2 INTRODUCTION

2.1 Strategic Environmental Assessment (SEA)

2.1.1 EU Directive 2001/42/EC, and the associated UK Regulations, introduce a legal requirement for public bodies to undertake Strategic Environmental Assessments (SEA) of certain statutory plans and programmes. SEA is a process for appraising the environmental impacts of the plan or programme, and the resulting Environmental Report must be taken into consideration before the plan or programme is approved.

2.1.2 Government guidance states that Local Transport Plans (LTPs) are subject to this Directive. Nottinghamshire County Council is responsible for producing two LTPs – one for Greater Nottingham in partnership with Nottingham City Council, the other for North Nottinghamshire. These are due to be submitted to Government in their final form by March 31 2006. Provisional plans were submitted in July 2005.

2.1.3 This document is the Environmental Report which has been prepared as part of the SEA process for the North Nottinghamshire LTP. The equivalent report for the Greater Nottingham LTP has been published separately.

2.2 Guidance on the Application of SEA to LTPs

2.2.1 Guidance prepared by the Department for Transport (DfT) on how to carry out SEA for transport in England, is contained within Strategic Environmental Assessment Guidance for Transport Plans and Programmes (WebTag Unit 2.11), the final version of which was issued in December 2004. The SEA of the LTP for North Nottinghamshire is being carried out in accordance with this guidance.

2.2.2 The DfT's guidance outlines the main stages of SEA as follows:

Table 6 – Stages of the SEA process

Stage A:	Setting the context, identifying objectives and problems and establishing the baseline
Stage B:	Deciding the scope of SEA and developing alternatives
Stage C:	Assessing the effects of the plan
Stage D:	Consultation on the draft plan and the Environmental Report
Stage E:	Monitor the significant effects of implementing the plan on the environment

2.2.3 The DfT's guidance integrates the SEA with the New Approach to Appraisal (NATA) framework, which is the government's existing transport appraisal process for appraising transport plans, programmes and projects. Appraisal under NATA is made in relation to the government's five objectives for transport (environment, safety, economy, accessibility and integration). It is the aim of this SEA to reflect the NATA appraisal requirement for transport schemes. The environmental objectives of NATA are therefore translated into SEA objectives in Appendix 5.

2.3 Purpose, structure and approach of Environment Report

2.3.1 The Directive stipulates that SEAs will be reported in two stages: a Scoping Report and an Environmental Report. The Scoping Report for the North Nottinghamshire LTP SEA was

produced in July 2005 alongside the Provisional LTP, and sent as to the 4 statutory consultation bodies:

- English Nature
- English Heritage
- Countryside Agency
- Environment Agency

2.3.2   The results of the scoping process have been used to shape the SEA process, including:

- the final choice of SEA objectives
- the choice of alternatives to be considered within the LTP
- the selection of potential environmental impacts to be fully assessed in the Environmental Report

2.3.3   This Environmental Report was issued for formal consultation in draft form in November 2005, alongside the provisional LTP, in accordance with the regulations. This document is the final version of the Environmental Report. It provides:

- Details of relevant environmental objectives, as set out in legislation, plans and policies, and how these have been taken into account in the LTP (Chapter 3).
- Baseline data describing the current state of the environment and key environmental problems (Chapter 4)
- SEA objectives and indicators (Chapter 5)
- Identification of strategic alternatives to the LTP (Chapter 6)
- Assessment of the potential significant environmental effects of the alternative strategies and programmes within the LTP (Chapter 7)
- Detailed analysis of the environmental impacts of the preferred option (Chapter 8)
- Identification of mitigation measures to reduce any negative impacts and monitoring proposals (Chapter 9)
- Final conclusion and consultation deadlines (Chapter 10)

2.3.4   The approach to undertaking this SEA has been as follows:

Table 7 – SEA approach

1   With reference to the SEA regulations, and to the DfT's New Approach to Appraisal, potential environmental impacts of the Local Transport Plan have been categorised under the following headings ("SEA topics"):

- Population (social inclusion, accessibility, crime and the economy)
- Human health (health, safety and noise)
- Climatic factors, including CO2 emissions
- Air quality
- Biodiversity, flora and fauna
- Landscape
- Soil, including contaminated and derelict land
- Water, including quality, resources, and flooding
- Cultural heritage
- Material assets, including fossil fuels, minerals and waste

2   Relevant international and national legislation, and national, regional and local strategies and policies have been identified which have "environmental" objectives relating to any of these issues which the Local Transport Plan may influence. These include strategies and plans which are:

- environmental (e.g. Nottinghamshire Local Biodiversity Action Plans)
- transport related (e.g. Transport White Paper)
- relating to other areas such as land use planning (e.g. Regional Spatial Strategy)

From these strategies, a series of environmental factors which the LTP needs to take account of has been listed.

3   Again, for each of these issues, baseline data has been gathered. Where possible this has been related to regional and national data, in order to compare the environmental quality of North Nottinghamshire with these wider areas, and identify specific environmental problems.

4   Using both the analysis of relevant legislation, strategies and policy, baseline data, and the analysis of environmental problems, the following have been identified:

- Strategic Environmental Assessment objectives
- Indicators and targets associated with these objectives

5   A number of strategic alternatives to the proposed strategy and measures within the Local Transport Plan have been identified. These have then been and compared for their impacts on both LTP and SEA objectives. From this assessment, the preferred option was confirmed.

6   A more detailed assessment of the impacts of the LTP on the SEA objectives has been undertaken.

7   Mitigation proposals have been identified to address the main negative impacts

8   Monitoring proposals have been identified

2.4   LTP role, study area and objectives

2.4.1   The Local Transport Plan sets out Nottinghamshire County Council's policies, plans and programmes for transport within North Nottinghamshire. The Plan also acts as a bidding document for government funding to implement many of the measures within the LTP. Local Transport Plans are prepared to cover a five year period, and the plan which is subject to this SEA will run from 2006 to 2011. As such it is the second to be produced, the first having been adopted in 2000.

2.4.2   The North Nottinghamshire LTP covers the Districts of Bassetlaw, Newark and Sherwood, Mansfield and Ashfield (excluding the Hucknall area). This area is shown below:

Figure 2: North Nottinghamshire Local Transport Plan Area
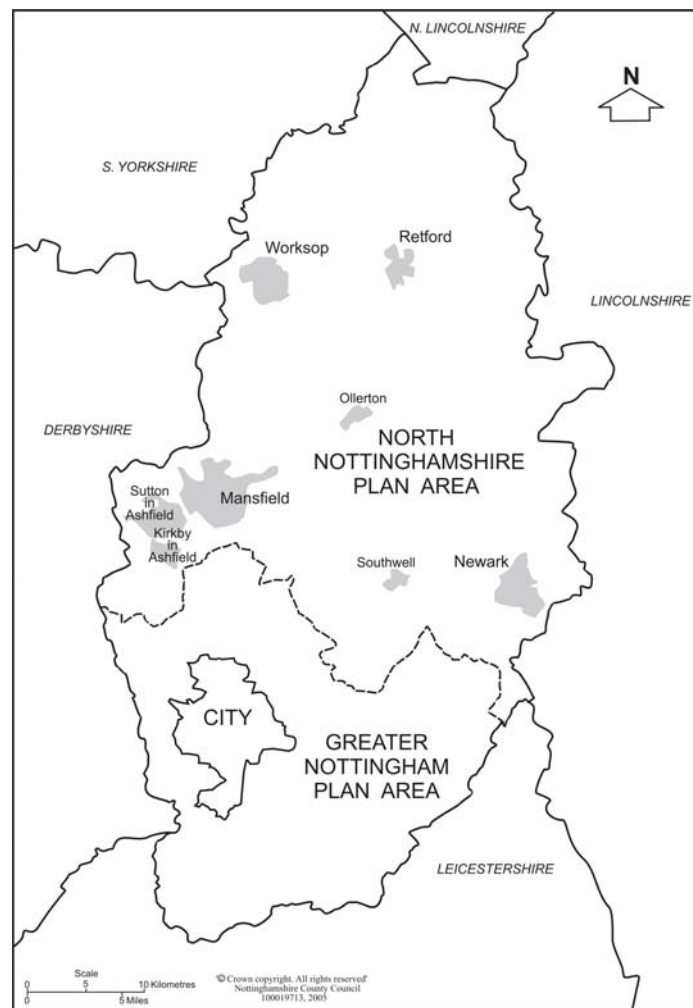
2.4.3 The Plan is based on a set of seven key objectives. These are derived from the Government's "shared priorities" for transport, and identification of additional issues of particular local importance. The objectives are detailed in the following extract from the LTP, which also describes the way the County Council intends to achieve these objectives:

