Nottingham
Local Transport Plan 2011 - 2026
Integrated Impact Assessment
Final Report March 2011









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Nottingham City Council

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Non-technical Summary 1

1 Non-technical Summary

1.1 Background

1.1.1 This Integrated Impact Assessment Report ("the Report") contains the outcomes of the Integrated Impact Assessment (IIA) of the Local Transport Plan 2011-2026 (LTP3) for Nottingham City and has been prepared by Nottingham City Council.

1.1.2 The IIA has been designed to incorporate the requirements for carrying out a Strategic Environmental Assessment (SEA) to appraise the environmental impacts of the Plan alongside the requirements for an Equalities Impact Assessment (EqIA) to appraise the equalities impacts of the Plan as well as having regard to good practice in Health Impact Assessment (HIA). The resulting IIA Report must be taken into consideration before LTP3 is approved.

1.1.3 The IIA is focusing on the LTP3 Strategy as a whole. Major transport projects will be subject to more detailed Environmental Impact Assessments and individual Equality Impact Assessments as a part of the project feasibility and development stage.

1.1.4 A Scoping Report was produced for consultation and approval by key statutory consultees in June 2010. The resulting comments were taken into consideration when preparing the Draft IIA Report which was made available for public consultation alongside the draft LTP3 Strategy for eight weeks from November 2010 until January 2011. This final version of the IIA Repart takes account of the opinions expressed during this second round of consultation.

1.2 Approach

1.2.1 The approach to the IIA has been carried out with reference to the European Directive on SEA and the national regulations as set out in DfT guidance, the City Council's requirements for EqIA and best practice on HIA.

1.2.2 The potential environmental, health and equalities impacts of LTP3 have been considered under the following headings:

- Population and economy;
- Climate and CO2;
- Material assets (Minerals, Waste, Energy and Fossil Fuels);
- Water;
- Natural Environment (Landscape, Biodiversity, Soil and contaminated land);
- Urban Environment including Townscape and Cultural Heritage;
- Equality and Inclusion;
- Human health including Safety, Air Quality and Noise.

1.2.3 The Report sets out:

- Details of relevant International, European or member state environmental protection objectives and other relevant strategies and policies and how these will be taken into account in LTP3 (**Section 5**);

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- Baseline data describing the relevant aspect of the current state of the environment (**Section 6 and Appendix 1**), and an analysis of the problems and opportunities offered to improve the environment, equalities and health (**Section 8**);
- IIA objectives and indicators (**Section 7**);
- Identification of strategic alternatives and the potential significant effects of the alternative strategies proposed for LTP3 (**Section 9 and Appendix 4**);
- A detailed assessment of the significant environmental, health and equalities impacts arising from the measures and schemes of the preferred strategic option, for each IIA objective (**Section 10 and Appendix 5**);
- The monitoring framework and the mechanisms to trigger the proposed mitigation measures, as part of the recommendations to ensure the conclusions of the Report are an integral part of the LTP implementation process (**Section 11**).

1.3 Baseline data

1.3.1 This section of the Report describes the baseline for each of the IIA topics providing an indication of future trends. More detailed data with national and sub-national comparative data where available is given in Appendix 2. Section 8 of the Report uses this data to identify the key environmental, health and equalities problems and opportunities for LTP3.

1.3.2 The baseline data provides a basis for forecasting and monitoring environmental, health and equalities impacts and will help to identify any problems during the implementation of LTP3.

Headline data from the baseline
Climate and carbon dioxide
• UK Climate Impacts Programme predicts that the East Midlands will continue to get warmer, wetter and windier with more storms and flooding in winter and more droughts in summer. For Nottingham this means increased flood risk in winter and water shortages in the summer. • Carbon dioxide emissions per capita are close to regional and national averages. • The transport sector contributes 21% of greenhouse gas emissions.
Water
• Flood risk affects 12% of the City's area and 5,500 dwellings in the City are subject to a 1 in 100 chance of flooding. • Approximately 10,000 households are at risk of flooding from surface water. • The Basford area of the City has problems with rising groundwater due to reductions in water dependent manufacturing and water abstraction. • The Strategic Flood Risk Assessment for the River Leen demonstrates that the Robin Hood Line corridor acts as a secondary water channel for 1 in 100 year flood events. • The River Trent is an under-utilised transport artery. The River Trent Water Freight Feasibility Study identifies capacity to carry extra 1 million tonnes per year for movement of dry bulk goods and waste. However the bridge at Newark restricts the size of barge that can reach Nottingham to 300 tonnes.

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Material assets

- The International Energy Agency predicts that global peak oil for conventional crude oil will be passed in the next 10 years but increases in the cost of oil will be seen much sooner. This will impact most on the less affluent members of our society.
- Transport represented 21% of City's total energy usage in 2006. Per capita energy use for transport in the City fell by 3.2% between 2005 and 2007.
- Household waste recycling rate in Nottingham is low but heat from waste percentage is well above average, meaning less than average goes to landfill.
- The majority of the City's municipal waste is transported by road but with the incinerator and Enviroenergy the City is well placed to explore opportunities for fuel and power generation for transport from waste materials.

Natural and Built Environment

- 20% of the City's land area comprises accessible open and green spaces including parks and natural and semi-natural areas supporting various species including water voles, peregrin falcons and six species of bats.
- The City Council is auditing its open space in terms of accessibility and quality - the City is well provided for in terms of quantity of open space but quality is an issue, particularly in the North West area.
- The character and quality of the residential areas in the City is very diverse ranging from significant areas of Victorian residential development to large council estates.
- 95% of housing built in the last seven years was built on brownfield sites**.**
- There are a great number of designated heritage assets in Nottingham including 29 Conservation Areas, 795 Listed Buildings, 13 Scheduled Ancient Monuments and 8 Registered Parks and Gardens.
- English Heritage's Heritage At Risk register identifies 10 conservation areas in Nottingham as being at risk.

Population & Economy

- City population = 300,800 (mid year estimate 2009) and Housing Market Area = 778,600 population.
- Nottingham has a young population with 30% of citizens aged 18 – 29. Students account for 1 in 9 of the population so different to national trends. Nottingham is unlikely to see increasing numbers of people over retirement age in the short to medium term.
- There has been net outward internal migration over the past 10 years and family age groups population is falling.
- IMD 2007 Nottingham ranks 13th out of 354 districts in England – 60% of the City's residents live in the 20% most deprived areas of the country.
- MOSAIC socio-demographic profiling shows that over 40% of citizens are likely to have an annual household income of below £10,000.
- Nottingham is one of eight Core Cities, recognised by the Government as the most important drivers of the national economy outside London.
- Nottingham is widely acknowledged to be the economic centre of the East Midland's region and has an influence that is felt beyond the City boundary and urban area attracting commuters, shoppers and visitors from a large catchment area.
- The Greater Nottingham economy is worth more than £12 billion per annum and there are around 300,000 jobs based locally.

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- City Centre ranked 6th in national retail rankings for 2010.
- The City has a lower than national employment rate and high proportion of claimants on sickness or disability related benefits.

Inclusion and accessibility

- Ethnically diverse population.
- Car ownership in Nottingham is lower than the Greater Nottingham, regional and national levels with 45% of households in the 2001 census not owning a car – this is particularly prevalent for households of people of retirement age living alone and lone parent families. It is estimated that this means up to 60% of residents do not have access to a car.
- However 95% of households are within 30 minutes travel time of City or town centre by bus or tram with only a 400m walk to the stop proving good connectivity and access to services.
- IPSOS Mori Place Survey 2008 reported that 79% of residents feel safe outside in the day but only 36% feel safe at night. However our own surveys for 2007/8 show that 74% of bus users feel safe using the bus at night – a 9% increase since 2005/6.
- Crime levels have fallen by 28% since 2003/04, but are significantly higher than regional/national averages.
- Theft from vehicles and theft of vehicles both continued to fall by over 30% from 2006/7 to 2008/9.

Health

- The City has big health inequalities – three-quarters of our wards have significantly lower life expectancy than the regional average and the life expectancy of a resident of Wollaton is 10 years longer than a resident of St Anns. Main causes of death are cardio-vascular disease, respiratory disease and cancers.
- Adult obesity is higher in the City than the national average. The City population also has higher levels of mental health illness.
- Drugs and alcohol misuse are concerns both in terms of antisocial behaviour and for road safety.
- Nottingham has the highest level of walking to school (65%) out of the core cities and is joint second nationally (excluding the London Boroughs)
- Air quality**:** There are two Air Quality Management Areas in the City in City Centre near the Ice Arena and in Dunkirk near Nottingham University Hospital Trust Queen Medical centre campus which both relate to pollutants from vehicles - modelling of nitrogen dioxide emissions indicate that exposure levels might exceed the permitted thresholds so the boundaries of both Air Quality Management Areas have been revised to include residential properties in the vicinity of the sites.
- Noise**:** Noise Action Plans produced by Defra indicates that there are approximately 3,000 households in the City affected by transport noise (road and rail).

1.4 IIA objectives and indicators

1.4.1 The IIA objectives have been developed to encompass the SEA topics (as set out in the European Directive), the City Council's requirements for Equality Impact Assessment and the strategic objectives in the Nottingham Plan (the Sustainable Community Strategy) vision.

1.4.2 The IIA objectives are:

- To reduce carbon and other greenhouse gas emissions from transport and enable the network to assist in the management of, and adaptation to, climate change.
- To manage scarce resources (minerals, energy and fossil fuels) and minimise waste.
- To protect water quality and minimise the impact of flooding.
- To protect and enhance the rich diversity of the natural environment, including biodiversity, landscape, geodiversity and soils by seeking net environmental gain.
- To protect and enhance buildings, areas and features of historic, archaeological and architectural interest including designated and other heritage assets and their settings.
- To respond to the regeneration and growth agendas in a sustainable way.To improve access to services and opportunities for all.
- To improve health and reduce health inequalities.
- To improve air quality in the AQMAs and maintain, and wherever possible, improve air quality across Nottingham City and the wider conurbation.
- To reduce levels of transport related noise in areas of sensitivity.

1.4.3 These have been tested for their internal compatibility and their compatibility with the LTP3 vision. The compatibility assessments highlighted some potential areas of conflict which have been taken into consideration when assessing the impacts of the LTP3 strategic options and when proposing measures to mitigate any potential negative impacts of LTP3.

1.4.4 For each objective a set of indicators has been identified which will help to monitor the performance of LTP3 against the IIA objectives.

1.5 Strategic alternatives

1.5.1 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 IIA should consider alternative scenarios for the overall management of transport in Nottingham City to ensure that the range of likely environmental, health and equalities impacts arising from LTP3 are addressed during the preparation of the plan. It also assists in explaining to decision makers and consultees why this strategy is being proposed.

1.5.2 The following strategic options were put forward:

- Option A: Without Plan Scenario
- Option B: Growth focused with Major Schemes
- Option C: Growth focused without Major Schemes
- Option D: Neighbourhood focus with Major Schemes
- Option E: Neighbourhood focus without Major Schemes

1.5.3 The authority has compared the likely outcome of each of these options against the IIA objectives as described in Section 9 and Appendix 4. This exercise combined with the stakeholder consultation on the LTP3 Challenges and Options helped to identify a Preferred LTP3 Strategic Option which meets the LTP3 and SCS objectives, is deliverable and which maximises the positive benefits and minimises negative impacts. The Preferred Option (a modified Option D Neighbourhood focus with major schemes) has been subjected to a detailed impact assessment as described in Section 10 and Appendix 5.

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1.6 Significant impacts and mitigation measures

1.6.1 Section 10 of the Report considers the environmental, health and equalities impacts of the different programme strands of the Preferred Option in more detail. In accordance with the European Directive recommendations and DfT's guidance the different work packages of the Preferred Option were assessed for their impact using the IIA objectives and assessment criteria. These assessments were conducted through a workshop and individual meetings with key expert officers at the City Council.

1.6.2 The assessment process also considered the significance of the impacts of each LTP3 workstream on the environment of the Plan area and for health and inequalities in the community, taking into account any areas of uncertainty and the possible secondary, cumulative and synergistic effects. Overall it was found that LTP3 would have an overall positive effect on the environment and for health and inequalities in the City.

Theme	Significance of impacts
Climate/Carbon dioxide	LTP3 will have a significant positive impact on reducing carbon dioxide emissions from transport by reducing the need to travel, encouraging more active travel, and delivering modal shift to public transport and low carbon transport. However new highway infrastructure will increase capacity which could generate additional car trips. It will be possible to reduce carbon emissions over time through technology changes if policies are successful in continuing to constrain traffic growth.
Material Assets (Minerals, Waste, Energy & Fossil fuels)	The transport sector is currently over-reliant on oil and therefore vulnerable to sudden fluctuations in the global oil market. LTP3 will play a significant role by providing public transport and low carbon travel options, reducing the need to travel and supporting modal shift thereby helping to reduce use of fossil fuels. LTP3 will also have a medium impact in terms of use of scarce resources. New construction will increase the use of materials and generate construction waste.
Water	LTP3 has the potential to make a positive contribution to reducing flood risk and to ensuring resilience of future transport infrastructure. The level of impact depends on implementation. Increasing impermeable surfaces increases surface water run-off and flooding risks so mitigation will be important to ensure the appropriate management of surface water, design of drainage systems and use of appropriate construction materials and techniques for resilience.
Natural Environment (Biodiversity, Landscape and Soil)	LTP3 is most significant in terms of improving connectivity by improving access to open space and providing opportunities to develop and enhance green infrastructure. Will also provide opportunities to improve access to open spaces by improving the transport network and travel options. However the impacts will be largely dependent on the design and implementation of transport schemes and the ongoing management of individual sites. Some highways schemes could have the potential to reduce public enjoyment of open space which will need to be addressed through appropriate mitigation measures.

Urban Environment (Cultural Heritage & Townscape)	Impact of LTP3 is significant as the City is primarily an urban environment. However the impacts are generally positive as transport investment offers opportunities to upgrade streetscapes through public realm improvements.
Population and Economy (Sustainable communities)	Overall the LTP3 is likely to have a significant positive impact as reduced congestion and benefits to accessibility should support economic development and business competitiveness.
Equality and Inclusion including accessibility and crime	Transport planning plays an important role to improve accessibility and inclusion for all groups. The impacts are mostly positive as many transport improvements are targeted at improving transport accessibility. However reliance of the transport sector on oil is likely to lead to future price fluctuations that will affect the affordability of transport.
Health inequalities including Air Quality and Noise	LTP3 provides a significant opportunity to support active travel modes and to increase physical activity levels. Congested traffic is the primary cause of breeches of air quality standards in the City. Two Air Quality Management Areas are currently designated in the Plan area. Action plans are in place to address these air quality problems. Transport related noise is an increasing area of concern. LTP3 provides the opportunity to implement quieter technologies and to upgrade transport infrastructure to reduce noise levels.

1.6.3 The IIA process has also enabled the identification of mitigation measures to accompany the LTP3 implementation to minimise or eliminate these potential negative impacts of the Plan. The key mitigation measures recommended to prevent or respond to any potential impacts are:

Key mitigation measures	Trigger for action
Ensure resilience of future infrastructure and highway assets by steering development away from areas of highest risk and use of appropriate materials and construction techniques.	Design Stage
Minimise use of new material and maximise use of recycled ones	Project Mandate
Use Site Waste Management Plans to reduce construction waste going to landfill.	Project Brief
Ensure ecological surveys are carried out prior to works likely to affect protected species or sites. This approach should be also be adopted for Biodiversity Action Plan habitats and for other species which can potentially be affected by projects along water courses.	Project Brief
Design needs to be sensitive to areas of townscape value - apply principles of Manual for Streets and the Streetscape Manual Code of Practice to ensure high quality public realm	Design stage
Use of Sustainable Urban Drainage Systems should be considered whenever possible to both improve water quality of road run-off and to increase areas for wildlife	Design stage
Avoid night-time construction in residential areas	Project Mandate

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Consider needs of different users to maximise accessibility including for disabled people	Design stage
Ensure released capacity is prioritised for sustainable transport	Project Mandate
Develop appropriate communications strategies and public education programmes to support schemes	Project Mandate

1.7 Implementation and monitoring

1.7.1 For each IIA objective a set of indicators has been identified which will help to monitor the performance of LTP3 against the IIA objectives.

1.7.2 The authority will be responsible for co-ordinating and leading the monitoring of the environmental, health and equalities effects of the Plan. The monitoring of the IIA will focus on the LTP3 as a whole, to ensure that cumulative effects are taken into account. This is especially relevant since:

- Many of the identified mitigation measures recommend ensuring synergies between packages of measures are maximised;
- The overall positive impact assessment of LTP3 depends on successful implementation of the transport measures as integrated measures.

1.7.3 The monitoring of the IIA objectives and indicators, the mitigation measures proposed during the impact assessment process, and the forecasted effects of the implementation of the Plan, will be reported in accordance with the Government's requirements for data reporting on local transport performance.

1.8 Environmental Statement

1.8.1 The IIA process along with the feedback received from the consultation periods for the draft LTP3 and the IIA Scoping and Draft Reports informed the Preferred Strategic Option chosen for LTP3 which was a modified Option D: Neighbourhood focus with Major Schemes. The detailed assessment process of the modified option found that this option would have an overall positive effect on the environment and for health and inequalities in the City as presented in the Draft IIA Report.

