we face over the coming years. In terms of planning and development the main issue that we face is accommodating the development required to support economic and population growth.

For the purposes of the Network Management Plan *planning* and *development* are defined as:

- *Planning* is about land use influencing where development is located at a strategic level, to reduce the need to travel by car.
- *Development* is about assessing the impacts of proposed development, ensuring that it is sustainable in transport terms and, as far as practicable, mitigating any adverse impact (such as congestion) - in other words safeguarding the future operation of our road network.

Changes to planning policy

Recent changes in Government planning policy will change how we review and respond to planning applications, and how we receive monies for mitigation.

National Planning Policy Framework (NPPF)

In order to simplify the planning process, and to speed up the planning approvals process, the Government introduced the new National Planning Policy Framework (NPPF) in March 2012.

The NPPF has a *presumption in favour of sustainable development*, and introduces the concept of neighbourhood planning, allowing local neighbourhoods to have more input into planning issues and applications that effect the local area.

The NPPF also states *development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe*. Although the definition of severe is not well defined, we take account of the impact on such things as safety, sustainability, and impact on the local highway network.

For instance, with regard to impact on the network we may not consider a five minute increase in journey time to Fosse Park as severe impact. However, a similar delay in a journey to a smaller shopping centre may have a proportionally bigger impact on the smaller local economy of that centre which could be considered to be a severe impact. Therefore we could consider the impact of any planning application that was likely to cause the latter more severe. An access which has poor visibility, and which could increase the chance of an injury accident, is likely to be considered as having a severe impact on safety.

Community Infrastructure Levy (CIL)

In addition to the challenges introduced by the NPPF there are also policy changes being created as part of the Community Infrastructure Levy (CIL) regulations. These changes will affect how we provide highway improvements can be provided and minimise the potential impact of development.

The Planning Act 2008 allows the local planning authority (LPA) and local highway authority (LHA) to request financial contributions from developers towards improvements or mitigation packages (via Section 106 obligations). The Highways Act 1980 also allows the LPA and LHA to request developers to provide physical highway improvements (Section 38 or Section 278 agreements).

From 2014 (as part of the Planning Act 2008) LPAs will also be able to set a Community Infrastructure Levy, for certain infrastructure improvements that they identify as important in their local areas. The levies are payable in addition to charges through planning obligations, and are not limited to highway infrastructure improvements, and can be used for other community infrastructure requirements such as flood defences, schools or health and social care facilities. Where a local planning authority introduces a CIL levy they will first have needed to assess the appropriate rate taking into account a range of factors including site viability.

We will need to continue to work closely with each LPA to ensure co-ordination of important infrastructure lists,

and to ensure that levies are set at a level which allows highway and other strategic infrastructure to be provided [AP10].

Growth

In assessing planning applications we need to support the Leicester and Leicestershire Enterprise Partnership (LLEP) Strategic Economic Plan, but we also need to safeguard the future operation of our road network.

We have seen that growth can increase the number of vehicles on our roads, and make congestion worse where the increase in traffic has not been adequately accommodated.

As discussed in the *Understanding the network* section a key tool in assessing the impact of growth on the road network is the Leicester and Leicestershire Integrated Transport Model

(LLITM). We require this model to be used by land developers to assess the impact of major, strategic developments, determine what mitigation measures may be necessary and at what stage in a development they are needed.

Policy 4

In exercising our network management duty we will seek to maintain the effective and efficient operation of our transport system. To facilitate this we will require development proposals to be supported by Transport Assessments (TAs) that clearly set out their potential transport impact. For larger strategic development sites it will normally also include an assessment of its impact (limited to deriving of trip distribution for smaller sites in this category), using the Leicester and Leicestershire Integrated Transport Model (LLITM).

Our 6Cs Design Guide sets out when a Transport Assessment is required and what it should include.

The model also provides evidence on the impact of proposed infrastructure. This enables discussions on such things as timing / co-ordination of works and their impact on economic growth. As an example, to improve efficiency and reduce the long-term impact of works, the Fosse Park roundabout improvements were undertaken at the same time as the Highways Agency M1 J21 pinch point improvements, and designed with the planned expansion of Lubbesthorpe in mind.

Planning and development in Leicestershire

Planning

In Leicestershire the local planning authority (LPA) is the relevant district or borough council. The LPA is responsible for such things as producing strategic planning strategies for their areas (Core Strategies / Local Plans) and approving planning applications in their area.

As the local highway authority (LHA), we are a statutory consultee in the planning process and our role is to ensure the transport impacts of development are properly considered and that development is brought forward in a way that doesn't have a detrimental impact on the transport network including securing appropriate mitigation.

We are not proposing to develop a specific road hierarchy plan to decide where development is appropriate. Instead we will produce a criteria based approach that will be more flexible and adaptable. The purpose of the criteria will be to identify those roads, or corridors, which are particularly important to the functioning of the road network, and which we would seek to protect from further development [AP9].

Development

Development control is the process for assessing the impact of new development. As a statutory consultee in the planning process the LPA consults us for our highway comments on appropriate planning applications.

There are four main stages to the planning application process (although not all applications will go through all four stages).

The first two stages provide the opportunity to influence the character and location of development:

- Pre-application
- Application
- Enforcement
- Appeal

In performing our development control role we use various policies and guidelines to assess planning applications. These include LTP3, the NPPF, Manual for Streets (MfS), the Design Manual for Roads and Bridges (DMRB), Department for Transport (DfT) Guidance on

Transport Assessment, Planning Policy Guidance Notes and the 6C's Design Guide (6CsDG) (the 6CsDG sets out the highways and transportation standards for new developments across the sub-region (Derby, Derbyshire, Leicester, Leicestershire, Nottingham and Nottinghamshire)).

By using these policies and guidance we aim to encourage development of the right size in the right location. This should encourage economic growth, reduce carbon emissions, promote sustainable transport and reduce car use and congestion on our road network.

We encourage applicants to work with us at an early stage of the process to try and resolve highway issues. By agreeing a way forward between both parties could minimise, or end, our highway objections. Ultimately we need to be able to justify our recommendations, particularly where we recommend refusal of an application, and thereby minimise the risk of being liable to pay costs if an Appeal is launched.

Conclusion

In terms of our planning and development functions we will seek to do the following to help meet our network management duty and manage congestion on our road network:

We will limit the demand for travel, particularly by private car, by seeking to resist development proposals that:

- are located in inappropriate locations – examples included residential developments that have poor access to employment or local facilities
- would have a severe impact on:
  - Routes to major employment sites
  - Routes and linkages to major retail sites
  - Main commuter routes
  - Core bus network routes
  - Areas of existing congestion
  - Routes or junctions with safety issues (personal injury accidents).
- are in areas that don't have adequate walking, cycling and public transport facilities, unless this is being provided by the development

We will seek to secure measures that off-set any negative transport impacts from development and we will also ensure that new development proposals are supported, as appropriate, by travel plans. This will provide greater choice and help road users make more informed choices about when and how they travel.

Highway management

As discussed in Chapter 1 the demand for car travel is predicted to increase in the future. This could result in more congestion on the road network.

To address this, and meet our network management duty, we take a variety of actions to help traffic to flow more freely. For the purposes of the Network Management Plan this Highway Management section is split into two parts: *highway maintenance and day-to-day management.*

Highway maintenance

We have a statutory duty under the Highways Act 1980 to maintain all of Leicestershire's public highways. This involves undertaking programmed, routine and reactive works to ensure that, as far as is practical, the road network remains safe, serviceable and resilient.

Evidence helps us to understand how our network operates now, and may operate in the future. This includes identifying the parts of the road network that are most in need of adaptation, to ensure that they remain resilient to the impacts of climate change. Our asset management approach (Chapter 4) ensures that a more planned and proactive approach is taken to highway maintenance.

The Highway Maintenance Policy and Strategy will be reviewed, to ensure that it is consistent with our Network Management Plan [AP11]. This will ensure that our network management duty is a key consideration when planning and delivering our highway maintenance functions.

Day-to-day management

The day-to-day management of the road network involves:

- planned events (for instance race events, markets and planned road works)
- unplanned events (for instance road accidents, severe weather events and emergency repairs)
- the management of our own works
- co-ordinating and facilitating the work and activities of utility companies, developers and others

- dealing with illegal activities (for instance obstructions or unlicensed works).

These issues are explored in more depth below.

The network management duty not only emphasises the importance of these issues, but it also emphasises the need for transport authorities to demonstrate parity between how their own work, and the works of others, are delivered. We therefore need to ensure that we apply the same standards and approaches to our own activities as we do to others [AP12] (for instance our own contractors will be subject to the same restrictions and directions as utility companies).

There are costs associated with road works, including:

- the cost of the actual works being undertaken
- a cost to the economy, in terms of the delays that they can cause.

We have undertaken research to look at the economic cost of road works, taking account of different methods of traffic control at different times of the day and week. This work is shown in Appendix D, including a ready-reckoner toolkit.

Consideration will be given to further developing this toolkit, to enable the economic cost of road works to be considered when deciding when, and how, works should be undertaken [AP13].

Planned events – road works

To minimise disruption we continue to improve how we manage our own works. We have adopted an approach called *Plan, Prepare, Do*. This process generally occurs

over three years, and involves *planning* for future programmes and then *preparing* approved programmes ready to *do* the work. This allows more effective planning, co-ordination and notification of works.

The economic cost of road works is set out in Appendix D, including a ready-reckoner toolkit. We will look into further development of this toolkit, to enable the economic costs to be considered when deciding when, and how, works should be undertaken AP13.

The Traffic Management Act 2004 places great emphasis on the co-ordination of works on the road network. Our co-ordination is enhanced by regular meetings with our own Department and the utility companies etc. This enables forward planning and co-ordination of all planned major works that are likely to have a significant impact on the road network. The aim of these meetings is to:

- identify potential problems
- identify potential opportunities
- identify strategies to minimise adverse impacts.

In undertaking our co-ordination role, we consider the needs of all parties, including works promoters, businesses, commuters and residents. On occasions it may be necessary to compromise, in order to strike a balance between the competing needs of all parties.

The New Roads and Street Works Act 1991 (NRSWA), which covers utility street works, requires all works promoters to give notice of their works in accordance with agreed timescales. We keep an electronic Street Works Register of these notices, to help in our co-ordination role. These notices give information regarding the nature of proposed works, the proposed traffic management, their locations and their start and end dates.

We use this information to help avoid conflicting works and/or an accumulation of disruption. Where planned works are likely to cause significant disruption we use our powers to require they are undertaken at other or less disruptive times.

Our Road Works Protocol ensures that we communicate about our own road works. This enables the general public, residents and business etc to adapt their travel plans. It also provides an opportunity for them to express their needs and requirements so that, where possible, adjustments can be made. The Road Works Protocol will be reviewed to ensure that it is effective in light of increased demands on our network and our revised Plan, Prepare, Do approach to scheme implementation, and also to take advantage of new technology or social media sites AP14.

In addition any works that involve road closures and/or lane restrictions are notified to the local County Councillor, Local Highway Forums Chair, the emergency services, affected bus operators, local press and key County Council personnel. Advance signage and letter drops are also provided in the vicinity of road closures. A list of all potentially disruptive works is also periodically distributed and published on our website. Again, the purpose of this is to allow people to plan ahead and minimise congestion.

When works start on site their progress is monitored. This ensures that management and co-ordination can react promptly to unexpected changes or delays. Extensions to works timeframes are allowed, when justified. However, unjustified or unreasonably prolonged works can disrupt the road network and have an impact on our economy. In this situation we can use statutory powers to impose penalty charges.

The notification, co-ordination and communication of road works is an essential part of our network management duty, and is important to the delivery of our LTP3 Goals. Being able to demonstrate parity (applying the same standards and approaches to our own activities as we do to others) is also critical to maintaining effective relationships with other works promoters.

To help tackle traffic congestion caused by road works we will continue to review and update data in the Street Works Register (and other ICT systems used for internal works planning). This will help to ensure that we make the best use of our staff resources, technology and statutory powers.

Planned events - other activities

Unrestricted and/or unregulated activities on the highway (such as advertising boards, skips, scaffolding or works) could introduce a hazard, or cause congestion. We therefore control any activities that could potentially affect the road network through licensing and permit procedures.

This can include controls for placing the following on the highway:

- Scaffolding
- Skips
- Building materials, cafe tables and chairs, signage and advertising material

It can also include controls for undertaking works, including:

- development works
- vehicle accesses
- private utility connections
- private cultivation activities.

Sometimes these activities are undertaken illegally, without a licence or permit. In this situation we will use our statutory powers to deter or minimise these activities or, where appropriate, take enforcement action.

Policy 5

We will use our statutory powers to control the activities undertaken on our road network by individuals or organisations that do not have a right to do so. We will deter, mitigate and take appropriate enforcement action in relation to unlawful activities.