Table 8 – LTP objectives

Objective	How will we deliver this objective?
Improving accessibility	We intend to improve accessibility to the vital services people need - employment, education, health, shopping and leisure. This will be done partly by working with the relevant agencies to ensure that these facilities are located in accessible locations, and partly by planning the network of bus and other public transport services to best meet the needs within available resources.
Improving safety	We will improve road safety by continuing to implement safety improvements and undertaking awareness campaigns. We will focus in particular on vulnerable road users such as motorcyclists and children.
Improving quality of life	We will seek to improve the quality of life for people in Nottinghamshire, by ensuring that better transport infrastructure plays its part in "Building Better Communities" through: a. Neighbourhood renewal b. Improving the quality of public space c. Delivering safer communities d. Improving health and well-being e. Reducing noise levels f. Improving access to the countryside In addition we will seek a reduction in the overall emissions from transport of carbon dioxide and nitrous oxides, which contribute to global warming and the problems of climate change
Reduce congestion	Although not anti-car, we intend to reduce levels of congestion by reducing the growth in traffic and the need to travel, and by encouraging greater use of public transport, walking and cycling. We will also undertake improved traffic management and implement targeted engineering measures to make the network more efficient
Improving air quality	We will take action to reduce air pollution caused by transport, and in particular focus our attention on air pollution hot-spots.
Supporting economic regeneration	We will work to ensure that transport supports economic progress by providing the infrastructure to move people and goods efficiently.
Maintenance ("making best use")	We will seek to maintain our roads, bridges and other transport infrastructure to a high standard, and remove the considerable backlog of maintenance work.

2.5   Timetable for SEA of LTP

2.5.1   The timetable that the County Council has followed in preparation of the SEA is set out
         below:

Table 9 – LTP and SEA timetable

Step	Timescale	Complete?
Scoping report issued for consultation	July 2005	√
Provisional LTP submitted to DfT	July 2005	√
Comments back on Scoping report	16 September 2005	√
Detailed LTP policy appraisal	September/October 2005	√
Environmental report published, and used for 6 week public consultation alongside the Provisional LTP	25 November 2005	√
Deadline for comments on Environmental Report/Provisional LTP	6 January 2006	√
LTP revised according to DfT assessment and the outcome of the public consultation	January 2006	√
Environmental impacts of revised LTP reassessed	February 2006	√
Final LTP and Environment Report submitted to DfT	By 31 March 2006	√

3 ANALYSIS OF LEGISLATION, PLANS AND PROGRAMMES WITH A BEARING ON THE LOCAL TRANSPORT PLAN

3.1 Introduction

3.1.1 The SEA Directive requires that the Environmental Report should provide information on the LTP's relationship with other relevant plans and programmes, and the environmental objectives established at a European Community level, which are relevant to the plan. It should also demonstrate how these objectives have been taken into account during the preparation of the LTP.

3.1.2 The analysis of plans and programmes which have a bearing on the LTP has been undertaken in two parts:

- Those with specific environmental objectives
- Those other plans and policies (primarily transport and spatial plans) which also have a bearing on the LTP

3.2 Analysis of legislation, plans and policies with environmental objectives

3.2.1 Appendix 1 provides an analysis of the main legislation and international, national, regional and local plans and policies which

- are relevant to North Nottinghamshire, and
- have environmental objectives, and
- may be impacted by Local Transport Plan policy

3.2.2 The environmental objectives from each of these strategies have been identified according to the following SEA topics:

- Population (social inclusion, accessibility, crime and the economy)
- Human health (health, safety and noise)
- Climatic factors, including CO_2 emissions
- Air quality
- Biodiversity, flora and fauna
- Landscape
- Soil, including contaminated and derelict land
- Water, including quality, resources, and flooding
- Cultural heritage
- Material assets, including fossil fuels, minerals and waste

3.2.3 In each case, Appendix 1 also summarises how the LTP should respond to the objectives identified for those SEA topics.

3.3 Relationship with other relevant plans and programmes

3.3.1 Appendix 2 identifies the other main international, national, regional, sub-regional and local plans, programmes and polices which influence the LTP. The table is split into transport documents and others (most of which are spatial plans). The table also provides a summary of the overall objectives of these plans and describes how these objectives should be taken account of within the LTP.

3.4 Conclusion

3.4.1 The wider policy and legislative framework which informs the development of the LTP contains a number of clear environmental objectives. The following table sets out how these should be built into the LTP, and the recommendations have informed the definition of SEA objectives (see chapter 4).

Table 10 – Recommendations for how LTP should respond to relevant plans and policies

SEA topic	Recommendation for how LTP should respond
Climate – CO2 emissions	• LTP should demonstrate how CO_2 emissions are being reduced from local transport in line with national targets to achieve 20% reduction in CO_2 by 2010 based on a 1990 baseline. • LTP should also seek reductions in NOx emissions, which are part of the basket of greenhouse gases covered by the Kyoto Agreement on Climate Change. • Although vehicle emission standards are improving, in effect this requires LTPs to demonstrate how they are seeking to reduce traffic levels. • LTP will need to include adaptation policies to take account of the changing climate.
Air quality	• Local Transport Plans must seek to address air quality problems where these are linked to vehicle emissions. • Action is required in particular in Air Quality Management areas where these are designated for NOx or PM10 particulates • Local Transport Plan should engage the Pollution experts in delivering improvements in air quality.
Biodiversity	• LTPs should avoid any damage to internationally protected sites and species, and to those of national importance. LTPs should also seek to avoid damage to locally designated sites, and to the wider biodiversity resource. • Where damage is inevitable, LTPs should seek to secure appropriate mitigation to offset the damage. • Moreover, LTPs should seek opportunities to enhance the biodiversity resource, particularly those sites and species identified in the Nottinghamshire Biodiversity Action Plan.
Landscape	• There are no National Parks or Areas of Outstanding Natural Beauty in Nottinghamshire. The LTP should however seek to minimise damage to Mature Landscape Areas. • Moreover the LTP should avoid damaging the character and quality of the countryside. Key issues are likely to be increasing the "suburbanisation" of rural areas by kerbing, signage, formal footways etc. The LTP should exploit opportunities to enhance landscape character and quality. • The LTP should not compromise the open character of green belt
Soil and contaminated / derelict land	• The LTP must seek to reduce waste by minimising the waste arising from transport projects. Such projects should be designed so that waste is recycled on site wherever possible (see also material assets section below) • Opportunities to use transport projects as a mechanism for cleaning contaminated land, and bringing derelict land into use, should be pursued where possible. In particular LTPs may help achieve targets to locate new development on brownfield sites by providing access • Transport projects should seek to avoid damage to Best and Most Versatile land where possible
Water	• LTP should ensure that run-off from existing and new roads and paths is managed to reduce flooding risks. • New and existing developments to take into account opportunities to improve run-off water quality.
Cultural heritage	• LTPs should not damage internationally and nationally designated sites and monuments, including settings. • LTPs should also avoid any damage to regionally and locally designated sites and monuments, including settings. • LTPs should also where possible avoid damage to other sites of cultural heritage interest. • In urban areas the LTP should seek to avoid damage to the character to Conservation Areas in particular (see also heritage section below). In all urban areas any damage caused by transport measures should be minimised by good design, and mitigated wherever possible • Where damage is inevitable, LTPs should seek to secure appropriate mitigation to offset the damage. This should include archaeological investigation and recording where appropriate.
Material assets	• The LTP should seek to reduce the use of fossil fuels, which in practice must be achieved mainly by reducing vehicle use. • The LTP must seek to reduce waste by minimising the waste arising from transport projects. Such projects should be designed so that waste is recycled on site wherever possible. • Equally the LTP should minimise use of primary aggregates, and promote the use of recycled aggregates. • The LTP should promote the use of street furniture and other products which use recycled materials