1.8.2 This Final IIA Report includes minor amendments in response to the feedback received during the Draft IIA Report consultation period as set out in Appendix 6. No significant changes were required and these amendments do not affect the initial impact assessment findings. In accordance with the requirements of the SEA Directive, an Environmental Statement summarising the outcome of the IIA process was published alongside the adopted LTP3 Strategy 2011- 2026 and the LTP3 Implementation Plan 2011 - 2014 in April 2011.

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2.1 Introduction

2.1.1 The SEA Directive states that '*When a plan … is adopted, the [environmental] authorities [and] the public …are informed and the following items [shall be] made available to those so informed: (a) the plan … as adopted, (b) a statement summarising how environmental considerations have been integrated into the plan … and (c) the measures decided concerning monitoring'* (Article 9(1)).

2.1.2 DfT guidance indicates that, to satisfy the Directive, authorities should state how they have taken the findings of the SEA into account. This SEA Statement should be made available to stakeholders. It will cover:

- Any changes to or deletions from the plan in response to the information in the Environmental Report.
- Ways in which responses to consultation have been taken into account. The summary should be sufficiently detailed to show how the plan was changed to take account of issues raised, or why no changes were made.
- Reasons for choosing the plan as adopted, and why other reasonable alternatives were rejected.
- Monitoring measures.

2.1.3 The detailed presentation of the opinions expressed during the consultation of the Scoping Report and of the Draft Environmental Report, and how they have been taken on board, can be found in Appendices 3 and 6.

2.2 How the consultation responses were taken on board

2.2.1 **Changes to LTP3 after consultation**: No significant changes were made to the Plan in response to the consultation on the Integrated Impact Assessment Scoping Report and the Draft Integrated Impact Assessment Report.

2.2.2 **Changes to the Integrated Impact Assessment Report after consultation:** The Final Integrated Impact Assessment Report reflects the feedback received during the consultation periods. The amendments were not significant and do not affect the initial impact assessment.

2.2.3 The statutory consultees required for an SEA, i.e. the Environment Agency, Natural England and English Heritage were invited to participate in the stakeholder workshops to develop the assessment framework and the initial assessment of the strategic options. These organisations provided comments during the consultation on the Scoping Report and the public consultation on the draft LTP3 and IIA Report. Their input is acknowledged and has been helpful in informing the IIA process and in shaping the Plan. Feedback focused on:

- Updating and supplementing baseline data sources;
- Refining IIA objectives and indicators;
- Ensuring that environmental impacts are considered at the design stage of any scheme.

2.3 Reasons for choosing the plan as adopted

2.3.1 Strategic alternatives for LTP3 were considered through a stakeholder workshop involving key officers at the City Council and partner organisations including Nottingham City PCT, Nottingham Energy Partnership and the Greater Nottingham Transport Partnership as well as the statutory consultation bodies. The following options were assessed:

- Option A: Without Plan Scenario
- Option B: Growth focused with Major Schemes
- Option C: Growth focused without Major Schemes
- Option D: Neighbourhood focus with Major Schemes
- Option E: Neighbourhood focus without Major Schemes

2.3.2 The initial analysis highlighted that Option D would be effective in meeting economic and social inclusion objectives delivered through the development of the link bus network and the major schemes element of the package such as NET Phase 2, A453 widening and the Ring Road upgrading whilst having fewer negative impacts than some of the other options due to a greater neighbourhood focus. In Option D the strategic level investment would be balanced with the promotion of active travel for short trips, individualised travel planning support and local pubic realm improvements supporting a more sustainable local economic development model.

2.3.3 The analysis highlighted that Option D was also the best option in terms of providing significant benefits to reduce carbon and greenhouse gas emissions without any negative impacts. For the Urban Environment, Air Quality and Noise themes Option D performed as well as or better than the other options with the positives outweighing the negative impacts. For Water there was considered to be small negative impact balanced by a small positive impact.

2.3.4 When considering Material Assets and Natural Environment themes the level of predicted negative impact for Option D slightly outweighed the predicted positive impacts due to the potential impact of the major schemes elements of the package indicating where future mitigation measures will need to be focused to minimise these impacts. Although Option E was predicted to perform better than Option D with regard to the likely impact on Material Assets and Option C was expected to perform better with regard to the likely impact on the Natural Environment these options did not perform as well as Option D against the socio-economic themes.

2.3.5 Therefore on balance a modified Option D: Neighbourhood focus with Major Schemes was considered to deliver the most benefits and would best meet the long term objectives of LTP3 and the Nottingham Plan (Sustainable Community Strategy) and was put forward as the Preferred Option. Option D and the Preferred Option are described in Table 2.1.

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Table 2.1 Description of Option D and Preferred Option

Hierarchy	Measures	
	Option D: Neighbourhood Focus with Major Schemes	**LTP3 Preferred Option (Modified Option D)**
		Maintenance of existing assets
Reduce demand	Introduce Workplace Parking Levy scheme with increased parking enforcement, travel plan support for business and individualised travel planning support.	Workplace Parking Levy with increased parking enforcement. Smarter Choices including business travel plan support and individualised travel planning.
Encourage alternatives	Emphasis on NET integration and development of local link bus network. Area-wide 20 mph zones. Focus on walking and cycling for short trips. Focus on district/local centre public realm improvements	NET Phase 2 and integration with public transport network. Development of bus infrastructure, localllink network, smartcards and information. Improve walking and cycling networks including Rights of Way. Road safety measures including area-wide 20 mph zones. Public realm improvements including district and local centres.
Improve efficiency	Manage existing networks. Focus on incentives for private low carbon vehicle ownership.	Network management. Low carbon transport system with emphasis on public transport and fleet vehicles and charging infrastructure.
Build capacity	Major new highway infrastructure including A453 and Ring Road upgrading. Small scale localised public transport and highway improvements.	Local highway improvements. Major highways schemes.

2.3.6 The Preferred Option was subjected to a more detailed appraisal process which considered a range of physical, social and economic environmental factors in a systematic matter in accordance with the European Directive and DfT's guidance. This second stage assessment found that a modified Option D would have an overall positive effect on the environment and for health and inequalities in the City as summarised below.

Physical environment

- **Air Quality:** Congested traffic is the primary cause of breeches of air quality standards in the City. Two Air Quality Management Areas (AQMAs) are currently designated in the Plan area. Actions plans are in place to address these air quality problems

- **Climate/CO2:** Transport is the fastest growing source of greenhouse gas emissions in the UK and commuter and business travel constitute nearly 40% of all miles driven by car. Therefore LTP3 will have a significant positive impact on CO_2 emissions from transport by reducing the need to travel, encouraging more active travel, and delivering modal shift to public transport and low carbon transport. Although new highway

infrastructure will increase capacity which could generate additional car trips, it will be possible to reduce carbon emissions over time through technology changes as long as policies are successful in continuing to constrain traffic growth.

- **Material Assets (Minerals, Waste, Energy & Fossil Fuels):** The transport sector is currently over-reliant on oil and therefore vulnerable to sudden fluctuations in the global oil market and it is predicted that by 2025 the UK will be importing 57% of its oil. LTP3 will play a significant role by providing public transport and low carbon travel options, reducing the need to travel and supporting modal shift thereby helping to reduce use of fossil fuels. LTP3 will have a medium impact in terms of use of scarce resources as new construction will increase the use of materials and generate construction waste.

- **Natural Environment (Biodiversity, Landscape and Soil):** LTP3 will improve connectivity by improving access to open space and providing opportunities to develop and enhance green infrastructure. The Plan will also provide opportunities to improve access to open spaces by improving the transport network and travel options. However the impacts will be largely dependent on the design and implementation of transport schemes and the ongoing management of individual sites. Some highways schemes could have the potential to reduce public enjoyment of open space which will need to be addressed through appropriate mitigation measures at the design stage.

- **Noise:** Transport related noise is an increasing area of concern. LTP3 provides the opportunity to implement quieter technologies and to upgrade transport infrastructure to reduce noise levels.

- **Urban Environment (Cultural Heritage & Townscape):** The Plan area is primarily an urban environment and the transport investment opportunities provided by LTP3 will have a positive impact by upgrading streetscapes through public realm improvements.

- **Water:** LTP3 has the potential to make a positive contribution to reducing flood risk and to ensuring resilience of future transport infrastructure. The level of impact will depend on implementation. Increasing impermeable surfaces increases surface water run-off and flooding risks so mitigation will be important to ensure the appropriate management of surface water, design of drainage systems and use of appropriate construction materials and techniques for resilience.

Social and economic environment

- **Population and Economy (Sustainable communities):** Overall the LTP3 is likely to have a significant positive impact as reduced congestion and benefits to accessibility should support economic development and business competitiveness.

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- **Health inequalities:** The gap in health inequalities is of increasing importance in Nottingham with life expectancy in the most deprived wards in the City 10 years below that in the most affluent wards. LTP3 provides a significant opportunity to support active travel modes and to increase physical activity levels.

- **Equality and Inclusion including Accessibility and Crime:** LTP3 will have a positive impact on inclusion for all groups by improving accessibility of transport services and key destinations. However reliance of the transport sector on oil is likely to lead to future price fluctuations that will affect the affordability of transport.

2.3.7 This exercise also identified recommendations for mitigation measures to be undertaken at the implementation stage for each of the Plan's proposed workstreams to minimise any predicted negative impacts. Most of the proposed mitigation methods are already an integral part of the normal implementation for LTP schemes. However it was felt that an additional emphasis within the IIA would draw attention to their importance in relation to the environmental, health and equalities objectives and would assist in identifying any problems at an early stage during implementation of the Plan.

2.3.8 It should be noted that the Major Schemes proposed in LTP3 have not been assessed in detail through the IIA because LTP3 financial allocations beyond 2012/13 are not confirmed at this date, and some schemes may or may not be implemented. These schemes will be subject to individual appraisal and accompanying project level environmental impact assessment (EIA) and Equalities Impact Assessment (EqIA) as part of the scheme development.

2.4 Monitoring arrangements

2.4.1 The monitoring for the IIA will be reported in accordance with the Government's requirements for data reporting on local transport performance. In February 2011, the Department for Communities and Local Government published a single data list local authority reporting. The list of transport data can be found on the Communities website at: http://www.communities.gov.uk/localgovernment/decentralisation/tacklingburdens/databurdens/

2.4.2 The City Council proposes to assess progress against the Plan objectives by monitoring a number of key transport performance measures as set out in Table 2.2.

Table 2.2 Key Transport Performance Measures

Ref	Indicator	Frequency	Comment
PI 1	Local public transport (bus and tram) patronage	Quarterly	City only. Target within Nottingham Plan
PI 2	Carbon emissions for city traffic area	Annually	Indicator to be determined
PI 3	Percentage of employees covered by a commuter travel plan	Annually	WPL business support. Definition of 'live' plan to be determined
PI 4	Cycling trips	Annually	

Ref	Indicator	Frequency	Comment
PI 5	Air quality (nitrogen dioxide in AQMAs) for a) city centre and b) ring road	Annually	
PI 6	Access to services and facilities	Annually	
PI 7	Working age people with access to employment by public transport	Annually	DfT Core Accessibility Indicators
PI 8	Mode of journeys to school	Annually	National school census data
PI 9	Children killed and seriously injured	Six monthly	Revised to report data on a 4 month delay (following processing and verification). Currently on 15 month delay
PI 10	Total killed and seriously injured	Six monthly	Revised to report data on a 4 month delay (following processing and verification). Currently on 15 month delay
PI 11	Journey time (vehicle journey time per mile)	Annually	

2.4.3 The Nottingham Plan (Sustainable Community Strategy) includes an indicator to monitor public transport use as a measure of economic performance. The Nottingham Plan also includes a number of additional cross-cutting indicators included in which transport has a direct bearing on, such as overall employment rates, provision of housing stock, improving community involvement in local decision making, carbon emissions, reducing obesity amongst children and cardiovascular disease amongst adults.

2.4.4 The Council intends to communicate progress on the delivery of LTP3 with citizens, key stakeholders and partners through existing forums and networks and through online and social media. Ongoing progress and delivery will be reported at least on an annual basis and published on the City Council's transport web pages at www.mynottingham.gov.uk/ltp3

Background 3

3 Background

3.1 SEA, HIA and EqIA requirements

3.1.1 Strategic Environmental Assessment (SEA): EU Directive 2001/42/EC, and the associated UK Regulations, introduced 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. Government guidance states that Local Transport Plans (LTPs) are subject to this Directive.

3.1.2 Equality Impact Assessments (EqIA): DfT's Guidance on Local Transport Plans (July 2009) states that: *"Local authorities have a duty under race, disability and gender legislation to carry out an Equality Impact Assessment of their LTP. EqIA can help determine how an LTP affects different groups of people. DfT advises that an EqIA encompass race, gender, disability, age, religion/belief and sexual orientation. As with SEA, it is important that EQIA is an integral part of devising an LTP. Working towards an early, evidence-based EqIA will help ensure LTPs address anti-discrimination and equalities legislation and take account of the impacts the Plan may have on the local community. The EqIA process should help inform an LTP accessibility strategy."*

3.1.3 Health Impact Assessment (HIA): Although there is no statutory requirement to carry out a HIA for LTPs in the way that an SEA is required, DfT's Guidance on Local Transport Plans (July 2009) states that: *"Consideration of 'Human Health' is a legal requirement in a Strategic Environmental Assessment (SEA) and a health impact assessment (HIA) is an integral part of a SEA to identify and inform health issues in Plans. Undertaking an HIA should provide an evidence base to help the decision making process in developing an effective LTP, and to mitigate the negative effects on health and well-being (whether physical and/or mental health). In addition, it should help to:*

- *Secure consistency between the LTP and work associated with Sustainable Community Strategies and Local Area Agreements;*
- *Coordinate the public health concerns in respect of air quality, noise and climate change;*
- *Contribute to the wider agenda relating to quality of life and reducing health inequalities."*

3.2 Guidance on the Application of SEA to LTPs

3.2.1 Guidance prepared by the Department for Transport (DfT) on how to carry out SEA for Local Transport Plans in England, is contained within TAG (Unit 2.11) Strategic Environmental Assessment for Transport Plans and Programmes. An "in draft" update to this guidance was issued in April 2009. The IIA of the LTP3 for Nottingham is being carried out in accordance with this latest guidance.

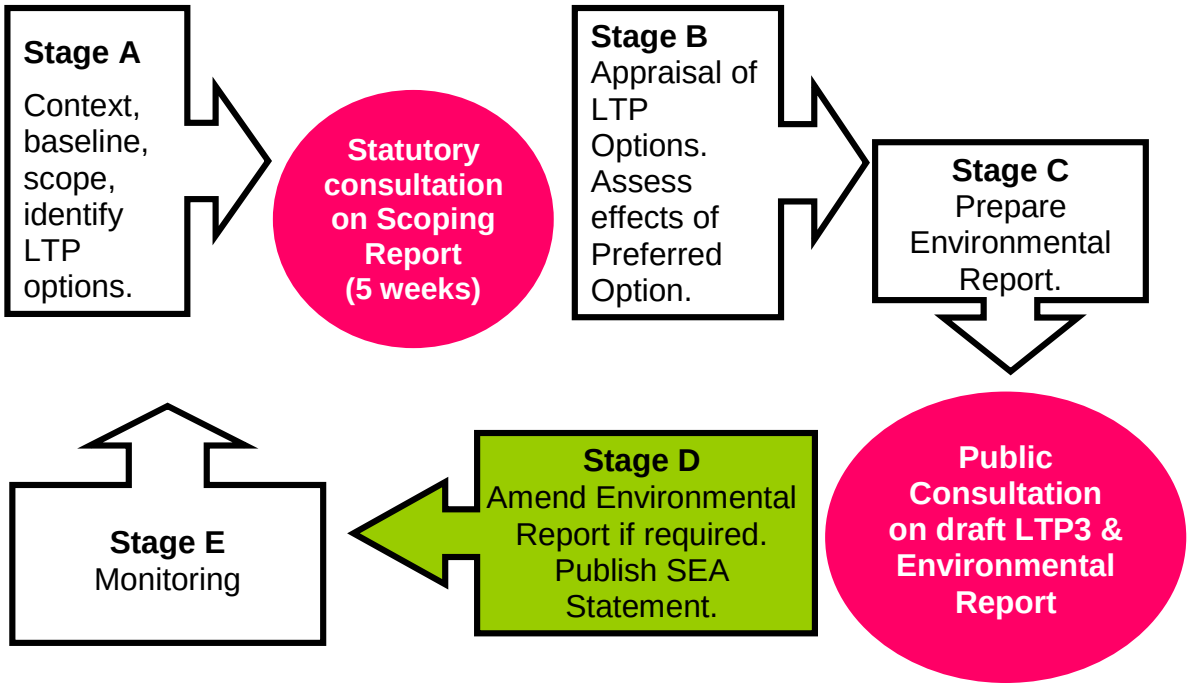
3 Background

3.2.2 The DfT's guidance outlines five main stages for an SEA as follows:

Stage A:	Setting the context, identifying objectives and problems and establishing the baseline and deciding the Scope.
Stage B:	Developing, refining and appraising strategic alternatives and assessing the preferred LTP option
Stage C:	Production of an Environmental Report.
Stage D:	Consultation on the draft Plan and the Environmental Report. Publication of an SEA Statement.
Stage E:	Monitoring the significant effects of implementing the plan on the environment.

This report completes Stage D.

Figure 3.1 The SEA process



3.2.3 The DfT's guidance on SEA (TAG Unit 2.11 Table 3.3) 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.

3.2.4 Table 7.1 in Section 7 shows the relationship between the SEA requirements, the NATA Sub-Objectives and the local priorities as set out in the One Nottingham Sustainable Community Strategy (SCS) and the LTP3 Vision.