Planned events – street markets, sporting events etc

Street markets, sporting events, music festivals, carnivals and parades can all help the local economy, but they can also cause congestion. We are committed to supporting these planned events, but will balance the potential positive economic and social benefits against potential negative impacts on the road network. When helping to plan events we will ensure that:

- arrangements are put in place to minimise their impact on the road network
- appropriate contingency plans are prepared
- there is early communication with external organisations, to help co-ordination
- temporary amendments to the network hierarchy are identified and prepared if required
- changes to public transport provision can be prepared
- publicity about the event is prepared
- appropriate levels of management are agreed and implemented.

After the event has finished we review the lessons-learnt from planning, managing and implementing the event. This helps to ensure that we continue to improve the way that events are managed and minimises their negative impact on the road network[AP15].

Policy 6

We will ensure that planned events are co-ordinated and managed effectively, so as to minimise disruption to the network.

We will do this by working with our partners to develop and maintain robust processes for the co-ordination and management of planned events, alongside road works and other activities on our road network.

Unplanned events – general

Unplanned events that affect the road network can include such things as road traffic accidents, debris or spillages, significant highway or utility apparatus failures, flooding, high winds, high temperatures, snow and ice.

The random nature and location of these incidents means that they can be difficult to deal with. However, we seek to deal with these incidents as quickly and efficiently as possibly, helping to contain and mitigate their negative impact on the road network.

Unplanned events – incidents

Incidents or hazards that affect the road network can be reported to us 24 hours a day, 365 days a year. This can be done in a variety of ways, including:

- Customer Service Centre (CSC) - Tel: 0116 305 0001, during normal office hours
- Highways Duty Officer - outside of normal office hours the CSC answer-phone message provides emergency contact details.
- Website

To help us meet our network management duty we use up-to-date evidence (see Understanding the Network) to develop contingency plans for managing our road network. Local procedures are in place to deliver the Highway Maintenance Policy and Strategy.

We will also look at the potential to develop Tactical Diversion Routes (TDRs), which will provide details of diversion routes for unplanned events on critical parts of the road network[AP17]. These plans will help us to minimise disruption, reduce congestion and help to protect local bus services during such unplanned events.

Policy 7

We will ensure that unplanned events are co-ordinated and managed effectively, so as to minimise disruption to the network.

We will do this by:

- Working with our partners to develop and maintain contingency plans to support the management of unplanned events, where there are safety implications and where there they would result is significant disruption and congestion on the road network. We are members of the Leicester, Leicestershire & Rutland Local Resilience Forum (LRF), which also includes the emergency services and other local authorities. The LRF has developed and produced a Major Incident Plan, which sets out how major incidents will be managed in Leicester, Leicestershire & Rutland.
- Producing a *Highways Emergency Procedures Manual* (HEPM), which will support the LRF Major Incident Plan. Ongoing network intelligence research and analysis will help develop specific contingency plans for critical parts of the highway network. This may involve working with the Highways Agency for key elements of the motorway, trunk road and County network[AP18].
- Ensuring good communication (for instance we also pass information on to the Area Traffic Control Centre (where appropriate), who provide travel advice on local radio stations to the public. We periodically review how we communicate, to ensure continued effectiveness and to take advantage of new technology and social media sites, such as Twitter). Where appropriate we also share information on major incidents with key stakeholders and partners.
- Ensuring appropriate level of response to major incidents (our in-house service provider Leicestershire Highways Operations (LHO) helps to co-ordinate our response, enabling information and resources to be managed effectively)
- Ensuring effective local procedures are in place to deal with emergencies and major incidents, to deliver the Highway Maintenance Policy and Strategy and support the LRF Major Incident Plan. These include:
  - officer guidance on dealing with incidents on the road network
  - officer advice on what constitutes a major incident
  - officer advice on when and how major incidents should be escalated.

Unplanned events – severe weather

Severe weather can cause severe disruption to the road network and have a negative impact on the economy. We are committed to ensuring that our road network is as resilient as possible to its impact.

Severe weather can include snow and ice, high temperatures, flooding and high winds.

Snow and ice can cause network wide problems, severely affecting our ability to travel. The economic impact can be significant. Local procedures are in place to manage the effects of snow and ice on our road network and deliver the Highway Maintenance Policy and Strategy (see

Section 12 Winter Service). Our objectives are to meet our statutory duties and to minimise delays, accidents and damage to the highway. To do this we deliver a range of measures, including:

- The precautionary salting of priority road routes
- The clearance of snow on priority road routes
- The provision of salt bins (in partnership with parish councils) on non-priority routes
- The development of a network of parish based snow wardens, to provide information on local conditions, jointly determine and organise actions and, if necessary, supplement the operation provided by the County Council.

High temperatures and hotter summers are causing more road surfaces to deteriorate and subside. This can cause problems on the road network, leading to disruption and congestion.

We are aware of the roads that are most at risk from high temperatures. As a result when high temperatures are expected these roads are regularly inspected and, where appropriate, contingency plans are put in place. Action to prevent future failures will be investigated and, where appropriate, measures will be introduced.

Flood events can also cause network wide problems, if associated with main watercourses. More localised impacts may occur when flooding is the result of surface water not being able to enter the ground or a drainage system. Both widespread and localised flooding can cause disruption and congestion and have a negative impact on the economy.

Flood events are dealt with as either major or minor incidents. We are aware of the roads that are most at risk of flooding. As a result when adverse weather is expected these roads are regularly inspected and, where appropriate, contingency plans are put in place.

In addition to our network management duty as a Lead Local Flood Authority (LLFA) we also have a duty to investigate flooding incidents and assess the associated risks. Action to prevent future flooding will be investigated and, where appropriate, measures will be introduced. If the cause of the flooding is the responsibility of others (for instance the Environment Agency) we will liaise with the responsible organisation.

Flooding can have a significant impact on local communities and we have developed a Local Flood Management Strategy. This sets out how organisations and communities should work together to manage their flood risk.

High winds can cause problems on the road network, by bringing down trees or other structures on to the road. Blocked roads are dealt with as either major or minor incidents and, where appropriate, contingency plans are put in place.

High winds can also cause difficulties for high sided vehicles. We are aware of the roads that are prone to high wind incidents. As a result when adverse weather is expected these roads are regularly inspected and, where appropriate, contingency plans are put in place.

In terms of meeting our network management duty, and reducing disruption and congestion caused by unplanned events, our policies and procedures will be reviewed in light of updated evidence.

Unplanned events – parking

Illegal and inconsiderate parking can cause congestion, reduce road safety and cause problems in our towns and villages for pedestrians, cyclist, public transport or other motorists. This is especially true in peak hours in our County towns, where illegal or inconsiderate parking can have a significant impact on congestion.

We want to encourage sensible and safe parking across the County. This will:

- Keep traffic moving
- Make our road network safer
- Improve access for emergency services
- Reduce pollution and help improve air quality
- Make our County more attractive to businesses and visitors.

Civil Parking Enforcement (CPE) is an important part of how we do this. We have undertaken congestion and parking studies, gathering evidence to help identify the

problem areas and appropriate solutions. As a result we have refined our approach to enforcement, including by introducing more targeted and focused patrolling.

We will continue to ensure that the most appropriate parking restrictions are in place, removing redundant restrictions and ensuring that there is an appropriate balance between demands for parking and movement of traffic [AP19].

We will also continue to refine the efficiency and effectiveness of our parking enforcement operation, to ensure that all parking restrictions are enforced to a suitable level [AP20.]

An over-arching policy for this section is set out below:

Policy 8

We will endeavour to manage our road network to avoid, eliminate or reduce disruption and congestion that is caused by planned and unplanned events (these events could affect the condition of our roads, or involve works or other activities being undertaken on the road network).

We will also ensure parity between how our own work is delivered and that of others, by applying the same standards and approaches to both.

Traffic demand management

The development of strategies to help manage congestion, provide more reliable journey times and direct traffic onto the most appropriate roads are key to us achieving our third Local Transport Plan (LTP3) goals and meeting our network management duty.

Traffic demand management (TDM) is one way that we can do this. TDM covers a wide range of measures that are aimed at reducing the adverse impacts of car use and helping traffic move more freely.

For the purposes of the Network Management Plan TDM can be split into three broad areas:

- Organisational and operational (including travel plans, car sharing, marketing / media campaigns, home working)
- Financial (including road user charging, public transport investment/subsidy and parking charges
- Infrastructure (including improved public transport facilities, demand responsive transport, park and ride, improved walking and cycling facilities, traffic management parking and intelligent transport systems.

Encouraging sustainable travel

Encouraging walking, cycling and public transport use

Chapter 3 discussed the importance of an effective transport system. The road network enables the efficient, effective and safe transport of people, goods and services, helping people get to and from home, work, leisure and education. This is vital to economic recovery, prosperity and to wider social and environmental priorities.

Our road network is used by a wide range of people, including car and lorry drivers, pedestrians, cyclists, bus passengers and equestrians. Encouraging more people to use sustainable transport modes (walking, cycling and public transport) is key to delivering several of our LTP3 goals.

Encouraging walking, cycling and public transport use also supports our network management duty, by helping to tackle congestion (through reduced car use). This will result in more reliable journey times.

Policy 9

In exercising our network management duty we will encourage walking and cycling by:

- targeting car journeys that can be substituted by walking and cycling
- targeting people who want, and are able, to reduce their car journeys
- providing walking and cycling facilities at locations that will offer the greatest benefit
- raising the awareness of residents and businesses about the impacts of their travel behaviour on their environment, their health and their quality of life.

To maximise the effectiveness of these measures we will focus our efforts on urban areas and times of peak demand.

Encouraging walking and cycling

Practical examples of this work include:

- Choose How You Move: Our sustainable travel campaign which encourages people to get fit, save money, have fun and help the environment by leaving their cars at home and walking, cycling, car sharing or catching the bus etc instead
- Personal Travel Planning (PTP): A comprehensive programme of one-to-one contact with residents, where we discuss their travel choices and provide them with sustainable travel information
- Adult / commuter cycle course: A series of courses providing one-to-one support for people who would like to cycle
- Travel Planning: Engaging through the planning process
- Star Travel Scheme: A programme of work for schools to follow, encouraging sustainable travel to school
- Rights of Way Improvement Plan: The plan considers how best to manage and develop the Rights of Way network in the County.

Encouraging public transport use

We will encourage the use of public transport (buses) by:

- Providing information to the public, making it easier for them to use buses, including:
  - Providing up-to-date information for public transport users through timetables, leaflets and online
  - Updating Traveline in a timely manner with relevant changes to bus timetables and stop information (Traveline shows all commercial and contracted services across the East Midlands, providing journey planning solutions)
  - Assisting with the delivery of real time information across the bus network
  - Undertaking targeted promotions, to help increase bus patronage.
- Implementing capital transport schemes and improvements, including:
  - Route improvements to increase reliability of local bus services.
  - Improving infrastructure and information at bus stops, town centres and transport hubs (for instance bus stations and train stations)
  - Assisting with the delivery of smart ticketing and real time information
- Performing our planning and development role, including:
  - Assessing the impact of new developments and providing comments on how to encourage sustainable travel use
  - Encouraging increase in sustainable transport use through provision of new development (Section106) travel packs.

Active demand management

A study into the impact of housing growth in the Principal Urban Area (PUA) reviewed the longer term effectiveness of providing, and encouraging people to use, sustainable transport. The study concluded that these measures may not be sufficient on their own to maintain our transport system's economic effectiveness.

The evidence pointed towards the need to investigate, and possible introduce, some form of active demand management during the second half of the LTP3 strategy (approximately 2018/19).

Our third Local Transport Plan (LTP3) advised that *we would investigate the role that implementing active demand management measures could play in helping to maintain the economic efficiency and effectiveness of our transport system.*

Traffic management

Traffic Management plays an important role in delivering a safe and efficient road network.

Our traffic management policies and standards are set out in *Policy and Standards for Traffic Management*, a reference document for officers. This document collects together traffic management techniques, practices and policies that are used within Leicestershire. It encourages the adoption of clear, consistent policies and standards in

line with LTP3 goals and our network management duty.

The *Policy and Standards for Traffic Management* was reviewed in 2012/13. We will continue to review it, to ensure that it remains fit-for-purpose, that it takes into account changes to legislation, LTP3, new technology and this Network Management Plan [AP21].

As well as the network management duty the Traffic Management Act 2004 also introduced civil enforcement powers for highway authorities. In July 2007 we took responsibility for the enforcement of non-moving traffic offences (illegal and inappropriate parking), which can cause congestion.

Civil parking enforcement (CPE) is an important part in meeting our network management duties. It is currently undertaken in partnership with the seven district and borough council's in Leicestershire, who employ Civil Enforcement Officers (CEOs).

Intelligent Transport Systems

Intelligent transport systems (ITS) is a collective term for all types of technology used to manage traffic on the road network. One example of ITS is traffic signals (traffic lights).