4 BASELINE DATA AND ENVIRONMENTAL PROBLEMS

4.1 Baseline data

4.1.1 The SEA Directive requires that *"the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan"* are assessed. The baseline data will assist:

- the identification of environmental problems within the plan area
- the assessment of impacts of the plan
- monitoring the environmental performance of the plan over time

4.1.2 Baseline data currently is held by a number of different sources, and at a number of different levels (national, regional, local). The SEA process has identified that although data is widespread, there are nevertheless significant gaps, and some datasets are more up-to-date than others. Government guidance makes clear that although SEAs must be underpinned by data, there will inevitably be areas where data is not comprehensive and the SEA should be undertaken with the best data available at the time. The baseline data collected as part of this SEA is set out in Appendix 3.

4.2 Identification of environmental problems

4.2.1 The baseline data has been used, along with the legislative and policy analysis set out in Chapter 2, to identify the existing and future environmental problems and opportunities which affect the Plan area. Appendix 4 sets these out alongside recommendations for how the LTP could contribute to making improvements. This analysis of environmental problems has contributed to the setting of SEA objectives in chapter 4.

4.3 Baseline summaries

4.3.1 The following is a summary of baseline data, trends and environmental problems identified for the North Nottinghamshire area. This summary draws from quantitative data in Appendix 3, from published reports, and from qualitative information provided by statutory consultees and other specialists.

Population

4.3.2 Social exclusion can be assessed using the index of multiple deprivation, which measures the levels of deprivation in neighbourhoods and wards. Data for North Nottinghamshire demonstrates that 30 (12%) of the 260 super output areas in North Nottinghamshire are in the worst 10% of areas in England and 81 (31%) are in the worst 20%. Most of these super output areas are in the Ashfield, Mansfield and Bassetlaw areas.

4.3.3 Accessibility in North Nottinghamshire is being assessed through the accessibility planning process, which is mapping the ability of local people to access health, education, employment, shopping and leisure facilities. This has demonstrated that accessibility in North Nottinghamshire, despite its rural character, is relatively high. For example:

- 87% of households without a car are within 30 minutes of a supermarket by public transport
- 96% of households without a car are within 30 minutes of a GP surgery by public transport
- 79% of 16-19 year olds have access to a further education establishment within 30 minutes by public transport
- 74% of people of working age have access to work by within 20 minutes by public transport

However these figures mask local variations. Accessibility in the more urbanised Mansfield/Ashfield and Worksop areas tends to be higher than the more rural Retford and Newark areas. Car ownership continues to increase within the plan area, with 74% of households having access to a car.

4.3.4   Crime figures for transport-related crime show that the plan area however has significantly higher vehicle crime than other parts of the country - there were 15.3 thefts from motor vehicles per 1,000 population in 2000/01, compared to an England and Wales rate of 11.9 thefts.

4.3.5   5,137 people were registered as unemployed in September 2005. This gives an unemployment rate of 1.9%, which is very similar to the rate for England as a whole. In line with national trends, unemployment has fallen markedly in the last few years. Nevertheless, there continue to be wide discrepancies in unemployment rates between ward areas. For example, the unemployment rates in most Mansfield wards are generally higher than in other areas.

Human Health

4.3.6   Physical activity data, including that related to transport, has been difficult to find. Only 10.1% of the North Nottinghamshire population obtained their BMA/Department of Health recommended 30 minutes per day exercise through walking or cycling in 2002/03.

4.3.7   Road accidents in North Nottinghamshire accounted for 404 deaths and serious injuries in 2004, a reduction of 17%% from the 1994-98 average. The County Council is on track to meet the national target of decreasing Killed and Seriously Injured (KSI) numbers by 40% by 2010 from the 1994-98 average, more than double the national reduction of 21.2%. The number of children KSI has also dramatically reduced by 29% since 2000 across North Nottinghamshire.

4.3.8   There is no comprehensive measurement of noise data in the LTP area.

Climatic Factors

4.3.9   Although no specific data on overall CO_2 emissions from transport in Nottinghamshire exists, national data makes clear that emissions from road transport have increased by 9% since 1990. This compares to a national target to reduce carbon dioxide emissions overall by 20% by 2010 - a rate of roughly 1% per year. In North Nottinghamshire, overall traffic levels have increased in the last five years, reflecting the national trend. CO_2 emissions from transport within the sub-region (and those of nitrogen dioxide, another potent greenhouse gas) therefore represent a major environmental concern. Whilst vehicles can be expected to get more efficient

in the future, nevertheless the impact of technological advances is likely to be small compared to that of increasing vehicle use. The only real solution to reducing carbon dioxide and other greenhouse emissions from transport in the short term will be a reduction in vehicle use. However it is also the case that many of the major influences over the levels of car use, particularly the price of fuel and the taxation on vehicles, are outside the influence of the Local Transport Plan.

Air quality

4.3.10 Air quality monitoring by District Councils is designed to identify where air pollution exceeds nationally set thresholds. These are based both on the levels of pollution, and the numbers of households affected by these levels. Where the thresholds are exceeded, the Authority is required to designate Air Quality Management Areas (AQMAs). For transport-related pollution, the main pollutants are nitrogen dioxide and particulates (PM10s). In North Nottinghamshire there are no identified areas where monitoring has demonstrated exceedences of the thresholds, and there are no AQMAs. However there are also health impacts of pollution below these thresholds, and the plan needs to seek to reduce air pollution in all areas.

Biodiversity, flora and fauna

4.3.11 Evidence suggests that the trends in biodiversity are generally negative. With relatively few exceptions, over time there has been both a reduction in the area and quality of habitats of conservation concern, and a decline (or in some cases a loss) of species of conservation concern. There has also been a loss of diversity more generally, particularly as a result of damage to ecological corridors connecting sites of interest. Further detail is provided in the Local Biodiversity Action Plan for Nottinghamshire. Most of the decline and loss relates to agricultural practice, physical development, and lack of sensitive management, and transport projects have contributed relatively little to this decline. However there are significant threats to wildlife from traffic-related air pollution, and from waterborne pollution resulting from run-off from the road surface. The latter may relate to spillages, construction projects and routine maintenance such as gritting. Conversely the role played by highway verges, lagoons and roadside trees can be significant in providing ecological corridors and habitats of value in their own right.