3.3 Equality Impact Assessment

3.3.1 An Equality Impact Assessment follows the same main stages as required for an SEA and Health Impact Assessment. Therefore for LTP3 it was decided to include equalities within the consideration of wider sustainability issues as part of an Integrated Impact Assessment process. One benefit of taking an integrated approach was that the links between environmental, health and equalities issues could also be identified and therefore equalities issues could be fully embedded into the other strands of the assessment process. Table 3.1 sets out how the this approach meets the City Council's requirements for an EqIA and where to find information about equalities issues in the IIA Report:

Table 3.1 How the IIA meets the EqIA requirements

The EqIA needs to describe:	Relevant IIA Section
What service, policy, function or strategy you have assessed.	Section 2 describes the LTP3 purpose, scope and coverage and the SEA and EqIA duties; Section 9 describes the Strategic Alternatives considered for LTP3; Section 10 sets out the LTP3 Preferred Option
What impacts you have identified through screening on the six equality groups (race, gender, disability, age, sexual orientation, religion/belief) and local communities, and whether these impacts are positive or negative.	Section 2 provides the EqIA Screening Assessment; Section 8 summaries the key environmental, health and equalities issues for LTP3; Appendices 4 and 5 record the results of the impact assessment workshops for the LTP3 Strategic Options and the Preferred Option.
What data you collected and analysed and how you did this.	Section 6.9 and Appendix 2 provide baseline data on equality issues.
What you concluded about positive or negative impacts on different groups from the data analysis.	Appendices 4 and 5 record the results of the impact assessment workshops for the LTP3 Strategic Options and the Preferred Option. The outcomes of these workshops is set out in Sections 9 and 10
What actions you are planning to undertake to reduce or remove any negative impacts and to promote positive impacts, including timescales and who is responsible for completing the actions.	Sections 10 and 11 set out the assessment of significant impacts, proposed mitigation measures and triggers for implementation.

3.3.2 In accordance with the City's Council guidance on EqIA, the first step was to carry out a screening exercise. The results of this stage are recorded in Table 3.2 The screening exercise identified where the key areas of focus should be on equalities issues in the wider impact assessment process. The key issues which have been considered during the preparation of the LTP3 are summarised in Table 8.1.

Table 3.2 Equality Impact Assessment Screening

Department: Development/Environment & Regeneration
Service Area: Transport Strategy
Name and description of policy/ service/ function/ strategy being screened: Nottingham's third Local Transport Plan ("LTP3")
Manager Responsible for Area: Chris Carter (CC - Team Leader Transport Strategy) Jennie Maybury (JM - Principal Transport Planner – Project Manager)
Date screening completed: March 2010
Is completing this EqIA a corporate priority? Yes

Key screening questions:

Could this policy or service and the way we deliver it affect some groups in society differently (negative impact)? Can this policy or service and the way we deliver it promote equal opportunities (positive impact)?

Equality Strand	Assessment of Potential Impact of policy/service (delete as appropriate)		Reason for the Assessment of Potential Impact (provided in previous column)	Are there any mitigating circumstances??	Actions Required (with timescales and name of responsible officer)
Race **Gender**	**Positive**	**Medium**	The strategy may be able to identify objectives that could help improve safety and reduce hate crime while using public transport for minority ethnic people or women. The strategy may be able to help make transport more accessible for people using pushchairs (who are more likely to be women). Feedback from BME groups indicates that transport for older people provided through adult services and health is a major concern for the ethnic minority community.	The Respect for Nottingham and Respect for Transport initiatives have already developed some relevant issues for example street lighting and safe taxi arrangements. A number of adjustments and initiatives to make transport and transport information more accessible to disabled people have been put in place or are being developed (for example disability	1. Ensure these impacts are addressed in LTP3 option assessment criteria – by April 2010 (JM). 2. Ensure the development of the plan including any consultation gains the views and responds to the needs of disabled people, older and younger people, LGBT groups, different ethnic and faith groups, women - by end of July 2010 (JM) 3. Produce full equality impact assessment (based on [2]) – by end July 2010
Disability	**Negative** **Positive**	**High** **High**	Disabled people's groups report that some current transport arrangements have a disproportionate impact for example bus designs that cannot accommodate both a pushchair and wheelchair, the need for systems to alert people with visual impairment that buses are arriving, the need for accessible information for disabled people on access to the city centre (for example parking and transport links to Shopmobility), and the impact of restrictions to private hire access to the City centre. The strategy has the potential to set objectives which could significantly improve access to public transport, information about public transport options, and access to different City		

			locations (including for example city centre venues and hospitals) for disabled people. The strategy is relevant to the Council's equality scheme objectives on improving satisfaction with public transport for disabled people, and improving satisfaction with information for disabled people.	awareness training for tram staff) which LTP 3 can build on. The Council's equality scheme sets out separate assessments for other major transport developments for example Ring Road Major Scheme, Nottingham Station Hub Scheme, NET (tram lines) phase 2.	4. Ensure any LTP3 consultation is publicised in ways that are accessible to disabled people – ongoing
Religion/ Belief **Sexual Orientation**	**Positive**	**Medium**	The strategy may be able to identify objectives that could help improve safety and reduce hate crime against LGBT people or different faith groups while using public transport.		
Age	**Positive**	**High**	The strategy has the potential to significantly improve transport (including for example to voluntary group meetings, city centre venues and hospitals) for older people. The strategy may be able to improve younger people's access to schools/colleges.		
Other (e.g. Community Cohesion)	**Positive**	**Medium**	The strategy has the potential to promote community cohesion by making it easier for (in particular) disabled people, women, older, LGBT and ethnic minority people to participate in consultations, volunteering and other civic activities in the City centre and across the city. Improving information on transport will also benefit people with low levels of literacy and people with learning disabilities. Improving access to sustainable transport choices may help to address the impacts of peak oil/rising fuel costs on the affordability of transport options.		These positive impacts in relation to cohesion and literacy would be an additional benefit arising from the actions above.

3.4 LTP3 objectives and study area

3.4.1 The Local Transport Plan (LTP3) for Nottingham is the third LTP and will comprise a long term strategy covering the 15 year period 2011 – 2026 and an Implementation plan covering the first three years from 2011 – 2014. LTP3 replaces the LTP2 for the period 2006/7 – 2010/11.

3.4.2 LTP2 covers an area comprising the whole of the City of Nottingham, the Boroughs of Broxtowe, Gedling and Rushcliffe and the Hucknall area of Ashfield, referred to as Greater Nottingham, and was produced jointly by Nottingham City Council and Nottinghamshire County Council. To support closer alignment with the Sustainable Community Strategy, the working arrangements for LTP3 will take a different approach mirroring the arrangements for the Local Development Framework. Therefore Nottingham City Council is preparing an LTP for Nottingham City and Nottinghamshire and Derbyshire County Councils are producing separate LTP documents covering the adjacent areas of the Nottingham Housing Market Area (HMA): Broxtowe; Gedling; Hucknall; Rushcliffe; and Erewash. The three LTPs will share a set of aligned core objectives and areas of common interest and joint working arrangements are set out in a Memorandum of Understanding.

3.4.3 Figure 2.2 shows the LTP3 area in relation to the Nottingham Housing Market Area.

3.4.4 LTP3 will build on the success of LTP2 as recognised by the Government in annual performance assessments and Centre of Excellence designation, Beacon status and Comprehensive Area Assessment Green Flag for public transport improvement.

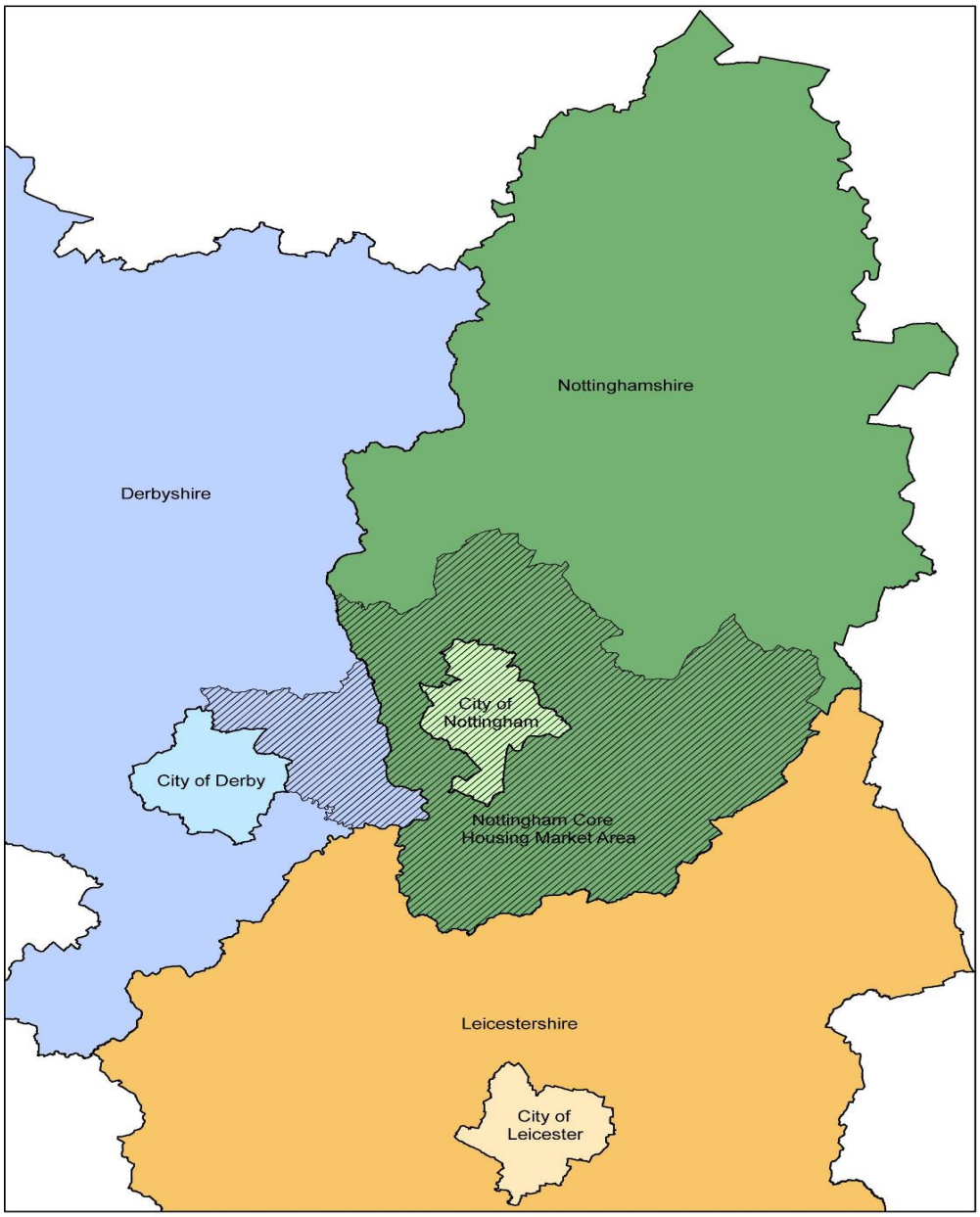
3.4.5 The Plan is themed around five key goals which respond to the Sustainable Community Strategy and comprise our LTP3 Vision as set out below:

Delivering a world-class sustainable transport system	This means helping to maintain a strong economy and improving business competitiveness by creating a world class transport system that maximises the efficiency of existing transport networks, reduces traffic growth and encourages the use of alternatives to the car.
Creating a low carbon transport system	This means creating a low carbon transport system that reduces greenhouse gas emissions from transport thereby improving air quality and reducing our carbon footprint.
Promote equality of opportunity	This means achieving sustainable access to jobs, learning and other essential services including healthcare, food shopping and leisure and tourism for all, with the greatest focus being given to those most in need. This also means planning the location and delivery of services to make best use of existing transport provision and to reduce the need to travel.
Improve quality of life and transform Nottingham's neighbourhoods	This means supporting development in identified Regeneration Zones, improving the public realm, rejuvenating run-down neighbourhoods and enhancing the local environment. This includes relieving communities of the adverse effects of transport such as noise, severance and visual intrusion.

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Support safe, active and healthy citizens	This means supporting citizens to live safe, independent and active lifestyles. It also includes improving road safety, particularly for vulnerable road users and children, addressing community safety and reducing the threat of crime.

Figure 3.2 The LTP3 area in relation to the Nottingham Housing Market Area.



3.4.6 For LTP3 the City Council is meeting the requirements for an SEA, incorporating elements of Health Impact Assessment, and an Equality Impact Assessment through a single assessment process, which we have called an Integrated Impact Assessment (IIA). The IIA uses the SEA guidance as the basis for the assessment methodology, supplemented by guidance on good practice for HIA and EqIA.

Approach 4

4 Approach

4.1 Introduction

4.1.1 The Integrated Impact Assessment has been carried out by transport, planning and sustainability officers at Nottingham City Council to fulfil our statutory requirements to prepare an SEA and EqIA but also to guide and inform the development of the third Local Transport Plan.

4.2 Scoping Phase

4.2.1 The first phase of the IIA was the Scoping Stage, which began in January 2010. The authority followed the guidance contained within the SEA regulations, the authority's own guidance on EqIA and examples of good practice for Health Impact Assessment to categorise potential environmental, health and equalities impacts of the Local Transport Plan under the following themes:

- Population and economy
- Climate and CO2
- Material assets (Minerals, Waste, Energy and Fossil Fuels)
- Water
- Natural Environment (Landscape, Biodiversity, Soil and contaminated land)
- Urban Environment including Townscape and Cultural Heritage
- Equality and Inclusion
- Human health including Safety, Air Quality and Noise

4.2.2 The first task was to identify relevant international and national legislation, and national, regional and local strategies and policies, which have environmental, health and equalities objective relating to any of the issues identified above, which the Local Transport Plan may influence. These include strategies and plans which are:

- Environmental (e.g. Biodiversity Action Plans);
- Health related (e.g. Joint Strategic Needs Assessment);
- Concerned with equality and diversity (e.g. Diversity and Equality in Planning - A good practice guide);
- Transport related (e.g. Delivering a Sustainable Transport System);
- Relating to other areas such as land use planning (e.g. Local Development Framework Aligned Core Strategy Issues and Options) and economic development (e.g. Sustainable Community Strategy).

4.2.3 The document review contained in Appendix 1 was used to draw out the key strategy objectives, legislative requirements and implications for the development of LTP3. These are set out by theme in Section 5 Tables 5.1 – 5.8. This information was used to develop a set of ten IIA Assessment Objectives to consider the impacts of the different LTP3 options under the themes. These Assessment Objectives were tested and agreed at a Scoping Workshop in February 2010 involving officers from the City Council, representatives of the statutory consultation bodies and other key partners. The workshop and its outcomes are described more fully in Section 7.

4.2.4 Baseline data was also gathered for each theme and is set out in Section 6 and Appendix 2. Where possible this has been related to sub-national and national data, in order to compare Nottingham with these wider areas. This information was used to identify problems and opportunities for LTP3 by theme as described in Section 8. For the equalities strand the key issues were identified through an EqIA screening exercise described in Section 3.

4.3 Consultation on IIA Scoping Report

4.3.1 The above information was set out in the Scoping Report alongside an outline of LTP3 options to be considered at the assessment stage. The Scoping Report was made available for formal consultation for a 5 week period from 21st June until 23rd July 2010 with the three statutory consultation bodies:

- Natural England;
- English Heritage;
- Environment Agency.

4.3.2 Comments were also invited from the Greater Nottingham Transport Partnership; the Health and Environment Partnership, NHS Nottingham City (the Primary Care Trust), the neighbouring local authorities in the Housing Market Area, Nottinghamshire County Council and Derbyshire County Council, and others officers and partners involved in the Scoping Workshop.

4.3.3 In addition pre-consultation drafts of the Scoping Report were made available to the LTP3 Project Board and the Chair of the Greater Nottingham Transport Partnership.

4.3.4 The responses received were taken into account in the preparation of the Draft Integrated Impact Assessment Report and a summary of the comments and how they were addressed is set out in Appendix 3.

4.4 Impact Assessment

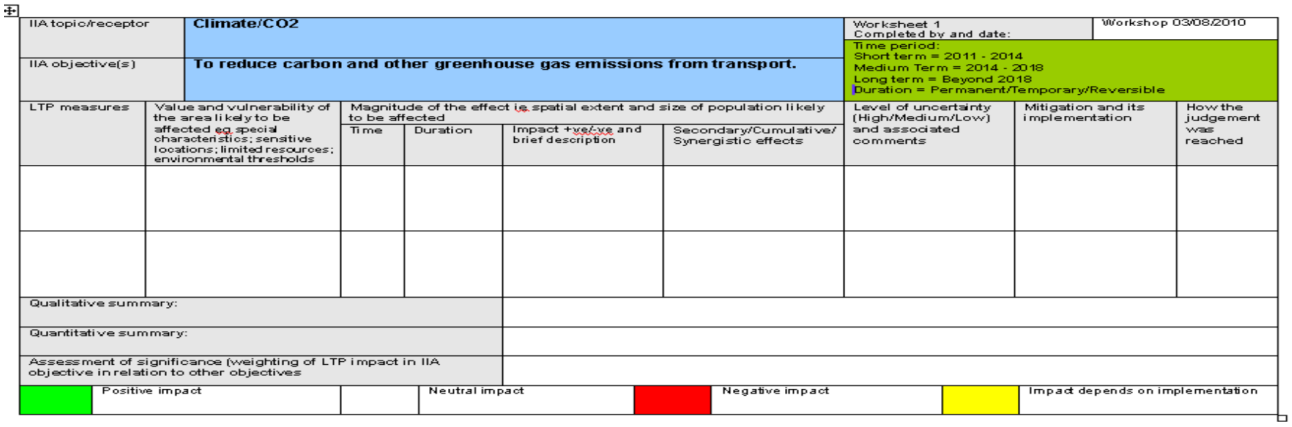
4.4.1 In parallel with the Scoping Report consultation period, the authority then proceeded to work with internal and external policy experts to carry out more detailed analysis on the LTP3 strategic alternatives using the objectives and criteria set out in Table 7.2. This was done as a two-stage process through a series of workshops and individual meetings.