The ITS used across Leicester and Leicestershire are managed by one authority - Leicester City Council. The Area Traffic Control (ATC) centre has a Service Level Agreement (SLA) with us to provide a range of ITS services, including:

- Pro-active management of the traffic signal installations across the County and
- Technical advice on new or modified junctions
- The provision of traffic and travel broadcasts and information
- Dealing with complaints and faults
- Providing guidance on future traffic management strategies.

The urban traffic control and fault management system used at the ATC is jointly owned by the LCC and Leicester City Council. The systems currently used include:

Traffic Signal System & SCOOT

Traffic signal installations are used across the County to manage the competing demands of vehicles and pedestrians at junctions, and to improve safety. Whilst they can be seen as a cause of delay they are essential to the management of the road network and can help to optimise the efficiency of signals.

The majority of traffic signals at junctions across the County can be controlled from the ATC centre, particularly those in the main towns and urban areas (these signals are often linked to each other). The ATC centre receives real-time information (for instance from loop detectors and cameras at key junctions) on congestion across the road network. This allows the ATC centre to manage the traffic signals, giving priority to particular roads so that traffic flows are maximised and congestion managed.

CCTV Cameras

There are some 23 dedicated traffic monitoring cameras in the County, which are monitored from the ATC centre.

Comet

This is an advanced traffic management and information system. It has a modular design which integrates systems and information from a wide range of suppliers to manage the flow of traffic. It is a key component at the ATC centre.

Traffic Information Service (TIS)

The importance of having accurate and up-to-date information on what's happening on the road network has been discussed in previous sections.

- TIS is a central database of incidents and road works. It includes data supplied by the police, utility companies, public transport operators and the public. Information includes major events, road works, congestion, adverse weather conditions and serious incidents.
- The information provided through TIS is utilised to help manage congestion on the road network and is vital in helping us to fulfil our network management duty.

Relevant information is also included on travel information websites. It is also used by BBC Radio Leicester, who broadcast daily traffic updates to the public. This provides up-to-date information to the public, which enables them

to make decisions about which routes to use and likely length of journey times.

TIS has been upgraded recently. It will continue to be monitored to ensure that it continues to use the latest technology and social media to ensure that it reaches as many people as possible.

Fault Management System (FMS)

This system registers traffic signal faults. These faults can occur for a variety of reasons, including severe weather affecting equipment or damage by vehicles.

Traffic signal faults can affect the whole road network and make congestion worse. It is therefore important that we have access to the resources and equipment to enable us to fix faults quickly. Maintenance of our ITS assets form an integral part of our asset management approach (see Chapter 4).

In order to be able to make the most of the existing road network, and to meet our network management duty, we will [AP22]:

- Maintain our close working relationship with the ATC centre
- Continue to invest in ITS
- Keep abreast of new technology and developments in demand management, such as part-time signals, variable message signs and tidal flow systems.

Chapter 6
Network management and the environment

Transport and congestion can lead to concerns about air quality and noise.

Although not specifically part of our network management duty our achievement of this duty will nonetheless help to tackle air quality and noise issues. It will also contribute to two of our strategic Local Transport Plan (LTP3) goals:

Goal 3: A transport system that helps to reduce the carbon footprint of Leicestershire.

Goal 6: A transport system that helps to improve the quality of life for our residents and makes Leicestershire a more attractive place to live, work and visit.

The strong links between the network management duty and our LTP3 transport goals are explained further in this chapter, including:

- The legal framework for air quality and noise
- Compliance with legislation
- The relationship between traffic volumes/speed and air quality/noise
- Air quality and noise in Leicestershire
- Possible actions to address issues.

Air Quality

There are many factors that affect air quality, including the layout of the land, infrastructure, the weather and different sources of emissions.

The UK Government is committed to delivering cleaner air. It is doing this by regulating emissions from industry, transport and domestic sources. As a result, air quality in the UK has continued to improve and, although vehicle kilometres are predicted to rise, emissions are not predicted to rise at the same rate. This can mainly be attributed to regulatory action and improvements in fuel, vehicle technology and efficiency.

However, there could still occasions when levels of pollution rise to a degree that could significantly harm human health, impact on the environment and affect quality of life.

The legal framework

The UK Government leads on international and European legislation. National air quality policy and legislation is set out in various Government Acts and Regulations, and dealt with by the relevant local authority:

- Part IV of The Environment Act 1995 sets provisions for protecting air quality in the UK and for local air quality management.
- The Air Quality (Standards) Regulations 2010 transpose into English law the requirements of Directives 2008/50/EC and 2004/107/EC on ambient air quality. Equivalent regulations have been made by the devolved administrations in Scotland, Wales and Northern Ireland.
- The Air Quality (England) Regulations 2000 set national objectives for local authorities in England.
- The National Emission Ceilings Regulations 2002 transpose into UK legislation the requirements of the National Emission Ceilings Directive (2001/81/EC).

Compliance with legislation

The Environment Act 1995 requires the Government to produce a UK National Air Quality Strategy. This strategy contains standards, objectives and measures for improving air quality.

The strategy, which was produced by the Department for Environment, Food and Rural Affairs (Defra), was originally published in 2000, and updated in 2007. It:

- Sets out a way forward for work and planning on air quality issues
- Sets out the air quality standards and objectives to be achieved
- Introduces a new policy framework for tackling fine particles
- Identifies potential new national policy measures which modeling indicates could give further health benefits and move closer towards meeting the strategy's objectives
- Sets values for key pollutants, helping local authorities to manage local air quality improvements.

We have no legal responsibilities in relation to monitoring and improving air quality. The relevant district or borough council has this responsibility. Their monitoring provides a wide range of data, including long term trends for levels of air pollutants in areas.

If pollutants exceed specific limits they are responsible for identifying and declaring Air Quality Management Areas (AQMAs) and, where appropriate, consideration will be given to the appropriateness and cost of introducing measures to improve it air quality.

However, even though we don't have legal responsibilities we recognise that, as the highway authority, we can make a significant contribution to improving air quality, particularly as carbon dioxide (CO_2) emissions from vehicles are a major issue. This will also help us to achieve our air quality target of a 34% reduction in CO_2 emissions in Leicestershire by 2020/21.

Air quality evidence

The Department for Environment Food and Rural Affairs (Defra) has produced a suite of tools to help local authorities assess local emissions, called the Emission Factor toolkit (EFT). This toolkit incorporates up-to-date information, including vehicle exhaust emission factors and consideration of brake and tyre wear and road abrasion for PM_{10} and $PM_{2.5}$.

Local data on traffic volume, type and speed is input to the toolkit. The toolkit then calculates local vehicle emissions, including for the main pollutants. Using this toolkit it has been possible to produce data for 2011 and future years. This data shows that:

- NOx emissions are forecast to fall by about 53% between 2011 and 2026
- CO_2 emissions are forecast to rise by about 1%
- PM_{10} emissions are forecast to fall by about 17%
- $PM_{2.5}$ emissions are forecast to fall by about 32% between 2011 and 2026 (with a 21% reduction between 2011 and 2016)

- Hydrocarbon emissions for the county are forecast to increase slightly between 2011 and 2026, with large fluctuations during this time (predicted 33% drop between 2011 and 2016, followed by a 1% increase between 2016 and 2021 and a 53% increase between 2021 and 2026.

This data will be used to help track progress against our air quality target, which aims to reduce CO_2 emissions in Leicestershire originating from road transport (based on the baseline figures set out in the LTP3 Performance Indicator Set).

Further work has been undertaken to look at how vehicle emissions change with traffic speed. The data confirms that slow moving vehicles (approximately 3 - 6mph (5-10kph)) produce higher CO_2 and NOx emissions than vehicles travelling at higher speeds (approximately 37 -40mph (60-65kph)). It also shows that as traffic speeds increase above 37 - 40mph (60-65kph) CO_2 and NOx emissions gradually increase, due to the higher fuel demanded by the engine.

If accurate predictions of the changes in traffic flow/ composition/speed can be calculated for potential schemes the potential impact on air quality can be quantified using dispersion / detailed modelling (such as ADMS-Roads). For example the traffic flows around a road network can be counted or modelled for a baseline scenario, and then predicted using traffic modelling software with a scheme in place. These traffic flows can then be modelled to predict the change in pollutant concentrations at sensitive receptors in the areas that will be affected. This will allow us to identify those schemes that will have the largest benefits. This type of prediction work will only be possible for schemes where traffic models can be developed (such as bypasses, changes to junction layouts, changes to traffic light priorities). It is unlikely to be beneficial in considering schemes that involve behaviour changes.

Further technical information on noise is provided in the evidence webpage.

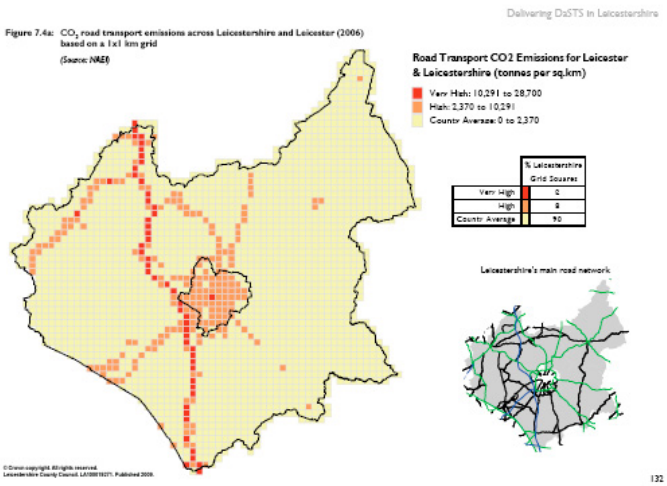
Air quality in Leicestershire

Air quality in Leicestershire is generally good, with data suggesting a fairly positive picture for the road network and vehicle emissions. However, there are some localised areas of concern, which are located alongside the motorway network, within county towns and other urban settlements.

There are currently 15 Air Quality Management Areas (AQMAs) across the County, with an additional AQMA located in Leicester City.

To ensure that we gain an overall picture of air quality the data from the Emission Factor toolkit (EFT), which plots vehicle emissions, is combined with our local data. This ensures that overall air quality (including other emission sources and the effect of the landscape and weather) is considered and action is focussed on priority areas.

When the maps are overlaid on the network stress maps (produced by the Leicester and Leicestershire Integrated Transport Model (LLITM)), a clear relationship between more heavily used roads, roads with higher numbers of heavy goods vehicles (HGVs) and roads that suffer from congestion can be seen.



Options to tackle poor air quality

The number of vehicles using the road, and the way that they use it, will have a direct bearing on air quality in Leicestershire.

Previous chapters looked at the type of things that we are doing to help meet our network management duty. These include:

- Maintaining and managing the road network, so that it operates as efficiently and effectively as possible
- Reducing the need to travel by car
- Encouraging the use of sustainable transport
- Influencing how people travel
- Concentrating goods vehicles on the most suitable routes available
- Introducing improvements to tackle congestion
    - Reviewing our own services and transport use
    - Encouraging sustainable development and working through the planning system to discourage new development that would involve significant lorry movements not on our LRN

Further detail on interventions and measures is provided in Appendix F. All of these will positively contribute to reducing the impact of vehicle emissions on air quality.

We will also work with district council colleagues to collect and monitor supporting information on air quality across the County. We will also monitor the number of newly registered ultra low emission vehicles and the percentage of the local bus fleet that use low emission engines.

We will use evidence to investigate the relationship between congestion and air quality, and to identify what, if any, transport solutions can be introduced to minimise the impact of transport on the environment and quality of life AP23.

Noise

We know that traffic and transport infrastructure can have both positive and negative impacts on people's quality of life. This impact can vary in intensity and significance.

There are many factors that impact on quality of life, including transport related noise. Noise can be affected by traffic speed, the number of heavy goods vehicles, the condition of the road surface and street furniture (including manhole covers), the layout of the land, infrastructure and the provision of noise barriers. Further information is provided on the evidence webpage.

The legal framework

The Environmental Noise Directive (2002/49/EC) is one of the main instruments that is used to identify environmental noise pollution levels and trigger action. The Directive considers the strategic impacts of noise pollution from road, rail, aircraft and industrial sources.

The Directive takes account of the health effects of environmental noise. It:

- Provides a framework for the identification of areas with high noise levels
- Introduces noise action plans for those areas that are experiencing high noise levels

In England the Directive is implemented through the Environmental Noise (England) Regulations 2006. The aim of these Regulations is to:

- Determine the exposure to environmental noise, through noise mapping
- Provide information to the public on environmental noise and its effects
- Adopt action plans, based upon the noise mapping results (these are designed to manage environmental noise and its effects)
- Identify quiet areas with good environmental noise quality, so that they may be preserved.

To determine the exposure to environmental noise, as required by the Environmental Noise (England) Regulations 2006, noise maps were first produced by the Department for Environment Food and Rural Affairs (Defra) in 2007. These high level noise maps cover specific urban areas and include data for:

- Major roads which had more than six million vehicle passages a year
- Major railways which have more than 60,000 train passages a year
- Major airports with more than 50,000 movements
- Major industrial sites, in first round agglomerations (with a population of more than 250,000 and a specific population density).