Landscape

4.3.12 Although it is hard to quantify, there has been a gradual decline in the character and quality of the countryside over time. Moreover Nottinghamshire may be considered to have started from a relatively low base, with no areas of national importance for landscape. Whilst there have been specific instances of damage to Mature Landscape Areas, perhaps the most pervasive impacts have been loss of character due to agricultural intensification, lack of maintenance of key features such as hedgerows, and the erosion of rural character through urban style development, urban treatments such as kerbing, signage, and *Leylandii* hedging, and increased levels of rural traffic. Notwithstanding this, there have been significant positive trends in the recent past, for example through the restoration of former colliery spoils heaps, and in projects such as the Greenwood Community Forest. Future trends in rural character are likely to be mixed – with a greater emphasis on environmental management on farms and the benefits of projects such as Greenwood being to an extent counteracted by continued suburbanisation of rural communities and continued increases in rural traffic.

4.3.13 Townscape character is equally difficult to quantify, and there are no formal measures of the quality of designated areas such as conservation areas. However townscape quality more generally is positively correlated to economic vitality. The character of some urban centres is improving through opportunities provided by regeneration and development, through positive town centre management programmes, and through initiatives such as Building Better Communities, a County Council initiative to improve local environmental quality in the County. Conversely there are other town and village centres, particularly associated with the former mining communities, where economic decline has led to the closure of local facilities and an atmosphere of decline and degradation and high levels of environmental crime such as litter and graffiti. Equally the character of suburban residential areas is mixed, with some areas improving but others declining due to local deprivation, environmental crime, and/or increases in traffic congestion.

Soil and contaminated/derelict land

4.3.14 Registers of contaminated land have only been kept for relatively short periods of time, and there is little or no comparative data with other parts of the country. However it is likely to be the case that whilst the area of contaminated land is high compared to the national average, given the industrial nature of Nottinghamshire's past, the levels are reducing due to the combined effects of a move from manufacturing to service industries, remediation of contaminated land in preparation for development, and tighter pollution control laws.

4.3.15 Trends in relation to derelict/previously used land (whether contaminated or not) are also positive. Strong planning policy presumption for using "brownfield" land over and above "greenfield" sites, in accordance with national policy, has led to significant reductions in the levels of derelict land. Other derelict land, particularly former colliery sites, has been brought into positive use not just for development but also for recreation in the form of country parks.

Water

4.3.16 Water resources present a particular problem. Whereas water quality has improved significantly over recent years due to improvements in pollution control, there has been a steady increase in the demand for water, which has not been matched by increased rainfall, significant increases in storage capacity, or reduced leakage. Indeed climate change is likely to make the situation significantly worse. Increased seasonality of rainfall will lead to shortages in the summer months. Increased temperatures and a longer growing season will lead to greater evaporation from soils and evapo-transpiration from vegetation, and increases in demand particularly for irrigation within the agricultural and horticultural industries. Furthermore there is likely to be an increase in the proportion of rainfall falling in storm events which lead to surface run-off rather than absorption. This leads in turn to increased flooding combined with reduced recharge of groundwater, with less availability of water after flooding subsides.

Cultural Heritage

4.3.17 Nottinghamshire has a rich heritage of buildings, sites and features of historic and archaeological interest. There are many individual buildings of note, and in areas such as the Trent corridor a concentration of sites of archaeological significance. However trends in cultural heritage tend to be negative as sites and buildings are damaged or lost. There has also been a general and more widespread loss of historic character, for example as a result of the loss of field patterns caused by the removal of hedges or changes to land management practices. There has been particular concern in the County relating to the numbers of historic buildings at risk. Damage to such buildings, and to sites of archaeological and historic interest more widely, has involved not just the feature itself but also its setting. Some of this damage is caused by development controlled through the planning system, including transport projects, but significant damage has also been caused through a lack of appropriate management. Positive planning policies, and an emphasis on better information, management recording and education may help to slow down rates of damage, but trends are likely to remain negative.

Material Assets

4.3.18 The loss of material assets in the form of landfill capacity, minerals availability and fossil fuels are all significant environmental issues.

4.3.19 Waste treatment capacity in the East Midlands, particularly in the form of available landfill sites, is extremely limited. Currently there is only landfill capacity for around 10 years' waste arisings. Creating new sites requires further land, a limited environmental asset, and brings with it a series of further environmental and social problems such as pollution, noise, loss of habitat, and the impacts of waste transport. It is important that transport policy seeks to

minimise waste arisings from transport projects (for example by balancing cut and fill requirements) and to use recycled products (particularly aggregates) wherever possible.

4.3.20 Aggregates and other minerals are a finite resource. Although Nottinghamshire contains nationally important reserves of coal, sand, gravel and gypsum, and others including clay and limestone, these are inevitably limited. Furthermore their extraction, although it can create significant community benefits in the form of employment and wealth, also brings significant environmental and social problems, including the loss of wildlife and archaeological sites, noise, dust and the impact of transport movements. Transport projects can require significant amounts of aggregates and cement, and other materials such as asphalt and stone which come from elsewhere. It is important the demand for such materials is minimised by using recycled products wherever possible.

4.3.21 Finally the use of fossil fuels is a further area where transport has a major impact on global material assets. Although there is no definitive data, some sources suggest that the peak in oil production will be reached in around 8 years time, after which known reserves will dwindle, and demand will potentially exceed production. Use of fossil fuels also has significant environmental and social consequences, particularly relating to climate change, but also as a result of its extraction and transport.

5   SEA OBJECTIVES AND INDICATORS

5.1   Developing SEA objectives

5.1.1   The SEA Directive does not specifically require the use of objectives or indicators, but they are a recognised way in which environmental effects of the LTP can be described, analysed and compared. A set of SEA objectives has been drawn up using the information gathered from

- the analysis of relevant legislation, plans and policies
- the baseline assessment
- identification of environmental problems

These SEA objectives are set out in detail in Appendix 5, which describes them in relation both to the SEA topics set out in the Directive, and to NATA objectives. The SEA objectives are summarised in the following table:

Table 11 – SEA Objectives

	SEA objective	Directive topic area
1	Promote social inclusion	Population
2	Promote accessibility to essential services	Population
3	Reduce the adverse effects of congestion on people	Population
4	Support employment and business competitiveness	Population
5	Reduce crime and fear of crime associated with transport	Population
6	Support access and enjoyment of the countryside	Population
7	Reduce road accidents	Human health
8	Reduce levels of transport related noise in particular in areas of high sensitivity	Human health
9	Improve health by promoting exercise through cycling and walking	Human health
10	Reduce greenhouse gas emissions from transport and the use of fossil fuels	Climatic factors
11	Maintain and improve air quality across all areas	Air
12	Avoid damage to areas of significant biodiversity interest, and exploit opportunities to enhance biodiversity wherever possible	Biodiversity, fauna, flora, soil
13	Avoid damage to areas of significant landscape quality, and exploit opportunities to enhance local distinctiveness wherever possible	Landscape
14	Avoid damage to the character and quality of urban areas, and seek opportunities to improve local environmental quality in towns and villages	Landscape
15	Minimise water run-off and contamination from transport infrastructure	Water
16	Avoid damage to areas and features of significant cultural heritage interest, and exploit opportunities for enhancement wherever possible	Cultural heritage
17	Minimise use of non-renewable resources and increase recycling	Material assets

5.2   SEA indicators and targets

5.2.1   For each objective, a set of indicators and targets has been identified, and these are summarised in table 12 below. These indicators will provide a means for monitoring the performance of the LTP against SEA objectives.

5.2.2   The targets and indicators have been selected because they are strongly influenced by transport policy. Additional indicators set out in the baseline data in Appendix 3 will also be monitored where possible, although many of these are influenced by factors other than LTP policy.