4.4.2 The first stage involved a workshop in July 2010 with City Council officers and key external partners with expertise in transport, planning, health, sustainability and equality, to carry out a broad assessment of the strategic options in terms of their environmental, health and equalities impacts and to recommend a Preferred LTP3 option. The outcomes of this process are described in Section 9.

4.4.3 The second stage assessed the Preferred LTP3 Option in more detail at a more focused workshop and one to one meetings with key City Council officers held in August 2010. This was done by completing a series of detailed appraisal matrices which considered the different programme elements of the Preferred Option against each of the IIA themes including equality.

4 Approach

Figure 4.1 Effects Prediction Matrix



IIA topic/receptor	Climate/CO2					Worksheet 1 Completed by and date:	Workshop 03/08/2010	
IIA objective(s)	To reduce carbon and other greenhouse gas emissions from transport.					Time period: Short term = 2011 - 2014 Medium Term = 2014 - 2018 Long term = Beyond 2018 Duration = Permanent/Temporary/Reversible		
LTP measures	Value and vulnerability of the area likely to be affected eg special characteristics; sensitive locations; limited resources; environmental thresholds	Magnitude of the effect ie spatial extent and size of population likely to be affected				Level of uncertainty (High/Medium/Low) and associated comments	Mitigation and its implementation	How the judgement was reached
		Time	Duration	Impact +ve/-ve and brief description	Secondary/Cumulative/ Synergistic effects			
Qualitative summary:								
Quantitative summary:								
Assessment of significance (weighting of LTP impact in IIA objective in relation to other objectives								
Positive impact		Neutral impact		Negative impact		Impact depends on implementation		

4.4.4 An Effects Prediction Matrix was prepared for each IIA objective, which allowed the consideration of each programme area within the Preferred LTP3 Option. The potential significance of any of the impacts arising from implementation was identified in order to formulate mitigation measures that will be needed to reduce the significance of any predicted adverse effects. A summary of the overall significant effects is provided in Table 10.1. The full results of this exercise are presented in Appendix 5.

4.4.5 This second workshop was supplemented by a number of individual meetings with key experts to ensure the tables were completed rigorously. The outcomes and implications of this process are described in Section 10 along with the proposed mitigation measures to reduce any of the adverse effects that may have been identified through the assessment process.

4.5 Dealing with uncertainty

4.5.1 Decision-makers need information that is both correct and precise. However, while the aim should be to be *correct*, ultimate *precision* will almost never be possible and may well not matter. For example decision-makers might decide that not letting one indicator go past a minimum tolerable value (e.g. air pollution), or not moving in the wrong direction at all (e.g. access for disadvantaged groups) should be an absolute constraint. Examples of decisions where certainty is not necessary in the IIA are:

- An impact is clearly significant and a known level of mitigation measures is needed;
- A topic is clearly insignificant compared to other topics;
- The baseline status is clearly positive and the plan would clearly maintain or improve this status under all reasonable scenarios;
- One alternative is clearly better or worse than another alternative under all reasonable scenarios, or;
- The significance of the impact would be the same whether mitigation measures are in place or not.

4.5.2 The IIA should be *fit for purpose*: as precise as necessary and feasible to inform the relevant decision. Throughout the IIA process, the officers have applied techniques to reduce and communicate uncertainty by seeking correctness and precision. These techniques have included:

- Early participation of statutory consultees and key partners;
- Interdisciplinary working;
- Use of SEA, EqIA and HIA guidance, checklists etc., to ensure that all likely impacts are considered;
- Collection/analysis of improved baseline data ;
- Use of existing forecasting (e.g. Nottingham HMA transport model)
- IIA carried out by people who know about the area, the plan, sustainability, and impact prediction;
- Use of the precautionary principle;
- Consideration of cumulative, indirect and long-term impacts;
- Reference to other examples of integrated impact assessment for strategic transport plans
- Identification of key areas of uncertainty in the IIA;
- Agreement on assumptions used in the IIA;
- Scenarios to help identify the range/scale of possible impacts, including modelling.

4.6 Cumulative effects assessment

4.6.1 The SEA Directive requires an analysis of "*the likely significant effects on the environment…These effects should include secondary, cumulative, synergistic… effects*". The aim of cumulative effects assessment is to identify, describe and evaluate cumulative (including synergistic) effects, and enable them to be avoided, minimised or enhanced as appropriate. The focus of cumulative effects assessment is on receptors.

4.6.2 Cumulative effects on a given receptor are rarely aligned with political or administrative boundaries. Their assessment must use the relevant receptor boundaries: Ecological boundaries for natural systems; Socio-cultural boundaries for human communities. Cumulative effects have been considered throughout the plan-making and IIA process by officers.

4.6.3 Particular techniques that have been used in this IIA to identify and predict cumulative effects and propose mitigation measures include:

- Workshops involving sustainability, health and transport planning experts;
- Matrices to capture and describe the interactions between actions and receptors;

These approaches have been informed by existing data and modelling where this is available e.g for local air quality, noise and traffic generation.

4.7 Timetable for IIA of LTP3

The timetable that the authority followed for the completion of the IIA is set out below:

	Step	Timescale
1	Scope of SEA prepared; Environmental, health and equalities aspects to be considered; IIA objectives defined; LTP strategic options agreed.	January - May 2010
2	Scoping Workshop with officers from Nottingham City Council and key partners.	24th February 2010

4 Approach

3	Scoping report issued for consultation.	21st June 2010
4	Comments back on Scoping report.	23rd July 2010
5	Detailed LTP policy appraisal.	July – August 2010
6	IIA draft report published, and used for 12 week public consultation alongside the draft LTP Strategy and Implementation Plan.	November 2010 - February 2011
7	LTP Strategy and Implementation Plan finalised in response to consultation.	February 2011
8	Environmental, health and equalities impacts of revised LTP reassessed.	March 2011
9	LTP Strategy and Implementation Plan approved by LTP Project Board; Portfolio Holder; executive Board and Full Council.	February – March 2011
10	Final LTP Strategy and Implementation Plan and IIA Report published.	Plan adopted 1st April 2011

4.7.1 The publication of the draft Integrated Impact Assessment Report marked the start of a second round of wider consultation and participation. Over the period 29th November 2010 to 24th January 2011 we asked for people's views on the draft Local Transport Plan and the Draft IIA Report. All the comments received were considered in the preparation of the final Local Transport Plan and this Final IIA Report.

4.7.2 The adopted LTP Strategy 2011 - 2026 and the LTP Implementation Plan 2011 - 2014 along with an Environmental Statement were published in April 2011 at www.nottinghamcity.gov.uk/ltp3. This IIA Report provides the background information and evidence which sit behind the Environmental Statement.

Relationship with Other Relevant Plans, Programmes, and Environmental Objectives 5

5 Relationship with Other Relevant Plans, Programmes, and Environmental Objectives

5.1 Introduction

5.1.1 The Directive states that '*the Environmental Report should provide information on the plan's 'relationship with other relevant plans and programmes' and the environmental objectives established at a [European] Community level, which are relevant to the plan….and the objectives and any environmental considerations have been taken into account during the preparation*'"(Annex 1 (a), (e)).

5.2 Policy and strategy review

5.2.1 A review has been carried out of the main international, national, regional and local legislation and policy documents with environmental, health or equality objectives, and other relevant international, national, regional, sub-regional and local plans, programmes and polices which will influence LTP3.

5.2.2 A wide range of documents has been considered under the following SEA themes: Air Quality; Biodiversity; Climate/CO2; Cultural Heritage; Human Health; Landscape & Townscape; Material Assets; Population & Economy; Soil; Waste; and Water. To address the requirements for an Equality Impact Assessment (EqIA) policies and strategies were also considered relevant to the theme of Equality including Access to Opportunity. To address the requirements for a Health Impact Assessment the health documents are separated out into their own theme. In addition some key transport policy and strategy documents were also considered. Transport and planning policies and strategies have also been considered.

5.2.3 The documents are summarised in Appendix 1. Each document appears under the theme that is most relevant and is listed by geographical coverage (European, National; Sub-national; Local) and then alphabetically. Due to the cross-cutting nature of many policies and strategies a table has been provided at the start of each theme section listing all the documents relevant to that theme and showing the links between themes. The documents are summarised under the primary theme for each only to avoid duplication.

5.2.4 The document review has been used to draw out the key strategy objectives, legislative requirements and implications for the development of LTP3 and for the Integrated Impact Assessment. These implications are summarised in Section 5.3 by theme.

5.3 Implications for LTP3 and the IIA assessment framework

Table 5.1 Climate and CO_2

Implications for LTP3	Implications for Integrated Impact Assessment
The LTP should respond to the Low Carbon Transport challenge by: • Reducing the need to travel by embedding integration of planning and transport within the Growth and regeneration agendas and working with partners to explore the use of ICT and other technology to deliver services differently; • Providing and promoting a range of accessible and affordable sustainable travel options; • Pursuing opportunities to support low carbon fuel options for public transport and public sector fleet vehicles; • Building on our local strengths: local electricity generation through the district heating system; proposed expansion of tram network through NET Phase 2 and proposal for WPL to fund tram and link bus improvements; • Establishing a network of electric charging points for electric vehicles.	The IIA Framework will consider the extent to which LTP3 maximises opportunities to • Reduce the need to travel; • Promote sustainable travel options, and • Support low carbon fuel initiatives.

Table 5.2 Material Assets including Minerals, Waste, Energy and Fossil Fuels

Implications for LTP3	Implications for Integrated Impact Assessment

• The LTP should seek to reduce the use of **fossil fuels** by reducing drive-alone journeys through the provision and promotion of sustainable alternatives (public transport, cycling and walking).
• The LTP should support appropriate selection of **materials** including:
  ◦ Obtaining street products from local suppliers to support local employment and reduce the environmental impact of transporting;
  ◦ Promoting the use of street furniture and other products which use recycled materials;
  ◦ Reusing salvaged materials reduces expenditure on new materials and the environmental impact of disposal and sourcing of new materials;
  ◦ Minimising use of primary aggregates and promoting the use of recycled aggregates wherever possible;
  ◦ Selecting materials on the basis of whole life costing to reduce the future maintenance burden.
• 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.
• The LTP should seek to maximise development on brownfield land in accordance with national planning policy by providing appropriate transport links.
	The IIA will assess the extent to which the LTP3 strategic options:
	• Reduce the use of fossil fuels by reducing drive alone journeys and supporting use of bio-fuel sources;
	• Support sustainable sourcing of products and construction materials including using local supply chains, recycled products and reclaimed materials;
	• Minimise waste from construction;
	• Support opportunities to develop brownfield sites.

Table 5.3 Water

Implications for LTP3	Implications for Integrated Impact Assessment

• The LTP should increase the use of Sustainable Urban Drainage Systems to ensure that run off from existing and new roads and paths is managed to reduce flooding risks and protect water courses from pollution and improve the quality of surface water run-off;
• The LTP should ensure that resilience to cope with extreme weather conditions i.e. flood and drought is a factor in the design of new transport infrastructure by:
  • Steering development away from areas of highest risk; and
  • Use of appropriate choices of materials and construction techniques.
• The LTP should seek opportunities to improve access to and recreational use of river corridors;
• The LTP should explore opportunities to increase freight transported by the River Trent and inland waterways.
	The IIA will assess the extent to which the LTP3 strategic options:
	• Manage and improve water quality;
	• Reducing the impact of flooding;
	• Resilience to extreme weather conditions i.e. flood and drought;
	• Improve access to and recreational use of river corridors;
	• Increase levels of waterborne freight.
	The IIA Framework will need to balance the conflicting demands to protect species and habitats against the demand to improve access to river corridors and to increase levels of waterborne freight.

Table 5.4 Natural Environment including Biodiversity, Landscape and Soil

Implications for LTP3	Implications for Integrated Impact Assessment
• The LTP should seek to avoid any damage to sites and species either internationally protected or of national importance; • The LTP should seek to avoid damage to locally designated sites and to the wider biodiversity resource. Where damage is unavoidable the LTP should implement appropriate mitigation to offset the damage; • The LTP should seek opportunities to enhance the biodiversity resource, particularly those species and habitats identified in the Nottinghamshire Biodiversity Action Plan; • There are no National Parks or Areas of Outstanding Natural Beauty in Nottingham. The LTP should however seek to minimise damage to Mature Landscape Areas; • The LTP should exploit opportunities to enhance landscape character and quality; • The LTP should not compromise the open character of green belt - NET Phase 2 meets the conditions set out in PPG2 and PPG13 regarding provision of Park & Ride sites within the green belt; • The LTP should seek to improve access to green and open spaces through the provision safe, affordable and suitable transport options.	The IIA Framework will assess the extent to which the strategic options for LTP3: • Take account of protected sites, habitats and species within the City that are covered under National and European legislation; • Seek to ensure that strategic transport options enhance habitats and conservation where possible; • Provide opportunities to protect and enhance landscape character and quality including protecting the green belt; • Support access to and enjoyment of the green and open spaces. N.B. Site specific issues will need to be considered through the EIAs for major transport schemes. The IIA Framework will need to balance the conflicting demands to protect species and habitats against the demand to improve access to green and open space including the creation of walking and cycling corridors.

Table 5.5

Implications for LTP3	Implications for Integrated Impact Assessment
The transport authority will need to consider: • Whether a Habitats Regulation Assessment is required should the LTP have a significant effect on any European protected sites within Nottingham City i.e. Special Areas of Conservation including candidate SACs; Special Protection Areas including proposed SPAs; and listed Ramsar sites; • Whether protected species are likely to be affected such as SSSis and LNRs and ensure the necessary consents and mitigation; • Where protected species are likely to be affected by projects under the LTP whether necessary surveying and potential licencing and mitigation are required; • The extent to which the Rights of Way Improvement Plan (ROWIP) can be integrated within LTP3.	

Table 5.6 Urban Environment including Cultural Heritage and Townscape

Implications for LTP3	Implications for Integrated Impact Assessment

• In all urban areas any damage caused by transport measures should be minimised by good design, and mitigated wherever possible;
• Measures proposed within the LTP should specifically avoid damage to:
  • Internationally and nationally designated sites and monuments, including their settings;
  • Regionally and locally designated sites and monuments, including their settings;
  • The character of Conservation Areas;
  • Other sites of cultural heritage interest, as far as possible.
• Where damage is inevitable, the LTP should seek to secure appropriate mitigation to offset the damage. This should include archaeological investigation and recording where appropriate.
 	
N.B. To properly assess the impacts of transport schemes on the historic environment site-specific issues will need to be considered through transport appraisals for major transport schemes.
 	
The LTP should seek to improve access to cultural activities and destinations for all sectors of the community through the provision safe, affordable and suitable transport options.
	The IIA Framework will assess the extent to which the strategic options for LTP3:
	
	• Provide opportunities to enhance the urban environment with particular regard to preserving the character of historic and designated conservation areas;
	• Create opportunities to enhance buildings, sites, areas and features of historic, archaeological and architectural interest by:
	  • Promoting less damaging forms of transport;
	  • Seeking integration with planning policies to reduce the need to travel;
	  • Seeking imaginative solutions to transport problems;
	  • Promoting good design which recognises local and regional distinctiveness;
	  • Encouraging innovative transport management strategies.
	• Improve access to cultural activities and destinations for all sectors of the community.
	
	N.B. The IIA can only consider the impact of the LTP3 options at a strategic level. To fully assess the impacts of transport schemes on the historic environment site-specific issues will need to be considered through transport appraisals for major transport schemes.

Table 5.7 Population and economy

Implications for LTP3	Implications for Integrated Impact Assessment

The LTP should seek to:
• Support the growth and regeneration agendas by:
  • Embedding accessibility planning into new developments to ensure that the location of development makes efficient use of existing physical infrastructure to ensure access to jobs, training, education, health, food stores and leisure facilities;
  • Promoting sustainable travel patterns in urban extensions and other major developments, in particular public transport, and walking and cycling.
• Support the local and regional economy by;
  • Improving accessibility to jobs, recreation and services by increasing the use of public transport, cycling and walking, and reducing traffic growth and congestion;
  • Providing the physical conditions for a modern economic structure through smart use of technology for transport and communications;
  • Improving connectivity to Derby, Leicester and the wider region for personal and business travel;
  • Explore opportunities to increase the amount transported by rail, water and pipeline.
	The IIA will assess the extent to which the LTP3 strategic options support the growth and regeneration agendas and the local and regional economy by:
	• Improving access to jobs and services using sustainable travel options (public transport, and walking and cycling);
	• Supporting the use of smart technology for transport and communications;
	• Improving regional connectivity for personal and business travel;
	• Providing sustainable infrastructure network for freight.