The Environmental Noise (England) Regulations 2006 required Noise Action Plans to be developed and adopted. In March 2010 The Department for Environment Food and Rural Affairs (Defra) published Noise Action Plans, including for road traffic noise outside agglomerations. The Noise Action Plans are designed to manage noise, including noise reduction if necessary.

The Noise Action Plans within England focus on those areas most exposed to noise. These are defined as 'Important Areas', where the 1% of the population that are affected by the highest noise levels from major roads are located. First Priority Locations were also identified.

Noise Action Planning is considered to be relevant where any proposed scheme or traffic management measure may bring about changes in road traffic noise levels that could impact on Important Areas or First Priority Locations. The consideration of such schemes or measures is advised to be undertaken with consultation of the relevant stakeholders within the Noise Action Plan.

Compliance with legislation

Our third Leicestershire Local Transport Plan (LTP3) sets out what we will do to help deliver our longer-term transport goals, including having a transport system that helps to improve the quality of life for our residents. This provides us with a clear focus for addressing issues such as transport related noise.

Noise evidence

To assess the noise impact from traffic an estimate of the overall noise level is required. The Government uses *The Calculation of Road Traffic Noise* (CRTN) to assess traffic noise.

Once the traffic noise level has been predicted it can be used to provide an indication of the likely annoyance to residents caused by traffic noise. Individuals vary widely in their response to the same level of traffic noise. However, the average or community response from a large number of people to the same level of traffic noise has been found to be fairly consistent.

Defra noise mapping includes interactive maps for the Leicester urban area. These maps present a picture of the exposure that people have to environmental noise. In addition to these maps we have built up an understanding of the noise levels generated from various types of road surface, based largely on research work undertaken in the early 2000s.

Facts that we are aware of include:

- Continuous and persistent noise, even at lower levels, can act as an environmental stressor and impinge on quality of life
- People are more sensitive to abrupt changes in traffic noise (for instance from new roads)
- Noise from road traffic is generated by both the vehicles engines and the interaction of tyres with the road surface.
- Traffic noise is influenced by a number of different factors, including traffic flow, speed, composition (for instance the percentage of HGVs), gradient, type and quality of road surface, obstructions, buildings, and landscape.
- Localised noise issues arise from the presence of heavy goods vehicles and buses.
- Levels of road freight are predicted to grow between now and 2020.

- Climate change may impact on how noise affects quality of life (increased temperatures may lead to more households and businesses having windows open. Even if noise levels remain the same, the impact of existing noise pollution would increase).
- Communities most affected by noise pollution in Leicestershire are likely to be those located near to major roads and close to railway lines and East Midlands Airport (EMA)
- Big reductions in traffic volume are required to deliver a perceptible change in noise level
- Significant changes in mean speed have negligible effect on noise.

Further technical information on noise is provided in Chapter 7 evidence – environment (noise).

Noise in Leicestershire

As stated there is limited evidence about transport related noise in Leicestershire.

However, we have delivered a variety of measures that helped to minimise traffic related noise, including:

- The delivery of our lorry route network (LRN), which concentrates heavy goods vehicles on the most appropriate roads
- Speed reducing measures
- Introducing road surfacing materials that reduce the noise of traffic
- Noise barriers
- Development control, ensuring that new development doesn't adversely affect the existing network

Options to tackle noise

Previous chapters looked at the type of things that we are doing to help meet our network management duty. These include:

- Maintaining the road surface (particularly on the lorry route network)
- Using low noise surfacing
- Managing the road network, so that it operates as efficiently and effectively as possible
- Managing vehicle speeds
- Reducing the need to travel by car
- Encouraging the use of sustainable transport
- Influencing how people travel
- Concentrating goods vehicles on the most suitable routes available
- Introducing improvements to tackle congestion
- Encouraging sustainable development and working through the planning system to discourage new development that would involve significant lorry movements not on our LRN
- Introducing noise barriers, where appropriate

All of these measures will contribute to reducing noise generated from our transport system.

Whilst new road building is unlikely (given the high costs and environmental impact) other types of actions and interventions are possible[AP24], including:

- Considering how better evidence of noise issues across the County could be gathered
- Continuing to consider the inclusion of noise abatement in the design of physical infrastructure, such as new road schemes
- Considering introducing measures (such as speed reduction and road alterations) to reduce the noise generated by lorries at locations where lorries are routed through communities
- Considering developing an indicator to monitor noise levels (contributing to Defra work on Noise Action Zones)
- Undertaking further investigation into the relationship between congestion and noise, and identify what, if any, transport solutions can be introduced to minimise the impact of transport on the environment and quality of life
- Ensuring that surface patching repairs, whether undertaken by ourselves as the authority of utility companies, are fit for purpose and do not cause noise by the use of different materials or poor reinstatement causing surface irregularities.

As with air quality the type of things that we are doing to meet our network management duty will contribute to reducing the noise generated by vehicles.

Chapter 7
The way forward and performance monitoring

Previous chapters set out the significant challenges that we face, the legislative framework, the linkages with our Local Transport Plan (LTP3) and environmental issues. They also identified the actions that we will be taking to meet our network management duty.

These actions, which are summarised in Appendix A, cover the transport services that we deliver. Their implementation will enable us to meet our network management duty and contribute to delivering our third Leicestershire Local Transport Plan (LTP3) goals and transport vision:

Leicestershire is recognised as a place that has, with the help of its residents and businesses, a first class transport system that enables economic and social travel in ways that improve people's health, safety and prosperity, as well as their environment and their quality of life.

The Network Management Plan actions will be included in future team business plans. Progress with meeting these actions will be monitored and reported through the business plan reporting process. If changes to how we deliver services result in policies needing to be changed, we will seek political approval AP25.

In terms of measuring the impacts of our network management plan we will do this through existing LTP3 performance indicators (specifically those relating to supporting the economy and population growth, active and sustainable travel, the condition and resilience of out transport system and quality of life) AP26. The relevant LTP3 performance indicators are listed in Appendix H. If appropriate, new performance indicators will be developed to monitor the impacts of the network management plan.

Our Network Management Plan will be reviewed and refreshed on an annual basis. This will ensure that it reflects changes to national legislation and guidance, changes to local policies and new procedures and developments AP27.

This Plan will contribute to the delivery of national and local goals, including to supporting the economy and population growth.

Appendices

Appendix A
Action Plan

The Network Management Plan explains what actions we will take to manage our transport system. This will enable us to get the most out of it, tackle congestion and meet our network management duty. The actions that we will take to deliver our Network Management Plan are summarised below.

Ref.	Action	Responsible Officer	Completion Date
AP1 page 19	Our approach will be to focus on making the best use of our existing road network and improving its operational efficiency through the highways and transportation services that we deliver.	T & S Group Manager (Lead)	On-going Action
AP2 page 19	We will look beyond own boundary, considering how our actions may impact on the network of neighbouring authorities. Cross boundary communication and cooperation is vital.	T & S Group Manager (Lead) Highways Group Manager	On-going Action
AP3 pages 20 21	We will:		
	Improve our understanding of how the network operates, including where congestion occurs now, where it may occur in the future, why congestion is occurring and what roads are affected and identify the relevant importance of different parts of our networks	T & S Group Manager (Lead)	On-going Action
	identify where we need to prioritise measures	T & S Group Manager (Lead) TM Team Manager	On-going Action as part of future works programme development
	the transport modelling work will be re-run, and the outputs reassessed, every 2 years	T & S Group Manager (Lead) TPS Group Manager T & S Group Manager (Lead) Traffic Modelling Team Manager	Next Update by September 2014
AP4 Pages 20	**We will investigate the reasoning behind the existing hierarchy of roads and examine the case for reclassifying some routes**, so that they reflect the volume of traffic that uses it. The outcome will influence the Transport Asset Management Plan (TAMP), in terms of our priorities for investment, road inspection frequency etc.	T & S Group Manager (Lead) Highways Group Manager AM Team Manager	Initial investigation work to be completed by March 2015

Ref.	Action	Responsible Officer	Completion Date
AP5 page 21	**Review our traffic sensitive road network (our most vulnerable routes)**. The outcome will influence the Transport Asset Management Plan (TAMP), in terms of our priorities for investment, road inspection frequency etc.	T & S Group Manager (Lead) Highways Group Manager LHO Group Manager	By March 2015
AP6 page 22	We will: a. **undertake a programme of congestion studies** to further develop our understanding of the network, the way it is used and how it will operate in the future. The studies will include: • Assessment of the **A47** and junction A review of **other key parts** of the network. b. **These studies will target specific geographic areas,** taking account of our Local Transport Plan (LTP3) area based approach. There will be a continued focus on Loughborough, Coalville, Hinckley, south-west Leicestershire, and the Leicester Principal Urban Area (PUA). c. **Use the evidence generated from the studies to help develop future programmes of traffic management interventions, aimed at improving network capacity, reliability and resilience.**	T & S Group Manager T & S Group Manager (Lead) T & S Group Manager (Lead)	On-going Action On-going Action On-going Action
AP7 page 22	**We will look at the existing roles of certain routes, and consider whether or not we will need to adapt them to serve a more strategic function in the future.**	T & S Group Manager (Lead) Highways Group Manager	On-going Action
AP8 page 22	When reviewing our road network **we will assess whether a route is already of a suitable standard to serve a more strategic function, or whether we are able, if appropriate, to carry out improvements to bring the route up to a suitable standard.**	T & S Group Manager (Lead) Highways Group Manager	On-going Action
AP9 page 24	**We will work closely with each Local Planning Authority to ensure co-ordination of important infrastructure lists, and to ensure that levy's are set at a level which allows highway and other strategic infrastructure to be provided.**	T & S Group Manager (Lead)	On-going Action
AP10 page 24	We will: • produce flexible and adaptable criteria to use in identifying road hierarchy (the purpose of this criteria will be to identify those roads, or corridors, which are particularly important to the functioning of the road network, and which we will seek to protect from further development) • Provide an indication to Development Control colleagues of the potential problem sites.	T & S Group Manager (Lead) TPS Group Manager	March 2015
AP11 page 26	We will review our Highway Maintenance Policy and Strategy, to ensure that it is consistent with our Network Management Plan.	T & S Group Manager (Lead) Highways Group Manager AM Team Manager	September 2014
AP12 page 26	We will apply the same standards and approaches to our own activities as we do to others, demonstrating parity between standards for others and ourselves (for instance our own contractors will be subject to the same restrictions and directions as utility companies).	Highways Group Manager (Lead)	On-going Action

Ref.	Action	Responsible Officer	Completion Date
AP13 page 26	**We will consider further development of the ready-reckoner toolkit (Appendix D),** to enable the economic costs to be considered when deciding when, and how, works should be undertaken.	Highways Group Manager (Lead)	September 2014
AP14 page 27	The Road Works Protocol will be reviewed to ensure that it is effective in light of increased demands on our network and our revised Plan, Prepare, Do approach to scheme implementation, and also to take advantage of new technology or social media sites.	Highways Group Manager (Lead)	September 2014 Then every 2 years
AP15 page 28	**We will continue to review the lessons-learnt from planning, managing and implementing events, after the event has finished.** This will help to ensure that we continue to improve the way that events are managed, and will minimise their negative impact on the road network		
AP17 page 29	**We will develop Tactical Diversion Routes (TDRs),** which will provide details of diversion routes for unplanned events on critical parts of the road network. These plans will aim to minimise disruption, reduce congestion and help to protect local bus services during such unplanned events.	Highways Group Manager (Lead) T & S Group Manager	On-going Action
AP18 page 29	**We will produce a *Highways Emergency Procedures Manual* (HEPM),** which will support the Local Resilience Forum Major Incident Plan.	Highways Group Manager (Lead)	March 2015
AP19 page 31	We will a. **continue to ensure that the** Local Resilience Forum Major Incident Plan.	T & S Group Manager (Lead)	March 2015
AP20 page 31	**We will continue to refine the efficiency and effectiveness of our parking enforcement operation** in conjunction with our District Council partners.	T & S Group Manager (Lead)	On-going Action
AP21 page 35	**We will continue to refine the efficiency and effectiveness of our parking enforcement operation** in conjunction with our District Council partners	T & S Group Manager (Lead)	March 2015
AP22 page 35	We will: **a. maintain our close working relationship with the ATC centre** **b. continue to invest in ITS** **c. keep abreast of new technology and developments in demand management**	T & S Group Manager (Lead)	On-going Action
AP23 page 39	We will use evidence to: **a. to investigate the relationship between congestion and air quality** **b. identify what, if any, transport solutions can be introduced to minimise the impact of transport on the environment and quality of life.**	T & S Group Manager (Lead)	On-going Action
AP24 page 41	We will: a. **consider developing an indicator to monitor noise levels** (contributing to Defra work on Noise Action Zones) c. **undertake further investigation into the relationship between vehicular traffic and noise** d. **identify what, if any, transport solutions can be introduced to minimise the impact of vehicular traffic on the environment and quality of life**	T & S Group Manager (Lead) T & S Group Manager (Lead) T & S Group Manager (Lead)	September 2014 September 2014 September 2014

Ref.	Action	Responsible Officer	Completion Date
AP25 page 42	We will: a. include the Network Management Plan actions in relevant team business plans b. monitor progress on implementation c. report progress on implementing the actions using the business plan reporting process d. seek political approval if we need to change policies (as a result of services changing to meet our network management duty)	T & S Group Manager (Lead)	On-going Action
AP26 page 42	We will: a. **measure the impact of our network management plan through existing LTP3 performance indicators** (specifically those relating to supporting the economy and population growth, active and sustainable travel, the condition and resilience of out transport system and quality of life). b. **If appropriate, new performance indicators will be developed** to monitor the impacts of the network management plan.	T & S Group Manager (Lead)	On-going Action
AP27 page 42	We will: a. **Annually review, and refresh as appropriate, our Network Management Plan, so that it:** • reflects changes to national legislation and guidance • reflects changes to local policies • reflects new procedures and developments b. **annually review, and refresh as appropriate, the Network Management Plan website, so that it:** • reflects any changes to the NMP • links to new legislation, guidance and reports • remains up-to-date	T & S Group Manager (Lead) T & S Group Manager (Lead)	End of March (annually) End of March (annually)

Appendix B
Network management plan policies

Policies to manage the network are shown at appropriate points throughout the Network Management Plan. These are summarised below.