Table 12 - Proposed indicators and targets

	SEA Objective	Indicators	Targets with plan period
1	Promote social inclusion	• % elderly with access to free bus travel	Increase from 47% to 57%
2	Promote accessibility to essential services	• Percentage of households within 30 minutes of a major retail centre by public transport • Proportion of buses stops that are DDA compliant (raised kerbs)	Maintain at 94% Improve from 41% t0 100%
3	Reduce the adverse effects of congestion on people	• To be proxied by air quality and CO2/vehicle mileage targets	See below
4	Support employment and business competitiveness	• Percentage of households within 30 minutes of a major employment site	Maintain at 96%
5	Reduce crime and fear of crime associated with transport	• Percentage of bus fleet fitted with CCTV • Percentage of boarding bus stops with lighting	Baseline and targets still to be established
6	Support access and enjoyment of the countryside	• Percentage of rights of way classified as "easy to use"	Improve from 61% to 65%
7	Reduce road accidents	• Number of killed and seriously injured (KSI) • Number of child KSI	Reduce from 486 to 282 Reduce from 77 to 42
8	Reduce levels of transport related noise in particular in areas of high sensitivity	• Awaiting Government guidance. No data or indicators at this stage.	Baseline and target still to be established
9	Improve health by promoting exercise through cycling and walking	• Increase in annual number of cycling trips • Reduction in school trips by car	4% Reduce from 34% to 30%
10	Reduce greenhouse gas emissions from transport and the use of fossil fuels	• Change in total vehicle kilometres travelled per year in LTP area • Volume of CO2 emitted by vehicles	Limit increase from 3.88bn to 4.19bn Limit increase from 300,127 tonnes to 310,492 tonnes
11	Maintain and improve air quality across all areas	• Number of designated air quality management areas	0
12	Avoid damage to areas of significant biodiversity interest, and exploit opportunities to enhance biodiversity wherever possible	• Number of designated sites damaged or lost by transport projects	0
13	Avoid damage to areas of significant landscape quality, and exploit opportunities to enhance local distinctiveness wherever possible	• Number of MLAs damaged by transport projects	0
14	Avoid damage to the character and quality of urban areas, and seek opportunities to improve local environmental quality in towns and villages	• Number of designated conservation areas significantly damaged by transport projects (as measured through Conservation Area Appraisals)	0
15	Minimise water run-off and contamination from transport infrastructure	• Number of highway SUDS schemes	Baseline and target still to be established
16	Avoid damage to areas and features of significant cultural heritage interest, and exploit opportunities for enhancement wherever possible	• Number of designated buildings, sites, areas and features (or their settings) damaged or lost by transport projects	0
17	Minimise use of non-renewable resources and increase recycling	• Percentage of aggregates used for transport projects that are recycled	Baseline and target still to be established

6 STRATEGIC ALTERNATIVES

6.1 Introduction

6.1.1 The SEA Directive requires that, '….*reasonable alternatives, taking into account the objectives and geographical scope of the plan or programme, are identified, described and evaluated.*' This means that the SEA should consider alternative scenarios for the overall management of transport in North Nottinghamshire to ensure that the range of likely transport effects arising from the LTP are addressed during the preparation of the plan. It also assists in explaining to decision makers and consultees why these strategies, and no others, are being put forward. DfT guidelines state that alternatives can be different ways of:

- Achieving the objectives of the plan
- Achieving the aspirations of the local community
- Dealing with environmental problems
- Dealing with transport problems

6.1.2 One situation which needs to be considered in all SEAs is the likely expected evolution of the baseline conditions without the plan. For a transport plan, the 'without the plan' scenario should, according to the DfT guidelines be developed in line with certain principles, such that it:

- is based on current government policies
- should assume that other adopted plans and programmes will deliver as planned
- should assume the continued implementation of strategies and measures planned in earlier adopted versions of the plan, unless they were planned to be time limited
- should not assume any new strategies or measures even if these appear to be essential in the light of current government policies or of other plans and programmes.

6.2 Development of alternative strategies

6.2.1 The following 4 strategic alternatives have been considered:

Table 13 – Strategic alternatives

Option 1 **Continuation of existing situation** (without plan scenario)
Option 2 **Preferred LTP option** (as set out in the LTP)
Option 3 **Capacity growth option** (greater emphasis on road-based measures to increase capacity as a way to tackle congestion and promote regeneration)
Option 4 **Car-constraint option** (greater emphasis on improving accessibility and tackling carbon dioxide emissions, health issues and local environmental quality by constraining car-use and promoting public transport, cycling and walking)

6.2.2 The table below provides more detail on the types of measures that each option would involve.

Table 14 – Details of the strategic alternatives to the LTP

Measures	LTP strategic alternatives

	Option 1	**Option 2**	**Option 3**	**Option 4**
Improve bus services (including Mansfield Public Transport Interchange)	• Maintain support for existing network	• Maintenance of bus network coverage • Bus priority schemes and other infrastructure investment • Accessible bus route treatments • Bus location/ electronic information	• Minimal investment in bus infrastructure • Possible contraction of bus network	• Higher levels of investment in bus infrastructure • Improved accessibility to vehicles • Possible increases in network coverage
Pedestrian and cycling schemes	• Maintain existing networks	• Network development schemes • Disabled access schemes • Rights of Way Improvement Plan implementation	• Minimal expansion of cycling and walking facilities	• Increased provision for cyclists (both off-road and on-road) and pedestrians
Awareness and publicity campaigns (smart measures)	• Support existing travel information • Support existing travel plans	• Travel plans (work/school) • Personal travel planning • Marketing/information • Education/awareness	• As for option 2	• As for option 2
Local safety schemes	• Treatment of priority sites	• Speed management • Junction/route treatments • Develop Safe Routes to Schools network	• Increased expenditure on safety as part of highway improvements	• May be less funding for safety schemes
Traffic management	• Management of existing network	• Traffic Management Act measures, esp roadworks co-ordination • Highway direction signing • Intelligent transport system measures	• As for option 2	• Less funding for local junction improvements
Improve road crossings	• No improvements	• Improved crossings, in particular to meet wheelchair access requirements	• As for option 2	• As for option 2
New roads/local roads schemes (including Pleasley and Kelham bypasses)	• Small scale minor improvements	• Junction improvements • Other highway improvements • Short link roads for economic regeneration • Proposed bypasses at Kelham and Pleasley	• Significantly increased investment in highways schemes to improve junctions, roads and new road links	• Limited junction improvements, except where this benefits buses, cyclists or pedestrians • No new roads
Maintenance	• Maintenance of roads, footways & structures	• Option 1 plus added value measures	• As for option 2	• As for option 2

6.2.3   Before considering the environmental impact of these alternative strategies, it is useful to assess the extent to which each meets LTP objectives. A comparison has been undertaken of the likely outcome of each of these options with respect to the key areas of the LTP (congestion, accessibility, safety, air quality, regeneration, quality of life and maintenance). The outcome of this exercise is summarised in table 6 below.

Table 15 : Comparison of the Strategic Alternatives against LTP objectives

Key Areas of LTP	Alternative strategies			
	Option 1	Option 2	Option 3	Option 4
Accessibility	-	+	=	++
Safety	=	+	+	=
Quality of life (noise, health, environment)	-	+	-	++
Congestion	-	+	++ (short term) - (long term)	- (short term) + (long term)
Air quality	-	+	=	+
Economic regeneration	=	+	+	-
Maintenance	-	+	+	+

Major positive ++   Minor positive +   Neutral =   Minor negative -   Major negative - -

6.2.4   This exercise demonstrates that Option 4 (car-constraint option) would perform best in relation to delivering improved accessibility and health benefits, but may cause short term congestion if roadspace were given up for bus priority. There may also be less funding for safety and other local road improvement schemes. Conversely Option 3 (capacity growth option) would tackle congestion in the short term through road-based measures, and may aid regeneration and safety. However in the longer term these benefits would be lost as a result of traffic growth. Furthermore the option does little for accessibility, and would lead to increased noise, pollution and CO_2 emissions. Option 1 is largely negative. Option 2 overall provides the most balanced delivery against LTP objectives.