Table 5.8 Equality and Inclusion including Accessibility and Crime

Implications for LTP3	Implications for Integrated Impact Assessment
The LTP3 should meet the DaSTS goal of Improving Opportunity for All by: • Improving access to jobs and key services for those without access to a car; • Addressing barriers to accessibility in terms of geographical accessibility, physical accessibility, affordability, safety and security and provision of information; • Considering the specific travel needs of different communities in Nottingham including Ethnic communities; Disabled people; Women; Older people; Young people, LGBG community and Faith communities • Identifying which transport schemes in the programme require an EqIA: An EqIA has already been completed for NET Phase 2; EqIAs are programmed for the Ring Road Major and Nottingham Station Hub.	The IIA Framework will assess the extent to which the LTP3 strategic options: • Improve access to jobs and key services for those without access to car; • Address geographical travel barriers for different sectors of the community; • Address physical travel barriers for different sectors of the community; • Address cost of travel barriers for different sectors of the community; • Address safety of travel barriers including fear of crime for different sectors of the community; • Provide appropriate information about travel options in formats suitable for different sectors of the community; • Meet the specific travel needs of Ethnic communities; Disabled people; Women; Older people; Young people, the LGBG community and Faith communities.

Table 5.9 Human Health including Safety, Air Quality and Noise

Implications for LTP3	Implications for Integrated Impact Assessment
The LTP should maximise opportunities to: • Increase physical activity by prioritising low-carbon, local transport and improving the supply and integration of public transport; • Improve road safety by reducing traffic speed and danger from traffic, especially in urban areas, • Improve air quality by reducing the need to travel in general, and levels of private motorised road traffic in particular. • Increase the proportion of journeys made by walking, cycling and on public transport; • Improve access to activities and destinations that support active lifestyles; • Improve access to healthcare facilities; • Reduce transport-related noise. The transport authority should: • Explore opportunities for further joint working with health partners on common goals e.g. promoting active travel to increase physical activity; reducing avoidable injury from road traffic; improving access to healthcare; • Work in partnership with planning to improve access to healthy affordable food; • Consider health impact of all major transport schemes; • Develop Noise Action Plans to address noise problem areas.	The IIA Framework will assess the extent to which the LTP3 strategic options will: • Increase the proportion of journeys made by walking, cycling and on public transport; • Increase opportunities for physical activity by prioritising low-carbon active travel options; • Improve road safety by reducing traffic speed and danger from traffic; • Reduce the need to travel in general, and levels of private motorised road traffic in particular; • Improve air quality; • Improve access to services, facilities and destinations that support healthy lifestyles eg health food outlets, sports and leisure destinations; healthcare facilities; • Reduce transport related noise.

Implications for LTP3	Implications for Integrated Impact Assessment

• LTP3 will continue to incorporate transport measures to deliver on the AQMA targets to address air quality problems linked to vehicle emissions, in particular for NOx and PM10 particulates;
• *'A Breath of Fresh Air for Nottinghamshire*' provides recommendations for actions to improve air quality that the councils and their partners will, should and are encouraged to support including an emphasis on the role of travel plans to encourage sustainable travel choices:
  • **Actions the Councils will support**: Use air quality targets in LTPs; The reporting of smoky diesels (heavy goods vehicles) to the Vehicle Inspectorate; Parking restrictions where appropriate; Restricted vehicular access to towns and city centres where appropriate; Ensure that wherever possible all new developments are accessible by alternative means of transport, minimising the need to travel by supporting mixed development schemes;
  • **Actions the Councils should support**: Encouraging larger employers in developing travel plans or car sharing schemes especially through negotiation involving new developments; Use of park and ride schemes to secure improvements in air quality; Integrated transport systems; Cycle and pedestrian routes; Use of green fuels; Bus quality partnerships; Business initiatives to replace their existing fleet vehicles with greener alternatives when they need replacing; Replace Council vehicles with more environmentally friendly vehicles when opportunity arises;
  • **Actions the Council is encouraged to take**: Review how staff travel to work and put in place a travel plan or car sharing scheme where appropriate; Review their car leasing and loan schemes.
	The IIA framework will consider the extent to which the LTP3 strategic options will improve air quality in the Air Quality Management Areas and maintain, and whenever possible improve, air quality across Nottingham City and the conurbation as a whole.
	
	Improving air quality will be achieved by:
	
	• Enabling modal shift from car travel to public transport, cycling and walking;
	• Reducing the need to travel through the promotion of sustainable development locations;
	• Reducing the use of fossil fuels for transport;
	• Traffic management measures to limit traffic volumes in high emission zones.
	
	Reducing transport related noise will be achieved by:
	
	• Encouraging the use of lower noise vehicles;
	• Greater use of low noise road surfaces;
	• Traffic management measures.

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6 Baseline Data

6.1 Approach

6.1.1 The SEA Directive requires that the SEA considers "*the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan*" (SEA Directive, Annex 1b). This section therefore describes the baseline for each IIA topic (drawing upon the baseline data tables in Appendix 2) and their objectives and also provides an indication of future trends where possible.

6.1.2 The baseline data will provide a basis for forecasting and monitoring environmental, health and equality impacts and helps in the identification of environmental health and equality issues. Government guidance set out in TAG Unit 2.11 states that the development of objectives and indicators and the collection of baseline data should inform each other. The guidance also highlights that data collection is not a one-off process and that further data collection may be needed at later stages of the SEA. It should be pointed out however that data collection could be an indefinite process and so a limit should be set (as stated in the guidance) that is reasonable. The level of baseline data therefore reflects the level of information required to assess LTP3 against the IIA objectives.

6.1.3 Appendix 2 contains the baseline data collated to date, which has been drawn from the 2001 Census, the Nottingham City Local Development Framework Core Strategy Sustainability Appraisal and the 2008 Delivery Report for the second Greater Nottingham Local Transport Plan 2006/7 – 2010/11. The key information and data is summarised in this section for each of the IIA themes to give an overview of environment, health and equalities issues for the LTP3 area and how this compares regionally and the nationally.

6.2 General Characteristics

6.2.1 Nottingham City lies at the heart of the Greater Nottingham sub-regional housing market area (comprising Broxtowe, Erewash, Gedling, Nottingham City, Rushcliffe and the Hucknall part of Ashfield). It is located centrally within England in the East Midlands region. A snapshot of the key characteristics is given in Table 6.1.

Table 6.1 Key Characteristics

Social

- Population – 300,800 (mid year estimate 2009).
- Housing Market Area of 778,600 population.
- Family age groups population falling.
- Net outward internal migration over the past 10 years.
- Ethnically diverse population
- High level of deprivation (13th most deprived LA area in England).10 of the City's 20 wards are in the most deprived 10% in England.
- Life expectancy is lower than regional or national averages with particularly low rates in the deprived areas of the city.
- General level of health is below regional / national averages.

- High proportion of children eligible for free school meals and high number of households in receipt of council tax / housing benefits.
- 45% of households without a car but significant investments in public transport resulting in high degree of geographical accessibility to education, work, health, shopping by public transport.
- Education is improving but attainment rates are still below national targets.
- Two major universities with more than 45,000 full-time university students.
- Crime levels have fallen by 28% since 2003/04, but are significantly higher than regional/national averages.

Economic

- Nottingham is 6th highest per capita GVA in England outside of London.
- Designation as a Science City.
- Employment rate is low and issues of access of local people to City jobs.
- Following increases across the country the recent decrease in the registered unemployed rate is lower than the decrease at the national and regional levels.
- High percentage of development on previously developed land.
- Dwellings built at high density.
- Limited supply of allocated employment land.
- Significant redevelopment potential on the edge of the City Centre regeneration zones.
- City Centre ranked 6th in CACI's national retail rankings for 2010.

Environmental

- Flood risk affects 12% of the City's area and 5,500 dwellings in the City are subject to a 1 in 100 chance of flooding
- Approximately 10,000 households are at risk of flooding from surface water.
- Nottingham has 655 green and open spaces, 72 Sites of Importance for Nature Conservations (SINCs), 9 designated Local Nature Reserves and 4 Sites of Special Scientific Interest (SSSIs)
- Household waste recycling rate is low but heat from waste percentage is well above average, meaning less than average goes to landfill.
- Domestic electric and gas consumption is lower than average in Nottingham and commercial usage is lower than regional average.
- CO_2 emissions per capita are close to regional and national averages.
- Two designated Air Quality Management Areas
- Transport noise affecting approximately 3,000 households

6.2.2 Greater Nottingham is amongst the ten largest conurbations in the Country with 778,600 people living in the Housing Market Area which extends to Erewash. The built-up area of Nottingham, known as the Primary Urban Area or PUA (the districts of Nottingham City, Broxtowe, Gedling and Erewash) has a population of about 635,900 of which 300,800 (ONS mid year estimate 2009) live within the City boundary. The Travel-To-Work Area has

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a population of 786,600. The conurbation is surrounded by designated Green Belt which is drawn very tightly to the urban area, offering limited opportunities for development unless its boundaries are reviewed.

6.2.3 Within the City area Bulwell and Clifton play an important role as local centres providing a range of services. In the wider conurbation local services are provided by the suburban centres of Arnold, Beeston, Carlton, Long Eaton and West Bridgford and the two Sub Regional Centres of Hucknall and Ilkeston are important towns with their own identity and economic roles.

6.2.4 The City is recognised as having a comprehensive, efficient, accessible and integrated transport network. Significant resources have been invested on local transport improvements across the City over the last decade which includes the development of the Nottingham Express Transit tram network.

6.2.5 Being centrally located Nottingham has good connectivity to most of the country. There are direct rail connections from Nottingham to London, Manchester, Birmingham, Sheffield, Leeds and Liverpool but currently no direct rail services to the south west, north east or Scotland. Compared to some other routes however journeys times are uncompetitive and there is a lack of capacity on some services.

6.2.6 Also within easy reach of Nottingham is the East Midlands Parkway railway station, a £25 million investment in the region, located just off the A453, near junction 24 of the M1. The station is predominantly served by the East Midlands Trains' Nottingham to London fast train service and provides services to the capital in around 1 hour 35 minutes. The Parkway also provides a park and ride facility for Nottingham, Derby and Leicester.

6.2.7 Nottingham is connected to the M1 and the national motorway network via the A453 to junction 24, the A52 to junction 25 and the A610 to junction 26. The A52 provides a trunk road connection to the east including to the A46 which itself connects from the M1 north of Leicester to the A1 at Newark. Orbital movements are less well accommodated, there being only a partial Ring Road (A52 and A6514).

6.2.8 Nottingham residents and businesses have also benefited from the opening of the International Rail Terminal at St Pancras and services to mainland Europe via High Speed One and the Channel Tunnel. Nottingham East Midlands Airport also provides access to a range of European destinations.

6.3 Population and Economy

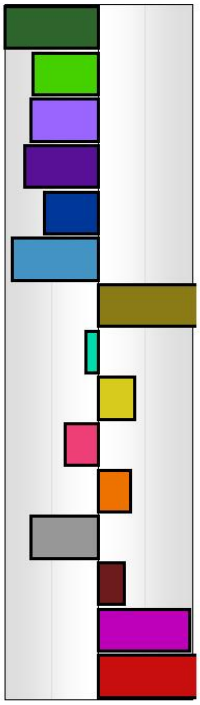
6.3.1 Nottingham is a city of contrasts: It has an attractive and successful City Centre with nationally acclaimed shopping facilities and a vibrant and growing leisure and cultural life attracting around 12 million visitors a year who spend over £460 million. Nottingham is a designated Core City, recognised as a city of national importance, and an important driver of the East Midlands regional economy. It is also a designated Science City, in recognition of the vital importance of the two hospitals and two universities to its economy, particularly in terms of offering knowledge intensive jobs and spin-out opportunities. There is a strong service sector presence including education, health, public administration and business services. However Nottingham City also has some of the worst areas of deprivation and under achievement in the country.

6.3.2 The Index of Multiple Deprivation (2007) ranks Nottingham 13th out of the 354 local authority districts in England. The high level of deprivation affects an extensive part of the city, with 56 of the 176 Super Output Areas being within the 10% most deprived in the country, and 106 in the worst 20%. Sixty percent of residents live in the 20% most deprived areas of the country.

6.3.3 Mosaic © is a geo-demographic dataset which describes different groups within a population. This sophisticated tool includes extensive information on socio-economic and lifestyle factors. Figure 6.1 shows the 14 Mosaic groups living in Nottingham, with the population per group and their proportion.

Figure 6.1 Mosaic profile comparing households in Nottingham with households in England

Mosaic Public Sector Groups	Nottingham HH	%	England HH	%	Pen. %	Index
A Residents of isolated rural communities	0	0.00	844,195	3.83	0.00	0
B Residents of small and mid-sized towns with strong local roots	3,420	2.64	1,945,991	8.83	0.18	30
C Wealthy people living in the most sought after neighbourhoods	1,167	0.90	716,555	3.25	0.16	28
D Successful professionals living in suburban or semi-rural homes	2,265	1.75	1,818,146	8.25	0.12	21
E Middle income families living in moderate suburban semis	6,157	4.76	2,496,266	11.33	0.25	42
F Couples with young children in comfortable modern housing	579	0.45	1,203,473	5.46	0.05	8
G Young, well-educated city dwellers	28,318	21.88	2,072,342	9.40	1.37	233
H Couples and young singles in small modern starter homes	5,801	4.48	1,138,566	5.17	0.51	87
I Lower income workers in urban terraces in often diverse areas	15,129	11.69	1,855,287	8.42	0.82	139
J Owner occupiers in older-style housing in ex-industrial areas	6,555	5.06	1,727,307	7.84	0.38	65
K Residents with sufficient incomes in right-to-buy social housing	14,136	10.92	1,795,595	8.15	0.79	134
L Active elderly people living in pleasant retirement locations	1,613	1.25	999,008	4.53	0.16	27
M Elderly people reliant on state support	8,395	6.49	1,123,266	5.10	0.75	127
N Young people renting flats in high density social housing	13,359	10.32	1,153,966	5.24	1.16	197
O Families in low-rise social housing with high levels of benefit need	22,537	17.41	1,146,550	5.20	1.97	335
Total	**129,431**	**100**	**22,036,513**	**100**	**0.59**	**100**



Experian

6.3.4 Analysis of Mosaic data suggests that there are a number of dominant Mosaic Groups in Nottingham. Group G (Young, well-educated City dwellers) are the largest group, comprising over a fifth of City's households. Over half of the 28,000 households in this group are characterised as being student types – living in privately rented housing or purpose built university accommodation. This group also includes young professional singles and families as well as more transient singles.

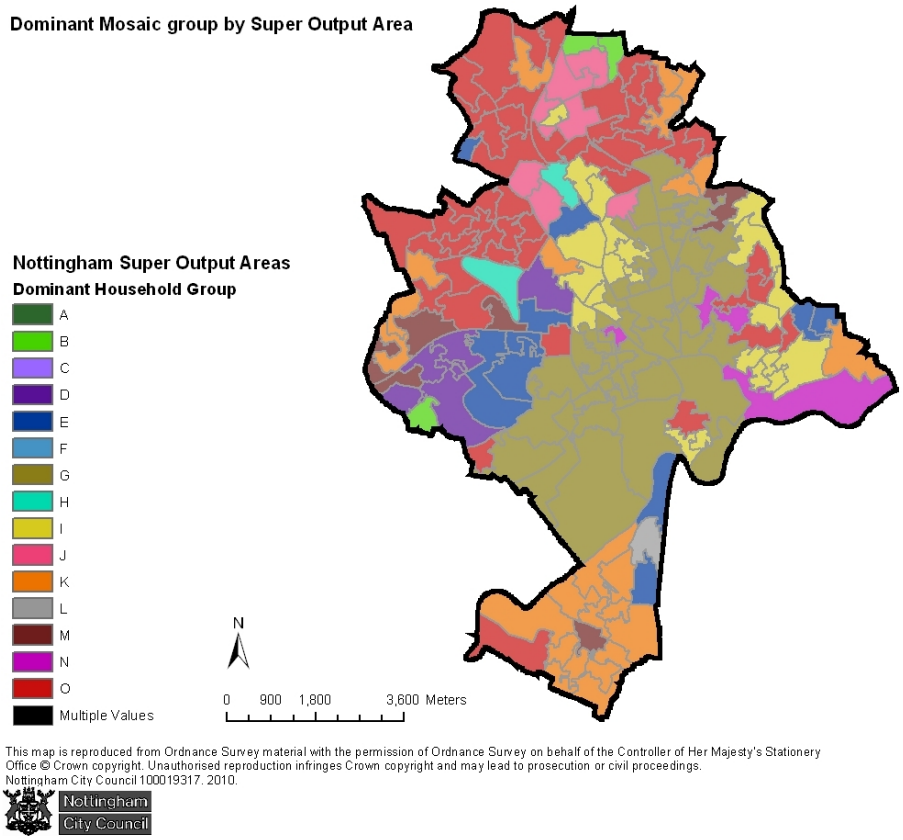
6.3.5 Other dominant Mosaic groups include the more disadvantaged and mostly young Group O (families in low-rise social housing with high levels of benefit need), comprising 17% of City households, with Group I (lower income workers in urban terraces in often diverse

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areas) making up a further 12%. Group K (residents with sufficient incomes in right-to-buy social housing) and group N (young people renting flats in high density social housing) are also seen in large numbers in Nottingham (some 11% and 10% of households).