Reference number	NMP page number	Policy
Policy 1	12	Any measure taken on the network to improve network reliability or resilience should not be at the expense of our other responsibilities or duties as a highway authority.
Policy 2	16	We will adopt a series of principles for the highway services that we deliver, ensuring a holistic approach to network management. These will include: • Reducing the need to travel by car • Safeguarding the future operation of our road network • Ensuring that new development does not detrimentally affect the road network • Seeking to minimise the delay caused by existing congestion • Helping to provide more reliable journey times • Directing traffic to use the most appropriate roads • Reducing disruption caused by planned events • Ensuring our road network is better able to cope with unplanned events • Liaising with neighbouring authorities, and others, about our policies and works
Policy 3	21	We will ensure that our hierarchy of roads, and our traffic sensitive road network, remains appropriate in the light of changing circumstances.
Policy 4	24	In exercising our network management duty we will seek to maintain the effective and efficient operation of our transport system. To facilitate this we will require development proposals to be supported by Transport Assessments (TAs) that clearly set out their potential transport impact. For larger strategic development sites it will normally also include an assessment of its impact (limited to deriving of trip distribution for smaller sites in this category), using the Leicester and Leicestershire Integrated Transport Model (LLITM).
Policy 5	28	We will use our statutory powers to control the activities undertaken on our road network by individuals or organisations that do not have a right to do so. We will deter, mitigate and take appropriate enforcement action in relation to unlawful activities.
Policy 6	28	We will ensure that planned events are co-ordinated and managed effectively, so as to minimise disruption to the network.

Reference number	NMP page number	Policy
Policy 7	29	We will ensure that planned events are co-ordinated and managed effectively, so as to minimise disruption to the network.
Policy 8	31	We will ensure that unplanned events are co-ordinated and managed effectively, so as to minimise disruption to the network.
Policy 9	32	In exercising our network management duty we will encourage walking and cycling by: We will also ensure parity between how our own work is delivered and that of others, by applying the same standards and approaches to both.

Appendix C
Compliance with the Traffic Management Act 2004

We recognise the opportunities and benefits that the Traffic Management Act and network management duty bring, and are fully committed to their implementation.

The table below points readers to the section(s) in this Network Management Plan that show how we are complying with the Act and duty. The web document can also be searched for specific words and phrases.

Section of the Act	Duty	Network Management Plan reference
16(1)(a)	Securing the expeditious movement of traffic on the authority's road network.	Pages: 18, 23, 27, 31, 40, 41
16(1)(b)	facilitating the expeditious movement of traffic on road networks for which another authority is the traffic authority.	Pages: 18, 53
16(2)(a)	[actions contributing to securing] the more efficient use of [the] road network.	Pages: 18, 30, 41
16(2)(b)	[actions contributing to securing] the avoidance, elimination or reduction of road congestion or other disruption to the movement of traffic.	Pages: 33, 39
16(2)	the exercise of any power to regulate or coordinate the uses made of any road (or part of a road) in the road network.	Pages: 27
17(2)	the appointment of a person .. the "traffic manager".	Pages: 12, 13
17(4)(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 [the] road network.	Pages: 33
17(4)(b)	consider any possible action that could be taken in response to (or in anticipation of) anything so identified.	Pages: 25, 36, 39
17(5)(a)	determine specific policies or objectives in relation to different roads or classes of road in [the] road network.	Page 24
17(5)(b)(i)	[monitor the effectiveness of] the authority's organisation and decision-making processes.	Pages: 51
17(5)(b)(ii)	[monitor the effectiveness of] the implementation of their decisions.	Pages: 51
17(5)(c)	performance …[of the] road network.	Pages: 24, 25
17(6)	review the effectiveness of the arrangements … in place.	Pages: 51

Appendix D
Congestion costs of highway works

Scheme promoters, both internal and external, must be mindful of the impact that their work will have on the road network and road users. Issues such as timing of works and traffic management arrangements can affect the network in different ways, and have different costs associated with them.

This is especially important in relation to the heavily trafficked A and B class roads in the County, where the timing of works and choice of traffic management arrangements can have a significant financial impact upon road users. The tables (1 to4) below provide indicative cost impacts on network users from a variety of traffic management options and timings.

The main conclusions to arise from this work can be summarised as follows;

1. Diversion routes provide significant daily cost to road users, even at relatively low flow levels and for relatively short diversion lengths. Careful consideration of diversion routes is perhaps the most important criteria for minimising cost to the road network.
2. For typical flow levels witnessed on the LCC network, the decision to run lane restrictions in the form of shuttle working on a route in either daytime hours or at night provides a small difference in terms of road user costs (with daytime working incurring more daily cost). The level of cost difference between the two time periods in these cases should not prohibit the use of daytime working for the majority of LCC routes. However, once flow levels exceed around 13,000 AADT, the travel costs incurred with this comparison increase significantly, and TM schedules should be arranged to reflect this.
3. For typical flow levels witnessed on the LCC network, the decision to run lane restrictions in the form of shuttle working on a route in either weekdays or at weekends provides a small difference in terms of road user costs (with weekday working incurring more daily cost). The level of cost difference between the two periods should not prohibit the use of weekday working for the majority of LCC routes, even those which have a flow in excess of 12,000 AADT.
4. For typical A road flow levels and high B and C road flow levels witnessed on the LCC network, the decision to run lane restrictions in the form of shuttle working on a route on either a long day including peak hours or a short day not including peaks provides a small difference in terms of road user costs (with longer working days incurring more daily cost). The level of cost difference between the two time periods in these cases should not prohibit the use of long-day working for the majority of LCC routes. However, once flow levels exceed around 13,000 AADT, the travel costs incurred with this comparison increase significantly, and TM schedules should be arranged to reflect this.

Further details on the methodology used to undertake this assessment work is detailed in the Technical Note: Operations on the Highway 08/05/2013 (MHA _ LCC _ Ops _ 004).

Table 1: Assessment of road closure with various diversion lengths

TYPE OF ROAD	TM LAYOUT (Site Length/Main Route Length)	FLOW AADT	TYPICAL DAILY USER COST IMPACT (2010 Market Prices, £)			DIVERSION LENGTH	TOTAL COST (£)
			Time & VOC'S	Accidents	Total		
S2 A Road High	Full-lane closure	18,824	2,572	434	3,006	2km	3,006
		18,824	6,947	1,302	8,249	3km	8,249
		18,824	15,624	3,038	18,662	5km	18,662
	(N/A, 1.5km)	18,824	38,290	7,378	45,668	10km	45,668
S2 A Road Typical	Full-lane closure	12,135	1,645	280	1,925	2km	1,925
		12,135	4,384	839	5,223	3km	5,223
		12,135	9,848	1,959	11,807	5km	11,807
	(N/A, 1.5km)	12,135	24,119	4,756	28,875	10km	28,875
S2 B Road High	Full-lane closure	13,081	1,792	329	2,121	2km	2,121
		13,081	4,724	986	5,710	3km	5,710
		13,081	10,562	2,302	12,864	5km	12,864
	(N/A, 1.5km)	13,081	25,800	5,590	31,390	10km	31,390
S2 B Road Typical	Full-lane closure	9,394	1,313	236	1,549	2km	1,549
		9,394	3,404	708	4,112	3km	4,112
		9,394	7,580	1,653	9,233	5km	9,233
	(N/A, 1.5km)	9,394	18,501	4,014	22,515	10km	22,515
S2 C Road High	Full-lane closure	6,294	901	158	1,059	2km	1,059
		6,294	2,293	475	2,768	3km	2,768
		6,294	5,080	1,107	6,187	5km	6,187
	(N/A, 1.5km)	6,294	12,384	2,690	15,074	10km	15,074
S2 C Road Typical	Full-lane closure	3,997	582	100	682	2km	682
		3,997	1,462	301	1,763	3km	1,763
		3,997	3,228	703	3,931	5km	3,931
	(N/A, 1.5km)	3,997	7,862	1,708	9,570	10km	9,570

Table 2: Assessment of daytime vs night-time working

TM LAYOUT (Site Length/Main Route Length)	FLOW - 12 HR	TYPICAL USER COST IMPACT (2010 Market Prices, £)			MAX QUEUE DELAY (20 min)	TOTAL COST (£)
		Time & VOC'S	Accidents	Total		
Shuttle working - daytime	15,138	19,506	69	19,575	Yes	19,575
Shuttle working - nighttime	3,686	128	17	145	Yes	145
(100m, 1.5km)					Yes	0
Shuttle working - daytime	9,759	475	45	520	Yes	520
Shuttle working - nighttime	2,376	78	11	89	Yes	89
(100m, 1.5km)					Yes	0
Shuttle working - daytime	7,856	325	33	358	Yes	358
Shuttle working - nighttime	1,538	48	7	55	Yes	55
(100m, 1.5km)					Yes	0
Shuttle working - daytime	3,311	110	14	124	Yes	124
Shuttle working - nighttime	686	21	3	24	Yes	24
(100m, 1.5km)					Yes	0

Table 3: Assessment of weekday vs weekend working

TYPE OF ROAD	TM LAYOUT (Site Length/Main Route Length)	FLOW AADT	TYPICAL DAILY USER COST IMPACT (2010 Market Prices, £)			MAX QUEUE DELAY (20 min)	TOTAL COST (£)
			Time & VOC'S	Accidents	Total		
S2 A Road High	Shuttle working - weekday	18,824	3,919	328	4,247	Yes	4,247
	Shuttle working - weekend	18,824	3,476	315	3,791	Yes	3,791
	(200m, 1.5km)						0
S2 A Road Typical	Shuttle working - weekday	12,135	1,522	144	1,666	Yes	1,666
	Shuttle working - weekend	12,135	1,328	145	1,473	Yes	1,473
	(200m, 1.5km)						0
S2 B Road Typical	Shuttle working - weekday	9,394	1,064	106	1,170	Yes	1,170
	Shuttle working - weekend	9,394	933	106	1,039	Yes	1,039
	(200m, 1.5km)						
S2 C Road Typical	Shuttle working - weekday	3,997	357	45	402	Yes	402
	Shuttle working - weekend	3,997	312	45	357	Yes	357
	(200m, 1.5km)						

TYPE OF ROAD	TM LAYOUT (Site Length/Main Route Length)	FLOW 12HR / FLOW 6HR	TYPICAL DAILY USER COST IMPACT (2010 Market Prices, £)			MAX QUEUE DELAY (20 min)	TOTAL COST (£)
			Time & VOC'S	Accidents	Total		
S2 A Road High	Shuttle working - long weekday Shuttle working - short weekday (100m, 1.5km)	15,166 6,732	19,924 273	70 31	19,994 304	Yes Yes	19,994 304 0
S2 A Road High	Shuttle working - long weekday Shuttle working - short weekday (100m, 1.5km)	15,073 9,035	18,709 419	69 41	18,778 460	Yes Yes	18,778 460 0
S2 A Road Typical	Shuttle working - long weekday Shuttle working - short weekday (100m, 1.5km)	9,777 4,340	477 156	44 20	521 176	Yes Yes	521 176
S2 A Road Typical	Shuttle working - long weekday Shuttle working - short weekday (100m, 1.5km)	9,717 5,824	472 225	45 27	517 252	Yes Yes	517 252
S2 B Road High	Shuttle working - long weekday Shuttle working - short weekday (100m, 1.5km)	10,979 4,873	549 174	47 21	596 195	Yes Yes	596 195
S2 B Road High	Shuttle working - long weekday Shuttle working - short weekday (100m, 1.5km)	10,869 6,754	538 264	46 29	584 293	Yes Yes	584 293
S2 C Road High	Shuttle working - long weekday Shuttle working - short weekday (100m, 1.5km)	5,197 2,534	188 82	22 11	210 93	Yes Yes	210 93
S2 C Road High	Shuttle working - long weekday Shuttle working - short weekday (100m, 1.5km)	5,243 3,344	190 111	22 14	212 125	Yes Yes	212 125

Appendix E
Transport modelling

Methodology

Average daily traffic flows were calculated for all County roads with available data. Present day (2012) traffic flows were derived from manual classified count data.