7   ENVIRONMENTAL ASSESSMENT OF STRATEGIC ALTERNATIVES

7.1   Objectives compatibility

7.1.1   SEA and LTP objectives are distinct, though the two can influence each other and may overlap. Indeed an important part of the SEA assessment process is to test whether the LTP objectives are compatible with the SEA objectives. This compatibility assessment is set out in the matrix below:

Table 16 : SEA/LTP Objectives Compatibility Matrix

Table shows how delivery of LTP objectives would impact on SEA objectives	LTP Objectives						
	Improve accessibility	Improve road safety	Improve quality of life	Reduce congestion	Improve air quality	Support economic regeneration	Maintenance
SEA Objectives 1. Promote social inclusion	✓	✓	-	✓	✓	✓	✓
2. Promote accessibility to essential services	✓	-	✓	-	✓	✓	✓
3. Reduce the adverse effects of congestion on people	-	+/-	✓	✓	?	✓	+/-
4. Support employment and business competitiveness	✓	-	✓	-	✓	✓	✓
5. Reduce crime and fear of crime associated with transport	-	-	-	-	✓	✓	✓
6. Support access and enjoyment of the countryside	✓	-	-	-	-	✓	✓
7. Reduce road accidents	+/-	✓	✓	-	-	✓	✓
8. Reduce levels of transport related noise in particular in areas of high sensitivity	-	-	-	-	-	✓	+/-
9. Improve health by promoting exercise through cycling and walking	-	✓	✓	✓	-	✓	✓
10. Reduce greenhouse gas emissions from transport and the use of fossil fuels	✓	-	+/-	✓	?	✓	-
11. Maintain and improve air quality across all areas	-	-	+/-	✓	?	✓	-
12. Avoid damage to areas of significant biodiversity interest, and exploit opportunities to enhance biodiversity wherever possible	?	?	?	✓	-	✓	-
13. Avoid damage to areas of significant landscape quality, and exploit opportunities to enhance local distinctiveness wherever possible	-	x	?	-	-	+/-	✓
14. Avoid damage to the character and quality of urban areas, and seek opportunities to improve local environmental quality in towns and villages	-	?	?	✓	✓	✓	✓
15. Minimise water run-off and contamination from transport infrastructure	-	?	?	-	-	✓	-
16. Avoid damage to areas and features of significant cultural heritage interest, and exploit opportunities for enhancement wherever possible	-	?	?	✓	-	✓	-
17. Minimise use of non-renewable resources and increase recycling	-	-	✓	-	-	-	x

✓	Compatible	x	Incompatible
?	Uncertain Link	-	No link
+/-	Potential for positive and negative effect		

7.1.2   This analysis has demonstrated that there were some areas where the two sets of objectives may be in conflict. These are:

- Reducing congestion, where this involves engineering works, may potentially have an adverse impact on landscape, townscape, biodiversity or cultural heritage, and may increase surface run-off of water. Conversely congestion in itself can damage these

environmental assets, and tackling it may be an improvement. Design is likely to be important.

- Local safety schemes such as signage, road markings and cameras may have a similar impact, particularly by damaging rural character
- Safety schemes which involve street lighting can have an adverse impact both on landscape character (if in rural areas) and on CO2 emissions due to their use of electricity
- Congestion increases CO2 emissions and air pollution, and tackling it will improve the situation. Conversely in the longer term reduced congestion may generate increased car use, which may have the opposite effect
- Safety schemes, particularly those which slow traffic, may have an adverse impact on congestion and encourage "rat-running". Conversely accidents can cause major congestion problems, and in this respect safety schemes are positive
- There may be a conflict between increased levels of cycling and road safety. Conversely increased off-road facilities in particular make cycling safer
- Increasing accessibility through the provision of walking and cycling routes along green corridors such as former railway lines may be in conflict with conserving and enhancing biodiversity.
- Increasing economic activity through regeneration may increase levels of traffic, congestion, air pollution and CO2 emissions
- More regular maintenance may increase exposure to noise whilst road works are in progress but better quality road surfaces will reduce levels of road traffic generated noise.
- Although improving the condition of roads will support employment and business competitiveness the road works necessary to carry out the works will cause disruption.
- Increased maintenance may result in increased use of aggregates and other non-renewable resources.

7.2 Assessing the environmental effects of strategic alternatives

7.2.1 This Section identifies the likely significant effects on the environment (as expressed by the SEA objectives) of each of the LTP alternative strategies. The SEA Directive requires that 'the likely significant effects on the environment of implementing the plan or programme…taking into account the objectives and the geographical scope of the plan or programme are identified, described and evaluated.'

7.2.2 Significance requires the consideration of:

- The characteristics and value of the receiving environment
- The magnitude of the impact (especially factors relating to the reversibility of the effect, its duration and frequency, its cumulative nature and spatial extent).

The results of this exercise are set out below.

Table 17 : Assessment of LTP strategic alternatives against SEA Objectives

SEA Objectives	Strategic Alternatives			
	Option 1	Option 2	Option 3	Option 4
1. Promote social inclusion	=	+	+	++
2. Promote accessibility to essential services	-	+	=	++
3. Reduce the adverse effects of congestion on people	-	+	++	=
4. Support employment and business competitiveness	=	+	+	-
5. Reduce crime and fear of crime associated with transport	-	+	+	+
6. Support access and enjoyment of the countryside	-	+	+	+
7. Reduce road accidents	=	+	+	=
8. Reduce levels of transport related noise in particular in areas of high sensitivity	-	+	-	+

	Option 1	Option 2	Option 3	Option 4
9. Improve health by promoting exercise through cycling and walking	-	+	=	++
10. Reduce greenhouse gas emissions from transport and the use of fossil fuels	-	-	--	=
11. Maintain and improve air quality across all areas	-	+	--	++
12. Avoid damage to areas of significant biodiversity interest, and exploit opportunities to enhance biodiversity wherever possible	-	-	=	-
13. Avoid damage to areas of significant landscape quality, and exploit opportunities to enhance local distinctiveness wherever possible	-	-	-	=
14. Avoid damage to the character and quality of urban areas, and seek opportunities to improve local environmental quality in towns and villages	-	+	-	+
15. Minimise water run-off and contamination from transport infrastructure	=	=	-	=
16. Avoid damage to areas and features of significant cultural heritage interest, and exploit opportunities for enhancement wherever possible	-	=	-	=
17. Minimise use of non-renewable resources and increase recycling	-	-	-	-

Major positive ++   Minor positive +   Neutral =   Minor negative -   Major negative - -

7.2.3   This analysis shows that Option 1, the continuation of the existing situation, will result in a deterioration of environmental conditions primarily due to a general increase in road traffic levels.

7.2.4   Option 2, the preferred LTP option, is anticipated to have beneficial social impacts and tackle local congestion problems, though overall traffic levels will continue to rise. There may be biodiversity, landscape and historical cultural heritage impacts dependent on design.

7.2.5   Option 3 provides benefits over and above the preferred LTP option by reducing congestion in the short term, and helping economic regeneration. Conversely it would do little to improve accessibility, particularly for those without a car. It would also lead to a greater increase in traffic levels, and therefore a faster increase in greenhouse gas emissions, air quality and noise, and would do little to promote health and exercise.