6.3.6 Overall these five groups comprise over 70% of all households in the City. Figure 6.2 shows the distribution of Mosaic groups in Nottingham.

Figure 6.2 Distribution of Mosaic groups in Nottingham



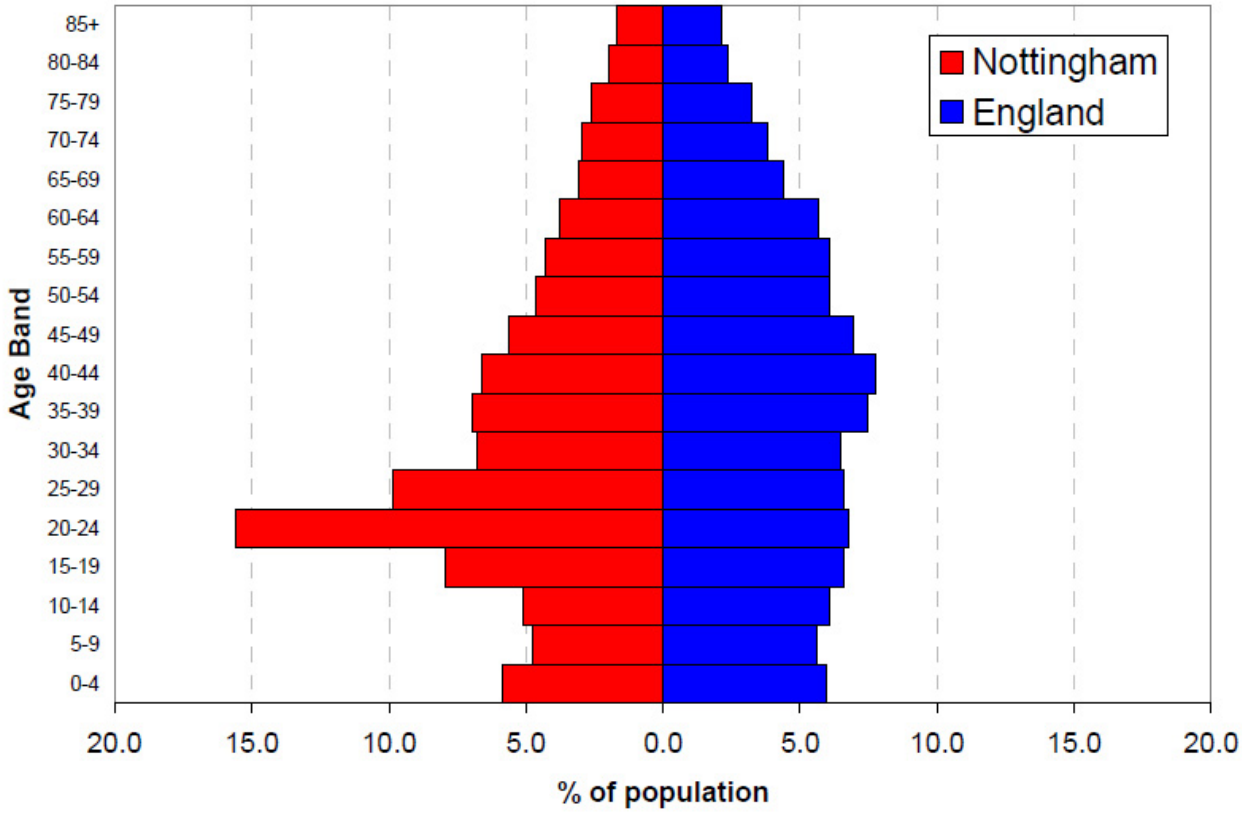
6.3.7 In 2009, Nottingham City's resident population was estimated to be 300,800. Nottingham's population may be larger than this census-based figure: in 2009, there were 312,217 people resident in the City registered with GP practices [(1)] – an additional 11,417 over and above the mid-year census estimate. Overall, there is a rising trend in the population, with a 31,900 increase since 2001 and a projected rise of 9,100 by 2014 and a further 8,200 by 2019. While the population increase remains significant, it seems to be slowing down.

6.3.8 The main reasons for the population increase are international migration (recently from Eastern Europe) and an increase in university students, supported by a big increase in house building. The number of births has risen considerably and is likely to continue to rise over the next five years. However, the proportion of children is lower than average, although much less so for under-fives. This may indicate that although birth rates are comparatively high, a considerable number of parents and children leave the City before starting school. The City therefore gains young adults due to migration while losing all other age groups.

1 2009 GP Register

6.3.9 The City has a very young population as shown in Figure 6.3, with a high proportion (30%) of people aged 18 to 29, due largely, but not entirely, to the presence of the two universities (Over 45,000 full time students attend Nottingham's two universities, of which more than 34,000 live within the City boundary so students account for approximately 1 in 8 of the population). The percentages in other age-groups are commensurately lower than average, with the proportion aged 40 to 69 being particularly low. The trends in the age structure of the city do not follow the average national trends. In the short to medium term, the city is unlikely to follow the national trend of increasing numbers of people over retirement age.

Figure 6.3 Age structure for Nottingham City



6.3.10 Educational attainment is improving with 67% of pupils at City secondary schools achieved 5 or more A* to C grades at GCSE in 2009, Nottingham's highest level of attainment to date.

6.3.11 Another major strength and a significant opportunity is that the City lies at the heart of a much larger urban area. It has undergone a transition with sectors that will leave the economy in a good position to bring future growth. The recent designation as a Science City is a good reflection of this. Big name companies have also demonstrated their commitment to the City; Experian has built its new European HQ on the ng2 edge-of-centre business

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park. Nottingham is also at the centre of the region's main economy - Greater Nottingham has approximately 15,700 VAT registered businesses, 299,700 jobs and around 25,500 residents in self-employment. [2]

6.3.12 Nearly 60% of the jobs (181,400) are within the Nottingham City boundary. A number of different research reports project growth in jobs, to be realised by developments such as Science City and the Eastside Regeneration Zone. [3]

6.3.13 Whilst unemployment has fallen and the number of jobs has risen, this has been managed without significant traffic growth. It has been contained to just 1.2% over the last five years, a far lower growth rate than previously and lower than comparable cities in the UK. Public transport use has grown against the national trend. Although both Greater Nottingham and Nottingham City have been affected by the recent economic downturn, latest figures for the period October 2009 to October 2010 show that unemployment has decreased by 8.3% in the City and 9.5% in Greater Nottingham.

6.3.14 Within the City boundary employment rates remain low, with some parts of society being disproportionately disadvantaged. The 2007 employment rate for the City was significantly lower than nationally. A high proportion of "workless" people are economically inactive, including sickness/disability related benefits and those for lone parents. These groups typically need the most help to gain employment, as, amongst other reasons, they tend to have low or outdated skills, low confidence and little recent work experience.

6.3.15 The City Council has designated three Regeneration Zones to drive city centre regeneration by allowing the city centre to expand, establishing new residential areas, and linking communities back into the city centre. The Southside Regeneration Zone is focused on the railway station, and allows for the city centre to expand to the south whilst improving linkages with The Meadows community. The Eastside Regeneration Zone will transform the eastern fringe of the city centre, provide new business and housing locations, and link St Anns and Sneinton with the city centre. The Waterside Regeneration Zone will provide high quality residential-led mixed use communities focussed on the river and the canal.

6.3.16 It is estimated that congestion costs the East Midlands regional economy over £935 million per annum in lost time with delays and negative impacts on economic productivity and these impacts are felt most strongly in the urban areas. Greater Nottingham is estimated to suffer direct economic costs of around £310 million per annum, with the local road network in Nottingham accounting for £160m of this cost with peak traffic delay identified as being particularly severe. The survey results of the 6Cs (Nottingham, Leicester, Derby and its surrounding Counties) Congestion Management Study for the morning peak hour (8am to 9am found that the areas worst affected by congestion are the radial routes running in and out of the three main cities of Nottingham, Leicester and Derby, and on city ring roads, where delays are at their most severe in the peak periods. In the case of Greater Nottingham, the analysis suggests a significant proportion of the delay cost is experienced by bus passengers. Local businesses identify increasing congestion as a significant threat to business competitiveness and growth.

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2 Sources: Small Business Service, 2007, 2008 Annual Business Inquiry, July 2008-June 2009 Annual Population Survey.

3 Source: 2008 Annual Business Inquiry.

6.3.17 Future trends indicate that the amount of road travel within the Three Cities sub-region is likely to increase significantly over the next 10 to 20 years without significant intervention. This is partly because of increasing car ownership per head of population (which is forecast by Government to continue to rise throughout the next 20 years), and partly because of plans for increasing economic activity and growth in population placing significant pressures on the transport system.

6.4 Climate and CO2

6.4.1 It is now widely accepted amongst the scientific community that if global emissions of greenhouse gases due to human activity continue to rise at today's levels, then average global temperatures could rise by 4°C by as early as 2060 and up to 6°C by the end of this century [(4)]. Alongside frequent and unpredictable extreme weather events, these temperature rises will bring severe and permanent changes to regional climates with impacts on global economies and socio-political instability; resulting in growing conflicts, public health related deaths and migration of peoples. It is important to note that early action could prevent some of the worst impacts of climate change.

6.4.2 To avoid the most dangerous impacts of climate change, we must limit the rise in temperature to no more than 2°C, [(5)] which means that global emissions must start falling before 2020 and then fall to at least 50% below 1990 levels by 2050.

6.4.3 In recognition of this, the UK has committed to cut its own greenhouse gas emissions by 34% from 1990 levels by 2020[(6)], and potentially by 42% if other countries play their part at the global climate negotiations. The UK will make an above average contribution within the EU, reflecting our relatively high income and by 2050 cut CO_2 emissions by 80%. This commitment has resulted in the Government setting detailed carbon budgets nationally and, effectively, for large organisations, through the Climate Change Act. [(7)]

6.4.4 Action to reduce CO_2 emissions at local level will also help to reduce fossil fuel reliance and enhance energy security, create new economic opportunities and bring wider environmental benefits.

6.4.5 However the levels of greenhouse gases already in the atmosphere are sufficient to guarantee some level of climate change and current data indicates that we are already locked in to around 40 years of unavoidable change due to the life cycle of carbon within the atmospshere[(8)].

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4 United Nations Environment Programme (UNEP) (2009). Climate Change Science Compendium. Available at: http://www.unep.org/compendium2009/

5 At the G8 summit held in L'Aquila, Italy, in July 2009, world leaders agreed that the increase in global average temperatures should not exceed 2°C over pre-industrial levels by 2020. http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=593&ArticleID=6245&l=en

6 Climate Change Act, 2008

7 Further details available at: http://www.hm-treasury.gov.uk/bud_bud09_carbon.htm

8 United Nations Environment Programme (UNEP) (2009). Climate Change Science Compendium. Available at: http://www.unep.org/compendium2009/

6 Baseline Data

6.4.6 UK Climate Impacts Change Programme (UKCIP)[9] and UKCIP09 science report: *The climate of the United Kingdom and recent trends*[10] provide data on recent observed climate trends for the UK:

- Average global temperature and sea level have risen since the late 19th century, and at an increased rate over the past few decades.
- Warming of the global climate system is unequivocal, with global average temperatures having risen by nearly 0.8 ºC since the late 19th century, and rising at about 0.2 ºC/decade over the past 25 years.
- It is very likely (>90% probability, Intergovernmental Panel on Climate Change) that man-made greenhouse gas emissions caused most of the observed temperature rise since the mid 20th century.
- Average UK temperature has risen since the mid 20th century, as have average sea level and sea surface temperature around the UK coast. Over the same time period, trends in precipitation and storminess are harder to identify.
- Central England Temperature has risen by about a degree Celsius since the 1970s, with 2006 being the warmest on record. It is likely (>66% probability, IPCC) that there has been a significant influence from human activity on the recent warming.
- Annual mean precipitation over England and Wales has not changed significantly since records began in 1766. Seasonal rainfall is highly variable, but appears to have decreased in summer and increased in winter, although with little change in the latter over the last 50 years.
- All regions of the UK have experienced an increase over the past 45 years in the contribution to winter rainfall from heavy precipitation events; in summer all regions except NE England and N Scotland show decreases.
- Severe windstorms around the UK have become more frequent in the past few decades, though not above that seen in the 1920s.
- Average temperature across all regions of the UK has risen since the mid 20th century. Over the same time period, trends in precipitation are harder to identify.
- All regions of the UK have experienced an increase in average temperatures between 1961 and 2006 annually and for all seasons. Increases in annual average temperature are typically between 1.0 and 1.7 °C, tending to be largest in the south and east of England and smallest in Scotland.

6.4.7 UKCIP also provides data on regional emissions scenarios. The predictions have been made using a computer model based on natural variation and human influence. The main human influence is the emission of greenhouse gases. How much our climate will

9 http://www.ukcip.org.uk/index.php?option=com.contents&task=view&id=353&Itemid=408
10 http://ukclimateprojections.defra.gov.uk/content/view/512/9/

change depends on net global greenhouse gas emissions. The UKCIP model was used to predict changes in climate based on two different scenarios; one using high emissions of greenhouse gases and another using low emissions. N.B. Due to the rapid industrialisation of China and India we are already operating above the high emissions model.

6.4.8 The regional emissions scenarios shown in Figures 6.4 and 6.5 and Table 6.2 predict that the East Midlands will continue to get warmer, wetter and windier, with more storms and flooding in the winter and more droughts in the summer. This could have some very severe consequences for the city of Nottingham e.g. increased temperatures, evaporation and changing rainfall patterns would mean less water available from the River Trent and Derwent valley reservoir system, exacerbated by an increased likelihood of summer droughts and higher water demand for irrigation, whilst in winter there will be an increase in rainfall leading to increased flooding risks.

6.4.9 A particular challenge is the need to move to a low carbon economy without unacceptable impacts on the natural environment, which will require a significantly more efficient use of energy and a substantial investment in clean energy technologies. Nottingham has been very successful over the last two LTP periods in increasing the capacity and use of public transport, cycling, tram and foot traffic over personal vehicle use as highlighted in sections 6.3.11 and 6.3.12. In 2006 transport represented 21% of the city's total energy consumption. Per capita energy use for transport across the city has fallen by 3.2% from 2005 to 2007. **(11)**

6.4.10 Whilst vehicles can be expected to get more efficient in the future, the impact of technological advances may be countered by increasing vehicle use. However Nottingham is a city with a constrained highway network. The Government is currently funding a number of programmes to promote the uptake of electric vehicles. However reducing carbon dioxide and other greenhouse emissions from transport will also require reducing the need to travel through integrated spatial planning and provision of high quality alternatives.

Figure 6.4

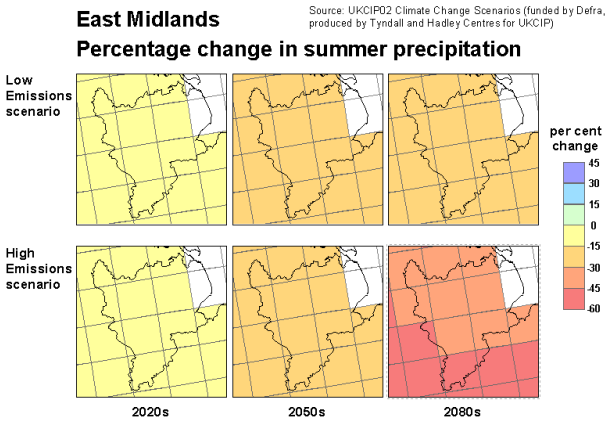
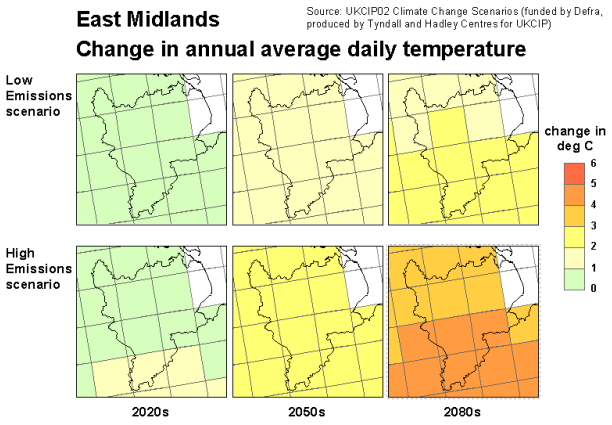


Figure 6.5



11 Nottingham Energy Partnership, 2009

Table 6.2 UKCIP emissions scenarios for the East Midlands region for the period 2010 - 2039