Projected future (2026) traffic flows were obtained from the Leicester and Leicestershire Integrated Transport Model (LLITM). A factor was then applied to the raw data obtained for the current year scenario, in order to produce average daily traffic flows.

The capacity of roads (the maximum hourly throughput of vehicles) with available data was also calculated, based on geometric attributes (such as carriageway width and number of lanes) and other factors including composition of traffic (such as the proportion of heavy goods vehicles (HGVs)). The average daily flow data for each road was then expressed as a percentage of capacity, to indicate levels of network stress.

Roads with network stress values of 85% or more were identified to be suffering from a degree of congestion (and worthy of further investigation), whilst those exceeding 100% were considered to be seriously congested, and therefore at risk of causing wider delays across the network.

Limitations

All data relates to the performance of road links. Data relating to junction performance needs to be obtained and calculated separately, given that link capacity is often increased on the immediate approaches to junctions (for instance by providing additional lanes), and traffic flows through a junction can often be constrained by road geometry and other, conflicting traffic flows.

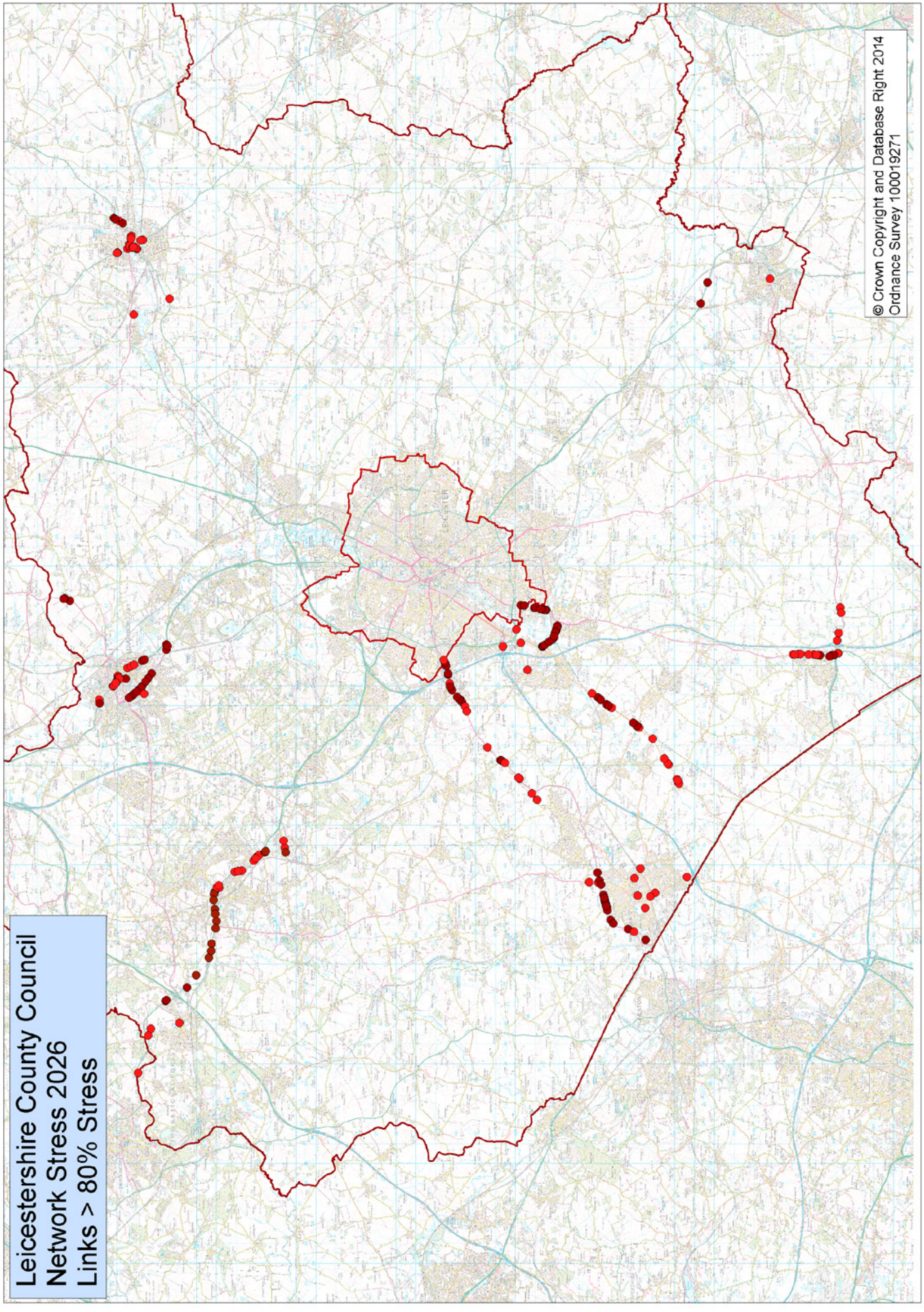
The performance of key, strategically important junctions throughout the County is a potential area for further investigation, given the impact delays and congestion at such junctions can have on the wider network.

The use of manual classified count data, and associated factoring of results, to calculate present day average daily traffic flows is unlikely to be as accurate as using permanent automatic counters, especially given the potential for day-to-day fluctuations and distortions in traffic flow caused by unplanned incidents elsewhere on the network (such as accidents).

However, manual classified counts were used, even where automatic counters were available, to ensure a consistent methodological approach to obtaining 'present day' data across the network. Some of the manual classified count data was derived from junction counts, which can be lower than equivalent link counts for the reasons outlined above. As a result, current levels of congestion on some roads may have been underestimated.

The reliability of the future average daily traffic flow data is dependent on how well inputs to the LLITM 2026 scenario (with regards to changes in land-use and new transport schemes) reflect what is likely to happen in reality.

In the case of some roads, generic capacity data had to be obtained from the Design Manual for Roads and Bridges (DMRB). This was because in some cases the geometric information required to calculate bespoke, site-specific capacity estimates was unavailable, affecting how realistic the estimates were for network stress and congestion.


Leicestershire County Council
Network Stress 2026
Links > 80% Stress
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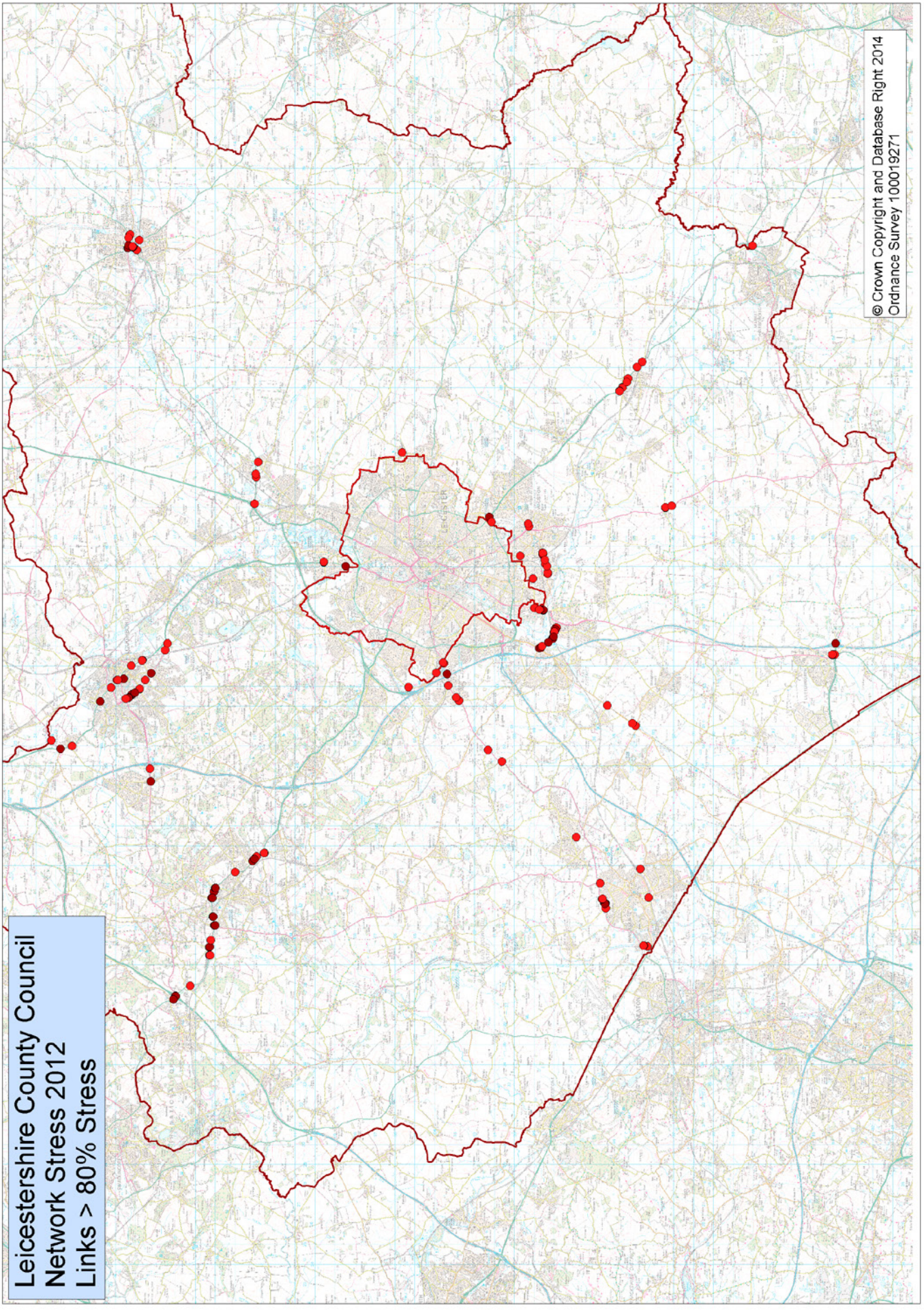
Ordnance Survey 100019271


Leicestershire County Council
Network Stress 2012
Links > 80% Stress
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Appendix F
Air quality

Interventions and measures

Interventions and measures to tackle congestion can have different effects on air quality. They can be split into four broad categories:

- Systems
- Infrastructure
- People
- Vehicles

Examples of the types of interventions and measures that can be provided to tackle congestion and improve air quality include:

Systems

Integrated traffic management and air quality monitoring

Traffic management systems (for instance SCOOT) are starting to be integrated with air quality monitoring systems in some locations around the country. Where air quality issues are anticipated, traffic management measures to divert traffic can be utilised.

Demand Management

Measures are utilised to control the amount of traffic using the road network. These measures can take a variety of forms including fiscal measures (e.g. road user charging) or changing signalling priorities.

Driver information: improved signs and active signs

Improvements in signs to assist drivers may reduce the amount of lane changes and subsequent disruption in traffic flows. The provision of information to drivers may enable drivers to change their routes to avoid areas of congestion.

Permits to Work

Permits to work schemes aim to minimise unnecessary road works and increase the efficiency of those works which are undertaken.

Incident / breakdown support

Disruption caused by breakdowns can be reduced by having response teams in place to assist in the timely removal of obstructions, and management of traffic, during an incident.

Public transport information

Better information on the availability of public transport can help to maximise public transport use and reduce the number of vehicles on the road network. This information can include real-time information at bus stops, real-time information available on interactive web-pages and online route planners covering multi-modal options.

Public transport route reviews

In conjunction with providing better information to the public, reviews of public transport routes can be carried out to identify those that have high demand for public transport and those which are already sufficiently served. Focussing additional resources on areas that are currently limited by access to public transport can assist in encouraging modal shift and reducing private vehicles use.

Infrastructure

Adjusting speed limits

Vehicles travelling at 70mph will emit more pollutants than those travelling at 50mph. Therefore lowering the average speed on high speed roads could have the effect of reducing concentrations of pollutants associated with vehicles.

Closing roads / rerouting networks

Closing highly polluted stretches of road, for example by pedestrianising town centres, will remove the primary source of pollutants from that area. However, it is recognised that displacement of vehicles onto other parts of the road network may lead to adverse effects elsewhere.