7.2.6   Option 4 by contrast scores highly in relation to social inclusion, tackling accessibility, and promoting exercise. In addition it is also positive in reducing CO2 emissions, air quality and noise. However it scores less well in relation to relieving congestion, and as noted earlier may be negative in the short term in this regard.

7.2.7   Overall Option 4 is considered to be the most environmentally beneficial of the strategic alternatives assessed. However as Table 15 demonstrates, option 4 does not fulfil the LTPs objectives as successfully as option 2, and on balance this has led to option 2 being preferred.

7 DETAILED ASSESSMENT OF PREFERRED LTP MEASURES, INCLUDING PROPOSED MAJOR SCHEMES

8.1 Approach

8.1.1 The packages of measures proposed in the LTP, which constitute option 2, have been subject to a more detailed environmental assessment. This process involved each of the main packages of measures within the LTP being assessed for their impacts on the environmental objectives. In each case the assessment considered, for each combination of LTP package and environmental objective:

- Sensitivity of the area or receptor concerned
- Magnitude and nature of the predicted impact (including short, medium and long term impacts, and any secondary, induced or synergistic impacts)
- Combining these factors, the overall level of significance of any predicted impacts
- The level of uncertainty associated with the prediction
- Proposed mitigation measures
- A description of how the assessment was reached

8.1.2 The generic packages of measures assessed are as follows. Further details are provided in Chapters 5-11 of the LTP

- Bus and other public transport improvements)
- Pedestrian and cycling schemes)
- Smarter choices (inc. travel plans))
- Local safety schemes (inc. safer routes to schools)) "Integrated Transport
- Traffic management (inc. enforcement)) Measures" (ITM)
- Road crossings)
- New roads/local roads schemes)

- Maintenance

- Major schemes – Mansfield Public Transport Interchange
  Pleasley bypass extension
  Kelham bypass

In the case of Mansfield Public Transport Interchange and Pleasley bypass extension, the assessment is a summary of the more detailed work undertaken as part of the scheme justification ("Annex E") already submitted to the Department for Transport. The assessment of Kelham bypass is more general, as the Annex E submission has not yet been prepared.

8.2 Summary of assessment results

8.2.1 The results of this assessment process are set out in Appendix 6. The table below provides a summary of the main impacts, positive and negative, in relation to the main SEA objectives:

Table 18 – summary of environmental impacts

Directive topic area	SEA objective		Summary of predicted significant impacts
Population	1	Promote social inclusion	Positive impact – the emphasis within the plan on improving accessibility and public transport will have a particularly beneficial impact on socially excluded groups, who are often more reliant on public transport than others. The improvements in road crossings will specifically assist those in a wheelchair, whilst the new Public Transport Interchange at Mansfield would be a major benefit on those reliant on public transport.
	2	Promote accessibility to essential services	The LTP will have a very positive impact on accessibility, particularly by improving bus, cycling and pedestrian facilities, and by improving road crossings for wheelchair users. This is to be expected as accessibility is on of the primary objectives of the plan. Mansfield Public Transport Interchange would be a major benefit. Roadworks associated with maintenance may cause short term problems
	3	Reduce the adverse effects of congestion on people	The impact of the LTP on congestion will be mixed. In the short term actions to improve bus priority, safety schemes and roadworks caused by maintenance may have negative impacts. However these will be compensated by the positive impacts of better traffic management, junction improvements, and reduced accidents. In the longer term the improvements to alternatives to the private car will encourage modal shift which will act to reduce congestion.
	4	Support employment and business competitiveness	The LTP measures will have a positive impact on business competitiveness and employment. In the sort term there will be benefits in the form of improved access to jobs and workforces. There may be some local congestion issues associated with bus priority measures, safety schemes , but in the longer term actions to reduce congestion will help reduce business costs. All three major schemes are predicted to have significant benefits for employment and business competitiveness.
	5	Reduce crime and fear of crime associated with transport	There will be a small positive impact on crime levels – the programme includes measures such as better waiting environments, CCTV and lighting. Mansfield public transport interchange will bring particular benefits. Conversely some bus shelters can act as a focal point for anti-social behaviour. There is a conflict between increased lighting for personal security, and reducing energy consumption and conserving rural character/night skies. However on balance personal security is considered in this case to be the key issue.
	6	Support access and enjoyment of the countryside	Overall the LTP will play a positive role in improving access to the countryside, by improving public transport, and by investing some resources in rural cycleway schemes.
Human health	7	Reduce road accidents	Overall the impact of the LTP on safety is highly positive. This reflects the fact that safety is one of the plan's key objectives. All three major schemes are expected to bring significant safety improvements. The main possible negative impact would be any short term increases in accidents involving cyclist caused by greater levels of cycling, even though the specific cycling measures in the LTP are designed to make cycling easier and safer. The research on the issue of cyclist safety is inconclusive.
	8	Reduce levels of transport related noise in particular in areas of high sensitivity	Overall the noise impacts of LTP measures will be localised and small. There will however be significant benefits from the Kelham bypass scheme. The main negative impact is the effect of maintenance and other construction of road-based measures.
	9	Improve health by promoting exercise through cycling and walking	The LTP will have positive impacts on health by promoting exercise through cycling and walking

	10	Reduce greenhouse gas emissions from transport and the use of fossil fuels	The impact of LTP measures on carbon emissions and climate change will be positive compared to likely trends if there were no LTP investment. However there are still predicted to be increasing levels of traffic, and therefore increasing emissions, within the lifetime of the plan, and to this extent the impact of the plan is negative. Both bypass schemes may lead to increases in CO2 emissions.
Climatic factors	---	---	---
Air	11	Maintain and improve air quality across all areas	The overall impact of the LTP is likely to be small but positive in the longer term.
Biodiversity, fauna, flora, soil	12	Avoid damage to areas of significant biodiversity interest, and exploit opportunities to enhance biodiversity wherever possible	The impact of the LTP on biodiversity is likely to be very limited, except in the case of the Pleasley and Kelham bypasses. For both these schemes there are potential losses. Although these may be compensated in part by new habitat creation, nevertheless this needs to be a matter of close attention at the detailed assessment stage.
Landscape	13	Avoid damage to areas of significant landscape quality, and exploit opportunities to enhance local distinctiveness wherever possible	Overall the impact of the LTP on landscape character and quality in rural areas is likely to be significant in the impact it can have by making the countryside feel more suburban. Kelham and Pleasley bypasses will both have slightly adverse effects, though these can be mitigated with appropriate landscape schemes and design.
	14	Avoid damage to the character and quality of urban areas, and seek opportunities to improve local environmental quality in towns and villages	The impact of LTP schemes on the character and quality of urban areas depends primarily on the detailed design of the proposals. Mansfield Public Transport Interchange will have a particularly positive impact on the centre of Mansfield by replacing a run-down bus station with a new "landmark" structure. Both bypass schemes will benefit the urban areas they bypass.
Water	15	Minimise water run-off and contamination from transport infrastructure	The impact of the LTP on water environment in general is limited. However both Kelham and Pleasley bypasses will slightly improve water quality, but present an increased are of hard surfacing which will decrease infiltration.
Cultural heritage	16	Avoid damage to areas and features of significant cultural heritage interest, and exploit opportunities for enhancement wherever possible	The impact of LTP measures on the historic and cultural environment is very largely dependent on the specific location of proposals, and on their detailed design. Signage and other roadside infrastructure may in particular damage the settings of historical buildings in certain localities. Mansfield Public Transport Interchange will have a negative impact on the setting of an adjacent Grade II listed viaduct, but it is hoped this impact can be minimised through sensitive design.
Material assets	17	Minimise use of non-renewable resources and increase recycling	The proposed LTP measures will involve the use of significant amounts of raw materials, including aggregates, cement, sand, stone and bitumen-based products. There will also be significant waste from road planings and other maintenance works. All of the 3 major schemes, and particularly the two bypasses, will involve the generation of waste and the use of raw construction materials. The use of fossil fuels is influenced by the LTP, and is expected to increase rather than decrease in the LTP period. However as stated in the climate change table above, this is influenced primarily by fuel duty levels which are not influenced through the LTP.