	UKCP Emissions scenarios for the East Midlands region for the period 2010 – 2039		
	The wider range is defined as the range from the lowest to highest value of change for all emissions scenarios and all three (10, 50, and 90%) probability levels for each 30-year time period.		
Emissions scenario	**Low**	**Medium**	**High**
The central estimate of increase in **wintermean temperature**	**1.3ºC**; it is very unlikely to be less than 0.5ºC and is very unlikely to be more than 2.1ºC. A wider range of uncertainty is from 0.5ºC to 2.2ºC.	**1.3ºC**; it is very unlikely to be less than 0.6ºC and is very unlikely to be more than 2.1ºC. A wider range of uncertainty is from 0.5ºC to 2.2ºC.	**1.3ºC**; it is very unlikely to be less than 0.5ºC and is very unlikely to be more than 2.2ºC. A wider range of uncertainty is from 0.5ºC to 2.2ºC.
The central estimate of increase in **summer mean temperature**	**1.5ºC**; it is very unlikely to be less than 0.6ºC and is very unlikely to be more than 2.5ºC. A wider range of uncertainty is from 0.4ºC to 2.5ºC.	**1.4ºC**; it is very unlikely to be less than 0.5ºC and is very unlikely to be more than 2.5ºC. A wider range of uncertainty is from 0.4ºC to 2.5ºC.	**1.4ºC**; it is very unlikely to be less than 0.4ºC and is very unlikely to be more than 2.4ºC. A wider range of uncertainty is from 0.4ºC to 2.5ºC.
The central estimate of increase in **summer mean daily maximum temperature**	**2ºC**; it is very unlikely to be less than 0.7ºC and is very unlikely to be more than 3.4ºC. A wider range of uncertainty is from 0.5ºC to 3.4ºC.	**1.9ºC**; it is very unlikely to be less than 0.5ºC and is very unlikely to be more than 3.4ºC. A wider range of uncertainty is from 0.5ºC to 3.4ºC.	**1.8ºC**; it is very unlikely to be less than 0.5ºC and is very unlikely to be more than 3.4ºC. A wider range of uncertainty is from 0.5ºC to 3.4ºC.
The central estimate of increase in **summer mean daily minimum temperature**	**1.6ºC**; it is very unlikely to be less than 0.7ºC and is very unlikely to be more than 2.7ºC. A wider range of uncertainty is from 0.6ºC to 2.7ºC.	**1.5ºC**; it is very unlikely to be less than 0.6ºC and is very unlikely to be more than 2.6ºC. A wider range of uncertainty is from 0.6ºC to 2.7ºC.	**1.5ºC**; it is very unlikely to be less than 0.6ºC and is very unlikely to be more than 2.7ºC. A wider range of uncertainty is from 0.5ºC to 2.7ºC.
The central estimate of change in **annual mean precipitation**	**1%;** it is very unlikely to be less than –4% and is very unlikely to be more than 6%. A wider range of uncertainty is from –5% to 6%.	**0%;** it is very unlikely to be less than –5% and is very unlikely to be more than 6%. A wider range of uncertainty is from –5% to 6%.	**0%;** it is very unlikely to be less than –5% and is very unlikely to be more than 6%. A wider range of uncertainty is from –5% to 6%.
The central estimate of change in **winter mean precipitation**	**6%;** it is very unlikely to be less than –3% and is very unlikely to be more than 16%. A wider range of uncertainty is from –3% to 16%.	**5%;** it is very unlikely to be less than –3% and is very unlikely to be more than 16%. A wider range of uncertainty is from –3% to 16%.	**6%;** it is very unlikely to be less than –2% and is very unlikely to be more than 16%. A wider range of uncertainty is from –3% to 16%.
The central estimate of change in **summer mean precipitation**	**–6%;** it is very unlikely to be less than –21% and is very unlikely to be more than 11%. A wider range of uncertainty is from –22% to 15%.	**–6%;** it is very unlikely to be less than –22% and is very unlikely to be more than 12%. A wider range of uncertainty is from –22% to 15%.	**–4%;** it is very unlikely to be less than –20% and is very unlikely to be more than 15%. A wider range of uncertainty is from –22% to 15%.

© Crown Copyright 2009. The UK Climate Projections (UKCP09) have been made available by the Department for Environment, Food and Rural Affairs (Defra) and the Department of Climate Change (DECC) under licence from the Met Office, UK Climate Impacts Programme, British Atmospheric Data Centre, Newcastle University, University of East Anglia, Environment Agency, Tyndall Centre and Proudman Oceanographic Laboratory. These organisations give no warranties, express or implied, as to the accuracy of the UKCP09 and do not accept any liability for loss or damage, which may arise from reliance upon the UKCP09 and any use of the UKCP09 is undertaken entirely at the users risk.

6.5 Material Assets (Minerals, Waste, Energy and Fossil Fuels)

6.5.1 The loss of material assets in the form of landfill capacity, minerals availability, peak oil and fossil fuels are all significant environmental issues, plus waste management and minerals extraction can create impacts in terms of transportation.

Minerals and Aggregates

6.5.2 Nottingham's geological profile comprises the coal measures which underlie much of the City at varying depths consisting of inter-bedded mudstone, siltstone and sandstone with common coal seams; to the north west of the city there are deposits of Magnesium Limestone and Marl; further southeast towards the city centre is Sherwood Sandstone overlain by the Triassic Sneinton Formation (formerly Keuper Waterstones) to the east and the Mercia Mudstones (formerly Keuper Marl) to the east and south; superficial deposits include an area of alluvial deposits, which including sand and gravel and/or clay associated with the River Trent flood plain and the flood banks of the River Leen. Looking beyond the City boundary, Nottinghamshire contains nationally important reserves of coal, sand, gravel and gypsum, and others including clay and limestone but these are inevitably limited.

6.5.3 The movement of minerals and/ or the importing of waste to infill mineral workings, can generate large volumes of traffic. Transport options include rail, road, water, pipeline or conveyor. Coal used to supply power stations is ideally suited to rail transport where large quantities of mineral need to be conveyed between fixed points. Other minerals, such as sand and gravel, usually require the greater flexibility offered by road transport since markets are more local and scattered. However some sand and gravel operations in the Trent Valley are able to make use of barges to carry material to markets in Yorkshire and Humberside. Pipelines or conveyors may convey waste materials, such as colliery spoil and power station ash.

6.5.4 The potential off-site effects of road traffic are:

- Increasing the number and size of vehicles on the road which may cause congestion, accidents, difficulties for pedestrians, particularly in areas where the road network may not be suitable for concentrated movements of Heavy Goods Vehicles (HGVs);
- Damage to roads and verges;
- Spillage onto roads causing mud and dust;
- To create visual intrusion, air pollution, dust, noise and vibration in areas adjacent to the roads;
- Damage to property, particularly historic buildings from vibration and spray eroding stone work.
- On-site, the potential effects are largely noise and dust in neighbouring areas.

6.5.5 Measures to limit the adverse transport impacts of mineral extraction include:

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- Operational measures such as sheeting of lorries; installation of wheel cleaning facilities; controlling hours of working;
- Highway improvements and maintenance;
- Appropriate lorry routing to mitigate impact upon the environment and disturbance to local amenity.

6.5.6 Bulk movement of minerals by rail or water can help to reduce environmental impacts and improve the sustainability of minerals operations such as the effect on the amenity of residential areas along possible routes and reduced fuel consumption. Outside the City the River Trent already plays an important role with barge transportation of sand and gravel from a number of quarries which offers a lower carbon freight transport solution. There is the capacity to be able to handle more and additional facilities such as wharfs at key locations would make its use even more viable. Where large amounts of material are involved, and the flexibility of road transport is not essential, alternative more sustainable means of transport should be encouraged, but this would need to be balanced with the impacts on the local environment of specific river and waterway corridors in terms of disturbance to habits, species and loss of leisure amenity.

6.5.7 Historically mining played a significant part in the local economy of Nottingham but all the collieries within Nottingham have long since closed. Also in the past mudstone, sandstone, magnesium limestone, marl and local sand deposits have all been quarried in various areas of the City. However the built up nature of the City means that there are unlikely to be any planning applications for mineral extraction in the foreseeable future.

6.5.8 Aggregates are a finite resource and building and maintaining transport infrastructure can require significant amounts of aggregates and cement, and other materials such as asphalt and stone which come from elsewhere. Therefore it is important the demand for such materials is minimised by using recycled products wherever possible.

Waste

6.5.9 The links between waste and transport are quite complex. On the surface it appears that the direct relationship between transport and waste generally has negative effects, however, there can also be positive indirect effects through the generation of renewable fuel sources from waste.

6.5.10 The construction of transport infrastructure has the potential to generate construction waste and it is important that transport policy seeks to minimise the amount of waste arising from transport projects (for example by balancing cut and fill requirements) and to use recycled products (particularly aggregates) wherever possible. Furthermore, recycling materials for construction on site can have beneficial impacts through removing the requirement to transport them elsewhere.

6.5.11 In Nottingham, the majority of waste, in particular municipal waste, is transferred via the road network. This is the main impact of waste on the transport network, as the transfer of waste generally requires the movement of large vehicles, which have greater requirements

for manoeuvring etc. These impacts are present, whether the waste is transferred to landfill, to an incinerator or to a recycling facility, although the scale of the impact will vary in relation to the location of the facility for which the waste is destined.

6.5.12 There are opportunities for waste to indirectly have beneficial effects on transport. In particular, it can be used to generate low carbon renewable energy and fuel. Research by the Nottingham Energy Partnership shows that Nottingham is well placed to exploit these opportunities. For example:

- Anaerobic digestion of food and garden waste could generate biogas. A part of the generated renewable energy could be used to fuel electric vehicles;
- The City's waste district heating system may have spare capacity at times of low energy demand. During this period, the electricity generated could power electric vehicle options, particularly for fleet vehicles, including public transport and community transport.

6.5.13 However, transporting waste to facilities that will transform the substance into a renewable fuel source can also have negative impacts, as can the waste (bottom ash etc) from such plants. Therefore, it is important to locate these facilities in areas where it is possible to transport material by rail and water, in order to achieve amore sustainable solution.

Peak oil and energy security

6.5.14 By 2025, the UK will be importing 57% of its oil up from 15% in 2010[(12)]. There has been no appreciable increase in global conventional crude oil output since 2005 despite increases in drilling rig activity (see Figures 6.6 and 6.7). The economic crisis over the last 12 months has also reduced global crude oil output and investment in new exploration. This issue has been recognised by Nottingham City Council in the December 2008 motion[(13)] acknowledging the forthcoming impact of Peak Oil.

6.5.15 The International Energy Agency (IEA) now believe that we will pass geological peak oil for conventional crude oil within 10 years, then all oil, including non conventional sources, within 20 years. The IEA also predict a supply crunch due to industry under-investment in five years with tightening demand and supply pressures pushing up prices from as soon as 2010. It can also be seen from Figure 5.3 that we may already have reached the peak of conventional oil output, given that the amount of crude oil available worldwide has not increased since 2005, despite demand and exploration growth.

6.5.16 Actual global crude oil output is limited by political and economic factors well before geological peak oil is reached. Many credible sources including several governments, independent expert bodies and major oil companies believe we will reach peak oil well in

12 Analytical Annex, Table 19, UK Low Carbon Transition Plan (2009). Available at: http://www.decc.gov.uk/en/content/cms/publications/lc_trans_plan/lc_trans_plan.aspx.

13 Nottingham City Council, 2008. *Motion in the name of Councillor Bull – Forthcoming impact of Peak Oil.* Internal minutes of the meeting of the Nottingham City Council, held at the Council House, Nottingham, on Monday 8th December 2008 at 3:15pm, pages 141-143.

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advance of IEA projections. We will see the economic impacts of falling global crude oil supply well before 2020; in reality, with an oil price spike of $147 in 2008, we are already experiencing them.

Figure 6.6 Global crude oil output between 1997 and 2009 (measured in millions of barrels per day)

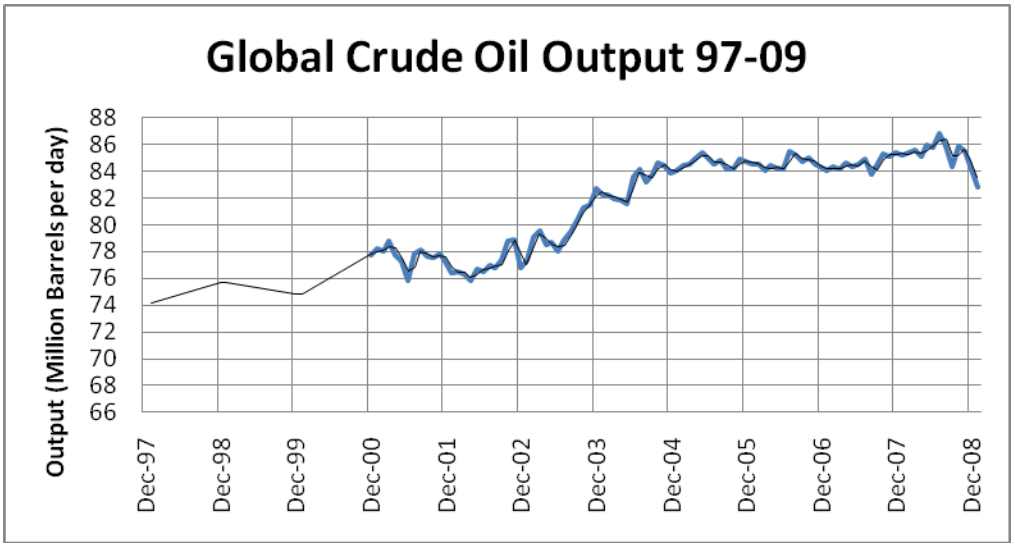
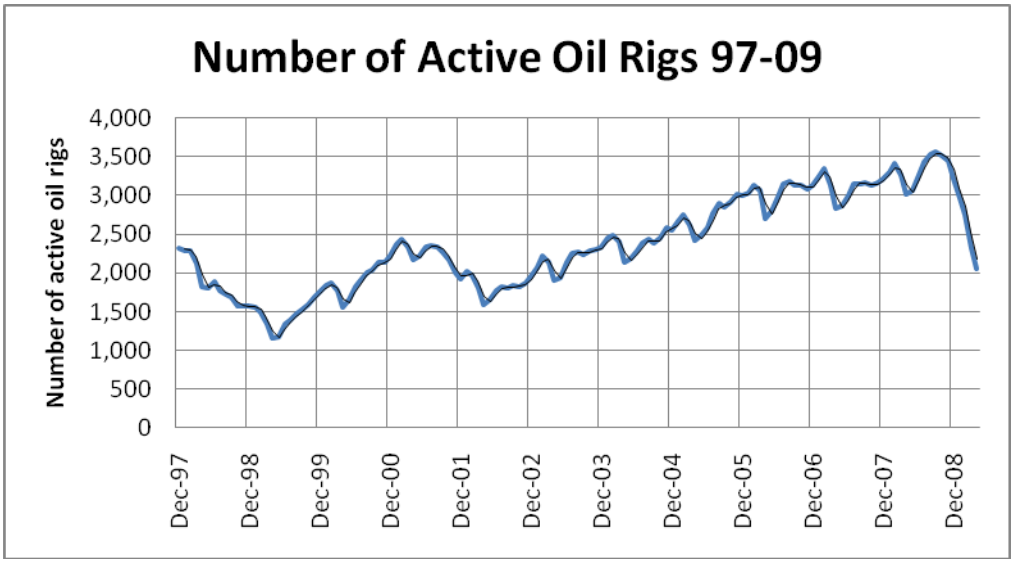


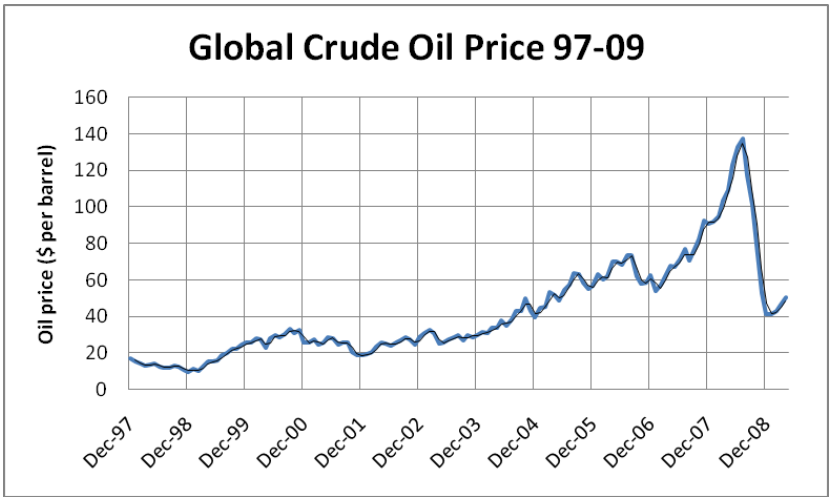
Figure 6.7 Number of active oil rigs worldwide between 1997 and 2009



6.5.17 Spikes in the price of crude oil (see Figure 6.8), followed by those in energy, food and inflation as experienced in 2008, will become more frequent and more severe, as global oil supply falls and competition for energy resources increases. The IEA has pointed out that any recovery of the global economy will inevitably lead to a recovery in oil demand and consequential steep energy commodity price rises.

6.5.18 As recognised in Nottingham City Council's Peak Oil motion [14],these impacts will clearly have significant effects on the residents and the economy of Nottingham.

Figure 6.8 Global crude oil price between 1997 and 2009 (measured in $ per barrel)



Source: EIA, 2009

Energy

6.5.19 Figure 6.9 shows that the transport sector is responsible for 21% of the energy consumption in Nottingham. In terms of road transport, although Nottingham's transport fuel consumption rose between 2004 and 2006, the trend has been reversed since then as shown in Table 6.3 and Figure 6.10. Petrol vehicle use in particular is falling with an increasing use of more efficient and lower CO_2 emission diesel. [15]

Figure 6.9 Nottingham's total energy use during 2006 a. By consumer type b. By energy use type



14 Nottingham City Council, 2008. *Motion in the name of Councillor Bull – Forthcoming impact of Peak Oil.* Internal minutes of the meeting of the Nottingham City Council, held at the Council House, Nottingham, on Monday 8th December 2008 at 3:15pm.