Altering junctions (priorities, roundabouts, signals)

Vehicles emit far more NOX at low speeds than at higher speeds (in g/km), particularly below 20 kph. If the flow of vehicles can be smoothed, so that fewer vehicles are travelling at low speeds or idling at junctions, the emissions of NOX per vehicle kilometre travelled will drop.

Inland ports: modal shift

Inland ports away from urban areas may assist in reducing congestion by taking HGVs off the road network and by placing freight on the railways.

Park and ride schemes

Park and ride schemes encourage private car users to only drive to the outskirts of cities, where they catch buses into a city. This measure is effective at reducing private car emissions and may be best implemented with clean bus technologies e.g. retrofitting, hybrid buses.

On-road parking alterations

On-road parking in some locations can hinder the movement of traffic and result in stop-start driving, with associated elevated emissions. The removal of on-road parking may improve air quality.

Queue relocation

Areas of poor air quality are often due to a combination of congestion and poor dispersion characteristics. For example junction locations in comparatively enclosed areas (canyons) where air pollutants cannot be as effectively removed by dispersion compared to open areas. Therefore, it may be possible to improve air quality by relocating queues away from areas of poor dispersion into areas of improved dispersion.

Cycling and Walking Infrastructure

Investment in infrastructure to support walking and cycling in congested areas may improve air quality by encouraging modal shift. The types of support could include:

- Cycle shelters
- Cycle routes
- Footbridges / underpasses at busy junctions
- Integration of cycling and public transport e.g. with trains.

Investment has already taken place within the County during LTP2 (2006-2011), and this continues during LTP3 (2011-2026).

People

Publicity

LTP3 identifies a need to educate people on making personal choices that can improve congestion and air quality, such as walking, cycling, using public transport and choosing to purchase cleaner vehicles.

Anti-idling

Vehicles emit far more NOX at low speeds than at higher speeds (in g/km), particularly below 20 kph. Vehicles that are just idling are emitting large amounts of NOX, so discouraging this practice (where feasible) can help to reduce emissions.

Driver Training

Driver training, for example for bus drivers, has been shown to improve fuel efficiency by encouraging smooth driving techniques. This will also help improve air quality.

Travel Plans

A wide range of organisations and people prepare and use travel plans to reduce their vehicle trips. Travel Plans may also be required as part of the planning process. These travel plans may include:

- car share schemes - to encourage people to travel to destinations together and reducing vehicle trips
- walking buses – for example to schools, to reduce congestion around school locations
- agreed transport routes – for example HGV routes to

avoid unsuitable locations

- mini-bus transport for business parks, universities etc
- working from home – opportunities for staff to work from home reduces vehicles trips
- tele-conferencing facilities can also reduce the need to travel.

Delivery times

Voluntary agreements or conditions agreed as part of the planning process for businesses to have deliveries outside of peak periods. This will help to tackle congestion and air quality issues in retail locations that are subject to congestion at peak periods.

Vehicles

Electrifying bus fleets, council fleets etc.

Replacing existing vehicles with electric vehicles can help to reduce emissions of pollutants. Hydrogen fuel cell buses are also being trailed by Transport for London. LTP3 identifies that the provision of electric, or low emission vehicles, can have a positive effect on air pollution where there are no alternative transport options.

Roll out of electric charging points to encourage domestic use of electric vehicles

Encouraging the use of electric vehicles in domestic situations would help reduce emissions of pollutants (some authorities require installation of electric charging points during the construction of new housing developments, to mitigate the impact of increased emissions from additional road traffic on existing properties).

Upgrading bus fleets, council fleets etc.

Replacing existing vehicles with vehicles that emit lower levels of pollutants will help to reduce emissions of pollutants. An alternative to replacing vehicles is retrofitting them, to improve their efficiency and lower their emissions. The City of Edinburgh undertook a significant programme of retrofitting buses from a trial in 2009 through to 2011. Measurement data suggested an improvement of 60% in the number of exceedances of the hourly mean objective for NO_2 following the retrofitting programme along the worst affected road in Edinburgh. The SCRT® system (a combination of CRT – Continuously Regenerating Trap, and SCR – Selective Catalytic Reduction) used in these retrofits registered a 71% improvement in emissions of NO_X and 86% for PM_{10} in testing.

Appendix G
National legislation

Traffic Management Act 2004

The Traffic Management Act (TMA Act) was introduced in 2004 to tackle congestion and disruption on the road network. The TMA Act places a duty on local traffic authorities to ensure the expeditious movement of traffic on their road network, as well as those networks of surrounding authorities. The TMA Act gives authorities additional tools to better manage parking policies, moving traffic enforcement and the coordination of street works.

Traffic officers (TMA 2004 Part 1)

This part makes provision for the designation of individuals as traffic officers by, or under an authorisation given by, the Secretary of State for Transport or the Assembly.

Network management by local traffic authorities (TMA 2004 Part 2)

Authorities are required to manage their road network (network management) to secure the expeditious movement of traffic on that network and to facilitate the same on the network of others.

Permit schemes (TMA 2004 Part 3)

Part 3 provides for the creation of permit schemes under which utilities, highway authorities (and others) wishing to dig up particular roads would have to apply for permission to carry out works and would have to comply with any conditions attached.

Street works (TMA 2004 Part 4)

Part 4 includes the provision for stronger powers for local highway authorities to direct when works are carried out or where new apparatus is placed. It provides for a noticing system for street works, fixed penalty notices and overrun charging schemes.

Highways and roads (TMA 2004 Part 5)

The Secretary of State for Transport may by order made by statutory instrument designate roads and proposed roads in Greater London, other than roads for which the Secretary of State for Transport or Transport for London is the traffic authority, as strategic roads.

Civil enforcement of traffic contraventions (TMA 2004 Part 6)

The provisions in Part 6 of the Traffic Management Act 2004 give the government the power to introduce a new framework for the enforcement of parking, bus lanes, certain moving traffic matters and the London lorry ban. They build on and strengthen the successful civil enforcement regime introduced by the Road Traffic Act 1991, the Transport Act 2000 Transport Act 2000 and London legislation.

Miscellaneous and general (TMA 2004 Part 7)

Includes the power to inspect blue badges.

Other legislation

We have other powers under which we maintain, improve and manage the highway network, including:

- the Highways Act 1980, principally covering the structure of the network
- the New Roads and Street Works Act 1991 (NRSWA), which covers utility street works
- the Road Traffic Regulations Act 1984, which regulates the activities of road users.

From a network management perspective, many of the powers that can be used to control activities on the network are derived from the NRSWA. These are supported by a number of codes of practice and guidance documents, some mandatory, but all of which are

recommended and accepted by the industry as good practice. These include:

- Traffic Signs Manual
- Safety at Street Works and Road Works: A Code of Practice (NRSWA)
- Code of Practice for the Coordination of Street Works and Works for Road Purposes and Related Matters (NRSWA)
- Code of Practice for Inspections (NRSWA)
- Specification for the Reinstatement of Openings in the Highway (NRSWA)
- Measures necessary where Apparatus is Affected by Major Works (NRSWA)
- Code of Practice for Recording of Underground Apparatus in Streets (NRSWA)

Another policy of major importance is the Equality Act 2010. The network management duty requires us to meet the needs of all road users. In doing so we will need to comply with the Public Sector Equality Duty, which came into force on 5th April 2011. This requires public bodies to publish relevant, proportionate information showing compliance with the Equality Duty, and to set equality objectives.

The Traffic Management Act 2004 builds on these existing powers, enabling more effective management of the network.

Appendix H
Performance monitoring

To support the delivery of our third Leicestershire Local Transport plan (LTP3) we have put in place a robust monitoring framework, which has two levels:

- Level 1 – Key Performance Indicators (KPIs)
- Level 2 – Performance Indicators (PIs)

We will use the existing LTP3 performance indicators to measure the impact of our network management plan. Further information on these performance indicators is provided below:

Level 1 – Key Performance Indicators (KPIs)

These are overarching indicators that will demonstrate whether we are achieving our LTP3 long-term transport goals and outcomes. Our Network Management Plan is intended to play an important part in helping to achieve many of these KPIs.

There are 7 KPIs. Those most relevant to the delivery of our Network Management Plan cover:

- vehicle speeds on locally managed A roads
- proportion of urban trips under 5 miles taken by (i) walking & cycling, (ii) Public Transport
- working age people with access to employment by public transport (and other specified modes)
- issues relating to green house gases and the resilience of our transport system to climate change

Where possible we have set aspirational, long-term targets for our key PIs. In addition we have set shorter-term 3 year targets to assess progress.

Level 2 – Performance Indicators (PIs)

This are more detailed indicators which will inform us whether the actions that are set out in our LTP3 Implementation Plan are delivering our strategic outcomes.

Those most relevant to the delivery of our Network Management Plan include:

- average vehicle speeds in six of our towns
- bus services running on time and levels of usage
- journey times to schools, health facilities, food stores and main centres
- public satisfaction regarding access to service and facilities (including for those without access to a car)
- CO2 emissions from road transport

We will continue to review and develop our performance framework to ensure that it remains relevant.

Monitoring

Specific areas of work are monitored in different ways, including:

Sustainable travel

Cycling: Permanent counters across Leicestershire are used to collect data on the levels of cycling. These are located, in the main, where cycling infrastructure has been built.

Walking: Data on levels of walking is not collected as a matter of course. However, one-off surveys have taken place for Connect 2 schemes.

In addition a requirement of the Local Sustainable Transport Fund (LSTF) is to monitor walking and cycling in Loughborough and Coalville, where LSTF measures have been introduced. To facilitate this baseline surveys in Loughborough and Coalville have been undertaken. These surveys will also help to ensure that permanent counters will eventually be installed in the most appropriate locations, providing meaningful data for the LSTF and LTP3.

Public rights of way (PROW): The performance indicator

(PI27) gives a target for the percentage of footpaths and other rights of way that are signposted and easy to use. Further work on developing an outcome measure (rather than the current output) is being considered. In broad terms this is to establish who is using the network, why they are using it and how numbers could be increased in line with priorities set out in the LTP.

Accessibility: Accessibility statistics are reported annually to DfT under the national performance indicator 77 (NI177). This measures accessibility by public transport to a range of destination, including schools, hospitals and town centres.

Personal Travel Planning (PTP): As part of the personal travel planning programme comprehensive monitoring and evaluation has been implemented. This monitors both the outputs (for instance the number of participants) and the outcomes (for instance modal shift). This is done through surveys, face to face interviews and focus groups.

School Travel: Schools voluntarily provide us with annual mode of travel data which enables targeting of areas that are experiencing high levels of car use. This is a LTP3 performance indicator 10 (PI 10).

ITRACE**:** Through the Local Sustainable Transport Fund (LSTF) we have purchased this internet based software suite which will monitor the performance of sustainable travel and smarter choices initiatives at workplace, schools and residential travel plan sites.

Bus patronage: LTP3 performance indicator 8 (PI 8) measures local bus journeys originating in Leicestershire. In addition bus patronage on supported services is monitored through the information operators provide to us on a monthly basis. This information is currently being used as part of the review.

Bus Reliability: LTP3 performance indicator 9 (PI 9) measures bus service reliability in terms of the percentage of buses that arrive on time.

Accessibility: LTP3 key performance indicator 3 (KPI 3) and performance indicators 11-18 (PI 11-18) monitors accessibility. Accessibility statistics are reported annually to the Department for Transport (DfT) under the national performance indicator 77 (NI177). This measures accessibility by public transport to a range of destination, including schools, hospitals and town centres.

Effectiveness of promotions: We monitor the success of promotions by measuring patronage before and after the promotion. The information is used to inform future promotions.

Air quality

Recent improvements in air pollutant monitoring technology have seen the introduction of two new types of monitoring systems into the commercial marketplace. These provide an evidence base that supports traffic management planning and policy development.

One of these technologies (motes) takes the form of small, lightweight sensors that can measure gaseous air pollutant concentrations in real time. The systems are powered by a small solar cell and can either log data or be linked together as a wireless network. A hub unit can be fitted with a modem for remote data downloading. There are currently 3 suppliers of this technology in the UK market.

The systems have the ability to capture short term changes in pollutant concentrations from short term changes in exhaust emission rates at a network of points simultaneously. This makes it possible to demonstrate the air quality benefit or disbenefit of traffic management initiatives.

The success, or otherwise, of schemes can be identified by carrying out localised measurements before and after a scheme is implemented. The types of scheme this would work for include:

- 20 mph zones
- traffic calming measures
- school parking
- travel plan initiatives
- changes to junction prioritisations or layouts

- introduction of shared space areas
- emissions from idling vehicles at bus stops, taxis ranks, signalised junctions
- effectiveness of mitigation requested for development schemes.

Other more conventional forms of monitoring, using diffusion tubes or continuous monitoring techniques may also be useful in establishing the effectiveness of interventions (such as new roads or diversions).