9 PROPOSED MITIGATION AND MONITORING

9.1 Approach

9.1.1 The assessment process set out above has identified a number of significant environmental impacts, both positive and negative, that are predicted as a result of LTP delivery. Where possible, mitigation proposals have been identified which:

- reduce, offset or remove negative impacts
- exploit opportunities to deliver positive environmental enhancements and benefits

Mitigation proposals are set out in the assessment tables in Appendix 6.

9.1.2 It should be noted that both environmental impacts, and the effectiveness of mitigation proposals, are very often subject to detailed design and locality issues which cannot be assessed accurately as part of a strategic environmental assessment. Under these circumstances generic recommendations are made which should be built into the design and delivery of all transport projects which flow from the LTP.

9.2 Mitigation proposals

9.2.1 A summary of the main mitigation proposals is set out in the following table:

Table 19 – summary of mitigation proposals

Directive topic area	SEA objective		Summary of mitigation proposals
Population	1	Promote social inclusion	The most important issue is to ensure that all facilities are designed with the needs of the disabled in mind. It is also important to consider the needs of those who cannot read or understand English when proving information and publicity
	2	Promote accessibility to essential services	All transport schemes should consider accessibility, and should be closely informed by the accessibility planning process. Efforts need to be made to minimise the disruption caused by roadworks.
	3	Reduce the adverse effects of congestion on people	Wherever possible improvements for buses, cycling and walking should be made without taking out road capacity for other users. However this will not always be possible. Efforts should be made to minimise the impacts of roadworks by promoting alternative routes. Night working would reduce the effects of roadworks on congestion, but would conflict with noise reduction objectives and would cost more, leading to lower levels of maintenance.
	4	Support employment and business competitiveness	Mitigation measures should concentrate on ensuring that the congestion impacts of new public transport measures are minimised, and in reducing the congestion impacts of road maintenance and local safety schemes
	5	Reduce crime and fear of crime associated with transport	Ensure that crime and personal safety feature in all bus infrastructure investments. Renewable energy sources (such as solar panels on bus shelters) can be used to reduce carbon emissions.
	6	Support access and enjoyment of the countryside	The accessibility planning process should consider the demand for access to rural areas for recreational purpose.
Human health	7	Reduce road accidents	All significant transport schemes should be audited for their impacts on safety, particularly cyclists and walkers. Awareness raising should be used to counter any negative impacts caused by increased numbers of cyclists.

	8	Reduce levels of transport related noise in particular in areas of high sensitivity	The noise impacts of roadworks can be reduced by a ban on night-time working. However this conflicts with reducing the congestion impacts of roadworks, safety considerations, and the cost of implementation which increase at night. The current policy is to consider each scheme on a case by case basis to get the best balance between these competing objectives, and this is likely to continue. Noise reduction measures should be employed on specific schemes where possible.
	9	Improve health by promoting exercise through cycling and walking	Physical activity should be emphasised in smarter choices programmes
Climatic factors	10	Reduce greenhouse gas emissions from transport and the use of fossil fuels	Reducing the level of car use is considered to be influenced primarily by national policy on fuel duty, and therefore to a considerable extent outside the scope of the LTP.
Air	11	Maintain and improve air quality across all areas	Where possible influence should be applied on bus operators to adopt low emission vehicles.
Biodiversity, fauna, flora, soil	12	Avoid damage to areas of significant biodiversity interest, and exploit opportunities to enhance biodiversity wherever possible	In all cases detailed design can be used to minimise impacts. There are also opportunities to enhance biodiversity through the positive management of roadside verges. SUDS have a positive impact on biodiversity by reducing waterborne pollution.
Landscape	13	Avoid damage to areas of significant landscape quality, and exploit opportunities to enhance local distinctiveness wherever possible	The main mitigation is to ensure that design standards are sensitive to the rural location, and through landscaping and appropriate design of the two bypass schemes. Use of low spillage lighting in sensitive locations will help reduce light pollution.
	14	Avoid damage to the character and quality of urban areas, and seek opportunities to improve local environmental quality in towns and villages	Design standards should reflect local character, particularly in areas of high value such as conservation areas.
Water	15	Minimise water run-off and contamination from transport infrastructure	Sustainable urban drainage schemes (SUDS) can alleviate water pollution and run-of problems, but are likely to be feasible only in major new developments.
Cultural heritage	16	Avoid damage to areas and features of significant cultural heritage interest, and exploit opportunities for enhancement wherever possible	Careful design and location of highways measures.
Material assets	17	Minimise use of non-renewable resources and increase recycling	The use of recycled materials should be maximised to reduce waste and the quantity of raw materials required.

9.3   Monitoring proposals

9.3.1   It is a requirement of the legislation that the environmental impacts of the LTP, as predicted in the Environmental Report, are monitored over time. This monitoring will take place in relation to the indicators set out in section 5.2, and the results will be published on an annual basis as part of the Annual Performance Report (APR). This is a monitoring statement for the wider Local Transport Plan, which is submitted annually to Government and published on the County Council's website www.nottinghamshire.gov.uk.

10   CONCLUSION AND FURTHER COPIES OF THIS REPORT

10.1   Conclusion

10.1.1 In summary, the Strategic Environmental Assessment of the North Nottinghamshire Local Transport Plan has identified that:

- The plan has a broadly positive impact on people and the environment, through helping to reduce pollution, road accidents, and transport related crime, and in particular by increasing people's ability to get to essential destinations such as health facilities, schools and shops.

- There are some negative impacts, such as the impact signs, kerbing. lighting and rural cycleways may have in making rural areas feel more suburban, and thus damaging landscape character. There may be further impacts on biodiversity and cultural heritage associated particularly with the two proposed bypass schemes. Actual impacts cannot be known until specific schemes are designed. However many of the potentially negative impacts can be reduced by good design or other measures.

- The most important negative impact is the fact that road traffic levels are still expected to increase by 8% over the five years within the plan area. This increase is lesser than that which would occur without the plan, and there are proposals to help reduce the worst congestion hotspots. However congestion may increase elsewhere, and overall the contribution of transport to global warming and climate change will increase over the plan period – compared to a national target to reduce emissions by around 1% a year. This is a significant concern, it is the case that road traffic levels are more influenced by national policies on fuel duty and vehicle tax than by local factors, and therefore remain largely outside the control of the County Council through the Local Transport Plan.

- The environmental impact of the three major schemes has been assessed in more detail. This shows that:

    - Mansfield Public Transport Interchange has a broadly positive impact, particularly on issues such as accessibility, although careful design will be required to ensure the setting of the nearby Grade II listed viaduct is not adversely affected

    - Pleasley bypass extension has mixed impacts. It has clear economic benefits, and also will reduce accidents, pollution and noise along the existing route. However these are balanced by adverse effects along the new route, such as possible impact on wildlife and also a nearby primary school.

    - Kelham bypass has been studied in less detail. It has similar benefits to Pleasley in relation to accidents, noise and pollution, and also will improve the setting of the Grade II listed Kelham Hall. Conversely it too may have adverse impacts on wildlife along the new route.

10.2   How to obtain further copies of this report

10.2.1 This report may be downloaded from the Nottinghamshire County Council website www.nottinghamshire.gov.uk. Copies of the non-technical summary are also available.