For driver behaviour based measures, questionnaires can be used with a cross section of people in the area where the initiatives are being launched. These can be used before and after the initiatives are introduced. Analysis of these questionnaires can indicate where behaviours have changed. Qualitative conclusions can then be drawn on where improvements to air quality have occurred as a result of these initiatives.

We report our performance to senior officers and Members, including to the Cabinet. We also publish our performance on the County Council's website in the form of Annual Performance Reports.

Appendix I
Contacts

Name	Responsibilities include	Contact details / information
Leicestershire County Council (LCC) Traffic Manager	Performs the tasks that are necessary for meeting the network management duty.	Greg Payne Traffic & Safety Manager Greg.payne@leics.gov.uk Tel: 0116 305 7073
Leicestershire County Council (LCC) Local highway authority (LHA)	Local roads: Accident investigation, bridges and structures, development control (highway), flooded roads, footway (pavement) repairs, grass cutting, highway drains, major development proposals, new estate roads adoption, potholes, public rights of way, public transport, road closures, road repairs, road safety, road surfacing, sections 38, 184 and 278, sign and lines, snow clearance, street lighting, traffic management, traffic signals (traffic lights), transport improvements, transport policy and strategy, winter salting / gritting, work in the highway. For motorways and trunk roads please contact the Highways Agency: http://www.highways.gov.uk	**All enquiries** Customer Service Centre County Hall, Glenfield, Leicestershire LE3 8ST customerservices@leics.gov.uk Tel: 0116 305 0001 **Leicestershire County Council webpages:** Roads and transport Roadworks Accident data and information Rights of Way Public Transport Cycling Walking Planning and new development
Local planning authority (LPA) District / Borough Councils	Car parks (off road) Environmental health Housing Leisure and amenities Local planning applications Recreation Refuse collection	District / Borough Councils

Further contacts:

Highways contact details

6Cs Design Guide contacts (see 6CsDG Appendix A)

Appendix J
Glossary

Term	Definition
6Cs	The term used for the 6 local authorities in the East Midlands sub-region. These consist of Derby City, Derbyshire County, Leicester City, Leicestershire County, Nottingham City and Nottinghamshire County Councils.
6Cs Design Guide (6CsDG)	This guide, which has been designed and adopted by the 6C authorities, sets out the highways and transportation standards for new developments across the sub-region.
Adaptive maintenance	Building resilience into our road network for the future.
Air quality	Poor air quality can impact on people's health. Eight specific pollutants are measured to assess the quality of air (further information can be viewed on the government's air quality statistics webpage).
Air Quality Management Area	Monitoring takes place to identify areas with poor levels of air quality. Air Quality Action Plans will then be produced to improve the air quality in that area in order to protect health and the environment.
Air Quality Strategy	This Strategy sets values (levels) for key pollutants which local authorities use to monitor local air quality.
Area Traffic Control (ATC)	ATC are responsible for helping to manage road transport systems across Leicester, Leicestershire and Rutland. They monitor road networks using CCTV, traffic signals and other technology to help manage traffic flow. They also log problems and instruct their street engineers to resolve issues. Their traffic data is also used for developing future traffic schemes.
Assets (highway)	An item of economic value owned / managed by Leicestershire County Council, including equipment (such as traffic signals), bridges, roads and pavements.
Asset management	A strategic approach that optimises the management, operation, preservation and enhancement of the highway infrastructure so that it remains fit-for-purpose now and in the future.
Climate change	Climate change is a significant and lasting change in the earths climate over a period of time (decades to millions of years). It may involve a change in average weather conditions or distribution of weather.
Congestion	The restriction of traffic flow due to the volume of vehicles using the road network. (see Chapter 3)
Congestion study (2007)	A study that looks at the impact of congestion on the network. The 2007 6Cs congestion management study estimated that congestion costs the East Midlands economy £935 million a year.
Design Manual for Roads and Bridges (DMRB)	The DMRB was introduced in 1992. It provides a comprehensive manual system which pulls together current standards, advice notes, and other published documents for works on Trunk Roads. The DMRB can also be applied to local road schemes.
Economic Assessment for Leicester and Leicestershire (2010)	The Local Democracy, Economic Development and Construction Act 2009 placed a duty on County Councils and unitary district councils to prepare an economic assessment of the economic conditions of their area. This document provides a robust evidence base that will underpin strategic planning investment decisions and delivery plans.

Term	Definition
Environment Act 1995	This Act created a number of new agencies (including the Environment Agency), set new standards for environmental management, required the Secretary of State to prepare a national air quality strategy and provided for the establishment of air quality management areas.
Environmental Noise Directive (2002/49/EC)	This is one of the main instruments that is used to identify environmental noise pollution levels and trigger action.
Highway	Any public road, or other public right of way, on land.
Highways Act 1980	This Act deals with the management and operation of the road network in England and Wales. It consolidates several earlier pieces of legislation.
Highways Agency (HA)	The Highways Agency is an Executive Agency of the Department for Transport (DfT). It is responsible for operating, maintaining and improving the strategic road network (trunk roads and motorways) in England on behalf of the Secretary of State for Transport.
Highway Maintenance Policy and Strategy (HMPS)	This local Policy complements the governments Well Maintained Highways guidance and subsequent complementary guidance. The HMPS was adopted on 1st November 2011 and updated (version 6) in November 2012.
Highway network	Includes all elements on the highway, including roads, footpaths, cycle routes, structures and lighting.
Links	The sections of road between junctions.
Local highway authority / Local traffic authority	In most places, a local authority is either a County Council, a metropolitan council or a unitary authority. They are responsible for the implementation of national and local government policy on a variety of civil issues. The local highway / traffic authority are responsible for the management of the local road network (excluding motorways and trunk roads).
Journey times	The time taken to make a journey
Leicester and Leicestershire Enterprise Partnership (LLEP)	
Leicester and Leicestershire Integrated Transport Model (LLITM)	LLITM is a transport forecasting tool. It calculates future demand for the road network by taking account of such factors as current use, proposed development, proposed transport infrastructure improvements, projected growth in population, the economy and levels of employment.
Leicestershire County Council	Leicestershire is in the east midlands region of England and the County Council covers seven district council areas. Leicestershire County Council provides a wide range of services to over 600,000 local people. The County Council has had its current administrative boundaries since 1997, when Leicester City and Rutland both became unitary authorities.
Local Flood Management Strategy	This Strategy sets out how organisations and communities should work together to manage their flood risk.
Local Resilience Forum (LRF)	The Leicester, Leicestershire & Rutland Local Resilience Forum (LRF), includes the emergency services and local authorities.
Local Transport Plan (LTP3)	The third Leicestershire Local Transport Plan (2011-2026) sets out how we will support national and local objectives, and manage and develop the County's transport system in the future.
Lorry route network (LRN),	The LRN is a countywide strategy which directs hgvs onto suitable roads by the use of weight restrictions and signing.
Major Incident Plan	The Local Resilience Forum (LRF) produces this plan, which sets out how major incidents will be managed in Leicester, Leicestershire & Rutland.
Metalled roads	Metal originally referred to the broken stone or cinders used in road construction (derived from the latin metallum, meaning mine or quarry). Metalling later referred to the process for creating a gravel road. More recently metalled roads referred to specific material used in road construction - stone chippings mixed with tar (tarmac).
Midlands Highways Alliance (MHA)	The partners in the MHA share a common goal: to improve performance, share best practice and make efficiency savings in the delivery of highway services by working together
Mode (transport)	Type of transport that people use (such as car, walking, cycling or public transport).

Term	Definition
Modal shift	The overall change in use over time between different types of transport (such as increasing car use and decreasing bus use).
Network management duty (NMD)	This duty is part of the Traffic Management Act 2004. It applies to all local traffic authorities and requires them to manage their road network so that they secure the expeditious movement of traffic.
Network Management Plan (NMP)	A strategic plan that sets out how the network will be managed to meet the requirements of the Traffic Management Act 2004. Supporting strategies include the Transport Asset Management Plan (TAMP) and Rights of Way Improvement Plan.
Network stress	Locations on the road network that are experiencing congestion.
New Roads and Street Works Act 1991 (NRSWA)	This Act sets out the statutory requirements for signing, lighting and guarding excavations and other street works on all roads except motorways and dual carriageways with hard shoulders.
Noise mapping	A Noise Map is a map which is coloured according to the noise levels in the area.
Noise pollution	Distracting, irritating, or damaging sound that is easily heard. This noise can be either continuous or intermittent and can affect quality of life.
Peak hours / peak period	The time of day when traffic volume is at its highest (rush hour) Peak hours: 8 - 9am and 5 - 6pm Peak period: 7 - 10am and 4 - 7pm
Plan, Prepare, Do (PPD)	The term used for the process of investigating, preparing and implementing programmes of works (we plan for future programmes, then prepare approved programmes ready for us to do the work).
Pollutants (main)	These include NOx (Nitogen oxide), CO2 (Carbon Dioxide), PM10 (particulate matter less than 10μm in diameter), PM2.5 (particulate matter less than 2.5μm in diameter) and Hydrocarbons (atoms of hydrogen and carbon produced by motor vehicles, particularly internal combustion engines).
Public transport	Any form of transport that is not personally owned by the user (for instance bus or train).
Rights of Way Improvement Plan (RoWIP)	A plan that sets out how the Rights of Way network in the County will be managed and developed. Supporting strategies include the Network Management Plan and Transport Asset Management Plan (TAMP).
Road network	The road network is made up of motorways and trunk roads (managed by the Highways Agency) and the local road network, managed by the local highway authority. We manage and maintain 2,575 miles (4,145 km) of local roads across the County. Further information on the local road network can be found in Highway Maintenance Policy and Strategy (Table 1, page 15).
Road Safety in Leicestershire report.	An annual road safety report that is produced by Leicestershire County Council. It includes casualty numbers and trends, performance and a review of the engineering, education, training and publicity measures that have been carried that year.
Road Traffic Regulations Act 1984	This Act gives local authorities various powers to manage their roads, including the ability to designate safe crossing areas, enforce parking regulations and carry out a range of other tasks related to the regulation of traffic.
Service Level Agreement (SLA)	A SLA is an agreement between two (or more) parties, where one is the customer and the other is the service provider. The SLA records a common understanding about services, priorities and responsibilities etc.
Street Works Register	Each highway authority maintains a register which shows all of the streets that it is responsible for. This register contains information about current or proposed works (required by the New Roads and Street Works Act 1991 section 53).
Stress modelling	Calculating the ability of the highway network to accommodate the traffic that is using it now, and which may use it in the future.
Sustainable transport	Types (modes) of transport which have limited, or no, environmental impact (such as walking, cycling, bus use or car share).

Term	Definition
Tactical Diversion Route (TDR)	These plans provide detail of how traffic will be held or diverted, in case of problems (unplanned events) on strategic routes. These plans will include diversion routes on our road network, helping to minimise disruption and congestion.
Traffic	The Traffic Management Act 2004 states that the term traffic includes pedestrians. Traffic therefore refers to pedestrians, cyclists and motorised vehicles engaged in the transport of people and goods.
Traffic control systems	Also known as urban traffic control (UTC) systems, these are a specialist form of traffic management. They integrate and co-ordinate traffic signal control over a wide area, in order to control traffic flows on the road network.
Traffic demand management	Measures to reduce use of private vehicles and encourage the use of more sustainable transport. The measures may encourage voluntary change or they may involve financial or restrictive techniques for achieving change in travel patterns.
Traffic Management Act 2004	The Act was introduced to reduce congestion and disruption on the road network and gives local traffic authorities new powers and a duty to keep roads clear and traffic moving (to secure the expeditious movement of traffic).
Traffic Manager	A statutory post required by the Traffic Management Act 2004 of all local traffic authorities. They will perform the tasks that an authority considers necessary for meeting the network management duty.
Traffic volume	The amount of traffic that is using a road.
Transport Asset Management Plan (TAMP)	A plan that sets out the process for managing and maintaining transport assets in an area. In Leicestershire this is the key mechanism to drive forward delivery of our asset management objectives and targets. Supporting strategies include our Network Management Plan and Rights of Way Improvement Plan.
Transport system	A system for transporting goods or people.
Travel Plan	A package of measures and initiatives which aim to provide people with more transport choice. This could help to reduce the number of car journeys. Personalised travel planning is the development of personalised information for the individual, based on their lifestyle and travel patterns. This enables them to make more informed decisions about their travel.
UKCIP02 (The UK Climate Impacts Programme 2002)	The UK Climate Impacts Programme (UKCIP) was updated in 2002 (UKCIP02). This report helps organisations to understand the possible impact of climate change, so that they can prepare adaptation strategies.
UK National Air Quality Strategy (Defra)	This strategy was published in 1997 and sets air quality standards and objectives for various pollutants such as Nitrogen Dioxide, Sulphur Dioxide, Carbon Monoxide, Particles, Volatile Organic Compounds, Ozone, Benzene and 1-3 Butadiene.