15 Nottingham Energy Partnership, 2009.

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Figure 6.10 Total fuel consumption in Nottingham between 2003 and 2007 (5 yr period) by proportional contribution of different types of road transport systems

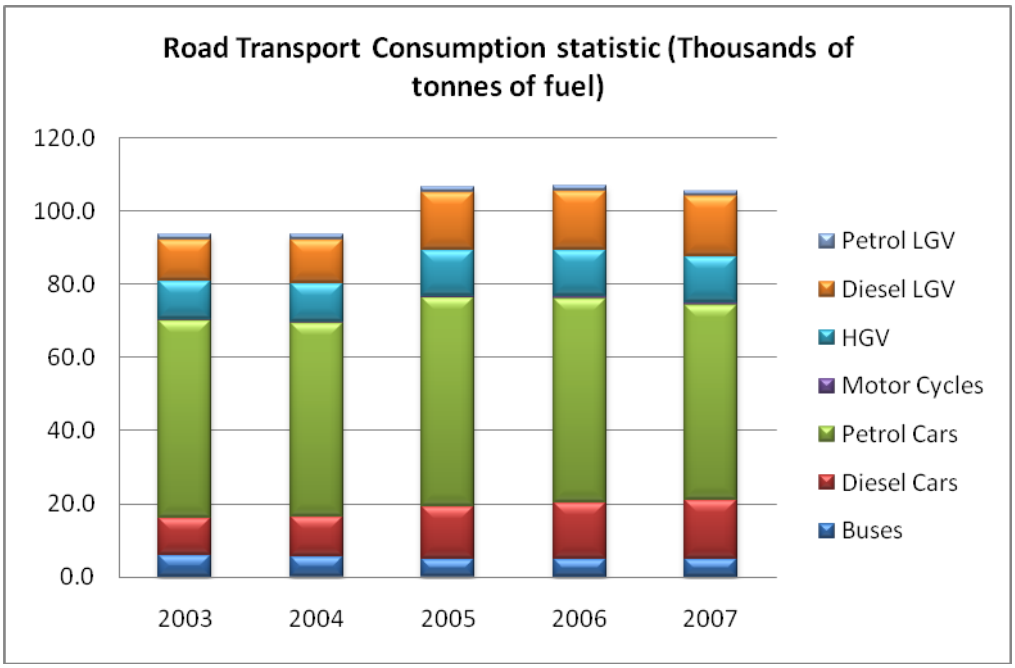


Table 6.3 Total fuel consumption in Nottingham between 2003 and 2007 (5 yr period) by different types of road transport systems (thousands of tonnes of fuel)

	2003	2004	2005	2006	2007
Buses	6.0	5.5	4.8	4.9	5.0
Diesel Cars	10.3	11.1	14.4	15.4	16.2
Petrol Cars	53.7	52.8	57.2	55.8	53.2
Motor Cycles	0.5	0.4	0.6	0.6	0.6
HGV	10.4	10.6	12.4	12.8	12.6
Diesel LGV	11.4	11.9	16.0	16.2	16.7
Petrol LGV	1.5	1.4	1.4	1.4	1.2
Personal [(1)]	70.5	69.8	77	76.7	75
Freight [(2)]	23.3	23.9	29.8	30.4	30.5
Total	***93.8***	***93.7***	***106.8***	***107.1***	***105.5***
[(1)]Personal travel includes buses, diesel cars, petrol cars and motor cycles					
[(2)] Freight includes HGV, diesel LGV and petrol LGV					

6.6 Water

6.6.1 Water resources present a particular problem. As set out in Section 6.4 the effects of climate change are likely to create water shortages in the summer months and an increase in the proportion of rainfall falling in storm events which lead to surface run-off rather than absorption. This in turn leads to increased flooding combined with reduced recharge of groundwater, with less availability of water after flooding subsides.

6.6.2 Although rainfall in the UK is high, parts of the East Midlands are among the driest in the country and there are limited natural or artificial facilities to store water in the region. The region has a high population density, which means that there is a relatively small amount of available water for each person and many demands on the available water, including public water supply, industry, irrigation, navigation, recreation, and ecology as shown by these Environment Agency headline statistics:

- The average annual rainfall in the East Midlands is less than 700mm per year, compared to an average of around 900mm for England and Wales;
- Over 1150 million litres of water per day (Ml/d) are abstracted for public water supplies in the East Midlands, and 350Ml/d for industrial uses;
- Domestic water consumption is around 135 litres per person per day.

6.6.3 There are four areas of consideration for the IIA with regard to water:

- Water availability;
- Water quality;
- Flood risk management;
- Use of inland waterways for water freight and leisure corridors;

of which the last three are the most relevant to LTP3.

Local context - water availability

6.6.4 Nottingham lies within the Humber River Basin District which ranges from the North York Moors to Birmingham, the Pennines to the North Sea and Stoke-on-Trent to Rutland. There is concern about future trends in water availability in the Humber River Basin District. Water is valuable. To ensure there is sufficient for future needs and for wildlife to flourish, supplies need to be provided in a sustainable way. Some areas are closed to new abstractions, while some have no water available during times of low surface flows. To accommodate growth in the district it will be important to ensure the efficient use of available water resources and restore sustainable abstraction in order. The main demands on water resources are: public water supply, irrigation for agriculture, horticulture and recreational use, and industrial abstractions. Climate change is also seen as a pressure on water resources. The Environment

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Agency has developed A Regional Action Plan for the Midlands following on from the publication of its water resources strategy for England and Wales which translates actions from the main strategy into local initiatives based on local needs and priorities.

6.6.5 Between 2001 - 2008 the Environment Agency prepared Catchment Abstraction Management Strategies (CAMS) to assess the availability and management of water resources for all major catchments in England and Wales to where water is available, and where current rates of abstraction need to be reduced. Nottingham falls within the Lower Trent and Erewash CAMS which covers the period up until 31st March 2015. **(16)** At the time of writing the Environment Agency is undertaking a second cycle of CAMS assessments including re-assessing how much water may be abstracted and when. The CAMS methodology has been updated to support an integrated approach to water management as required by the Water Framework Directive which seeks to identify the biological, physiochemical, hydrological and morphological quality of surface water and ground water bodies to provide a comprehensive ecological status assessment of each water body.

6.6.6 The Lower Trent and Erewash CAMS covers an area of 2,045km^2. Downstream of Shardlow the Trent becomes navigable, deepened by locks and weirs. Through the city of Nottingham the river is flanked by formal embankments and riverside developments. Downstream, the river widens as it flows towards the market town of Newark.

6.6.7 The River Leen rises in the Newstead area, north of Nottingham. It flows southwards through the series of ornamental lakes in the grounds of Newstead Abbey. Continuing downstream the Leen enters the City of Nottingham where the river has been heavily modified – the channel having been canalised and culverted throughout much of its course through the urban area.

6.6.8 The River Erewash is a major tributary of the River Trent within this CAMS area, flowing in a southerly direction through a series of urban areas including Ilkeston and Long Eaton, located to the west of Nottingham. Rather than flow directly into the River Trent, the River Erewash flows into the lake area of Attenborough Nature Reserve, a wetland area designated a Site of Special Scientific Interest (SSSI), created from a former sand and gravel quarry.

6.6.9 The average annual rainfall for the CAMS area is 591mm (based on rainfall data from the period 1961 to 1990). This means there is less than the average annual rainfall for England of 897mm. Rainfall is fairly evenly spread over the catchment, although larger amounts are recorded within the Erewash catchment.

6.6.10 The Lower Magnesian Limestone and Sherwood Sandstone Group are the two major aquifers in the Catchment. The Cadeby Formation, of the Sherwood Sandstone aquifer, is exposed in outcrop in the area to the west of Basford in Nottingham and forms the watershed between the Rivers Leen and Erewash.

6.6.11 Agriculture is the dominant land use in the CAMS area especially east of Nottingham running north towards the Humber Estuary. The area has high quality and productive soils and with the draining of land in parts of the catchment, there has been a move away from pasture to arable cropping.

16 Source: http://publications.environment-agency.gov.uk/pdf/GEMI0308BNPT-E-E.pdf

6.6.12 Forty-seven major industrial process plants have been listed in the CAMS area, including large steelworks and a number of power stations. At Beeston, south west of Nottingham City, a hydroelectric power (HEP) station operates adjacent to a weir that maintains water levels for the Beeston Canal.

6.6.13 The transition from water dependent manufacturing and process industries to the service sector has led to a decline in the amount of water abstracted which has impacted on the Basford area of Nottingham causing flooding due to rising groundwater levels in response to reductions in actual abstraction across the groundwater unit and continued recharge.

Water quality and ecology

6.6.14 River water quality is affected by many factors. These can generally be divided into point sources, which have a traceable discharge point, and diffuse sources, which can not usually be traced back to a single discharge point. Examples of point sources include domestic and industrial waste water; examples of diffuse sources include polluted water and sediment washing off fields, recreational areas, roads and pavements. There have been big improvements in waste water discharges over recent years but pollution from diffuse sources is becoming an increasing threat.

6.6.15 Modifications to the River Trent for flood defence, land drainage and navigation have affected the ecological character of the river. Ecological diversity is limited by the slow flowing, over-deepened nature of the channel. Floodplain areas are also heavily modified and, as a consequence, there are relatively few sites of national conservation importance and fewer still that are dependent upon the supply of water from the river.

6.6.16 The Water Framework Directive (WFD) is new legislation to improve the quality of water bodies across Europe. It focuses on protecting the habitat of aquatic life, rather than other uses of the water, and sets targets for most water bodies to reach a 'good ecological status' by 2015. The risk of failing these targets has been estimated for a number of key pressures, based on factors such as land use, water use, and pollution pressures.

- 93% of East Midlands rivers are at high risk of failure due to nitrates; less than 1% are at moderate risk;
- 10% are at high risk of failure due to phosphates; 45% are at moderate risk;
- 13% of groundwaters are at high risk of failure due to nitrates, mainly north of Nottingham and south of Lincoln;
- 23% are at moderate risk of failure from urban discharges;
- 13% of groundwaters are at moderate risk of failure due to urban discharges.

6.6.17 In the context of the Water Framework Directive, the water environment includes rivers, lakes, estuaries, groundwater and coastal waters out to one nautical mile. These waters are divided into units called water bodies. The Water Framework Directive sets a target of aiming to achieve at least 'good status' in all water bodies by 2015. The environmental objectives and actions to achieve improvement in the ecological status of rivers and water bodies are set out in a River Basin Management Plan.

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6.6.18 The Humber River Basin Management Plan (December 2009) has been prepared under the Water Framework Directive, and is the first of a series of six-year planning cycles. The Plan identifies a number of challenges for the Humber river basin. Those most relevant to this LTP are:

- **The way that urban land is used needs to also protect and restore habitats, species and natural processes** as well as drinking water supplies. The Environment Agency want to see reduced runoff from urban development and roads as this reduces diversity in aquatic plants and animals. Measures such as sustainable drainage systems and, clearly understood and effectively enforced planning policies are essential to the success of this objective.
- **The impacts of modifications and invasive non-native species on wildlife** can be reduced through measures introduced by river basin management planning. The benefits to the environment, wildlife and society in general of improved, well connected habitats need to be clearly explained, understood and maximised. For example, a planned approach to flood risk management which incorporates opportunities for habitat creation and river enhancement, will result in environmental improvements.
- **Urban and transport pollution** from a range of pollutants related to urban areas and the transport network is highlighted as a significant pressure. The Growth Point and the housing growth that will be part of the sustainable urban extensions will also present challenges to water resources in the future.
- **The legacy left behind from mining, both coal and non-coal, has led to contamination and rising mine waters**. Many collieries have closed in recent years and so minewater needs to be carefully managed to minimise the impact on water quality. The rising minewater in the catchment will require the implementation of new mine water pumping stations by the Coal Authority to prevent pollution of the major aquifer in the area.

6.6.19 The Plan identifies actions required by different partners and sectors to improve the water environment by 2015. The aspects most relevant to the LTP are:

- **Urban & transport** Development and regeneration is a major opportunity to improve the water environment. However, when poorly planned or designed, urban and transport infrastructure can adversely impact on water quality or water resources. The Environment Agency and others want to work with the urban and transport sector to achieve an urban water environment rich in wildlife that local communities can benefit from and enjoy. A good quality water environment has the potential to help economic regeneration and to enhance the economic and social amenity value of developments, and improve the quality of life in cities, towns and villages. Spatial planning and design for urban development and infrastructure should aim to reduce surface water run off; protect and restore habitats; improve the quality of rivers, coastal waters, and groundwater, and thus protect drinking water supplies and bathing areas. The release of toxic pollutants that harm the water environment also needs to be reduced.
- **Navigation** Ports, harbours and marinas are essential for economic prosperity. Many navigation and port authorities have already done a great deal to help improve ecology and water quality and some harbours are home to internationally important wildlife. Careful planning will be needed to ensure that waters remain navigable whilst at the same time water quality is protected and improved. Proposals to build new ports or expand existing ones need to take sustainable water management goals into account.

Physical changes are permitted to waters for navigation but only if certain conditions are met.

6.6.20 The Humber River Basin Management Plan reports on water quality for groups of rivers and lakes by catchment area. Nottingham lies within the Lower Trent and Erewash catchment.

Table 6.4 Lower Trent & Erewash Catchment: Key statistics at a glance

River and lake water bodies	Now	2015
% at good ecological status or potential	**5**	**5**
% assessed at good or high biological status (60 water bodies assessed)	17	17
% assessed at good chemical status (14 water bodies assessed)	86	86
% at good status overall (chemical and ecological)	5	5
% improving for one or more element in rivers		12

6.6.21 There are 76 river water bodies and nine lakes in the catchment. Thirty are artificial or heavily modified. Three per cent of rivers (27 km) currently achieve good or better ecological status/potential. 17 per cent of rivers assessed for biology are at good or better biological status now, with 39 per cent at poor biological status, and six per cent at bad status. Diffuse pollution from agriculture and point source discharges from water industry sewage works are key reasons for failures in the catchment. Physical modifications for flood protection and abstractions also play a key role in determining the status of rivers and lakes in this catchment.

6.6.22 In terms of existing good practice the OnTrent Initiative is a major partnership project working to enhance the heritage value of the River Trent and its floodplain. The initiative has been in place since the mid 1990s and its key role is to deliver its agreed vision of 'A Trent floodplain rich in wildlife habitats, landscape and historic features, for the benefit of all, both now and in the future'. OnTrent aims to provide opportunities to improve the quality of life for local people and support the local economy by:

- Creating a rich diversity of linked wetland habitats along the Trent from Stoke to the Humber Estuary.
- Respecting and enhancing local distinctiveness, character and diversity of the landscape.
- Encouraging the adoption of sustainable practices in agriculture, forestry, mineral extraction and building development.
- Conserving and enhancing the cultural identity and historic environment of the river valley.
- Encouraging sustainable recreation and tourism.
- Working with organisations and land managers to promote the value of wetlands and where appropriate the re-establishment of natural processes in floodplains.
- Encouraging others to adapt to, and mitigate the effects of, climate change

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Flood risk and management

6.6.23 The Greater Nottingham Strategic Flood Risk Assessment (SFRA) and River Leen SFRA represent the best currently available flooding information for the City of Nottingham. They should be read in conjunction with the Environment Agency's Flood Zone Maps. Together these documents form the starting point for establishing the risk of flooding to sites in the City. [17][18]

The SFRAs identified that:

6.6.24 Along the River Trent corridor in the City

- The existing River Trent flood defences provide protection against flooding for up to about a 1 in 50 annual chance flood event. The flood defences on the right bank of the River Trent have already been improved through West Bridgford, protecting Silverdale and Wilford within the Nottingham City area.

- The Environment Agency proposes to increase the standard of protection through Nottingham, as part of the Nottingham Trent Left Bank Flood Alleviation Scheme (FAS). Once the Nottingham Trent Left Bank FAS is completed, the City of Nottingham will benefit from flood protection up to a 1 in 100 year standard, based upon current understanding of the FAS and flood risk. If a 1 in 100 year event was to occur prior to the defences being raised, the SFRA has identified a flow route into the City Centre using the Nottingham Canal and railway line which act as secondary channels. This is broadly similar to a flow route observed during the 1947 flooding.

- However it is predicted that flooding will significantly increase with climate change, such that the flood outlines closely resemble the 1 in 1000 annual chance flood event. During a climate change scenario, it is expected that the new defences will overtop and there will be major flooding of the City of Nottingham. Major infrastructure such as the A453 would also be affected.

6.6.25 Along the River Leen corridor in the City

- Generally, the River Leen defences provide protection up to a 1 in 25 year standard and major overtopping occurs during a 1 in 100 year flood event at Bulwell, Basford, Bobbers Mill and Sherwood.However, flooding is predicted to start at a 1 in 5 year flood event north of Moor Bridge at Bulwell, Southwark Street meander and Day Brook confluence in Basford and along the length of Day Brook.

17 Greater Nottingham Strategic Flood Risk Assessment, Summary of Key Findings for Nottingham City Council, July 2008

18 River Leen and Day Brook Strategic Flood Risk Assessment, Summary of Key Findings July 2008

- There are a total of 696 residential and commercial properties at flood risk during a 1 in 100 year event on the River Leen and Day Brook. There are also 99 non-postal properties including tram stops and car parks at flood risk in a 1 in 100 year event. The SFRA predicts that major overtopping of the flood defences occurs at Bulwell, Basford, Bobbers Mill, Radford and Sherwood.

- Overtopping also affects major transport infrastructure such as the railway line, tram line and arterial roads in the north and west of the city. The NET tramline and major road infrastructure (Wollaton Road,Mansfield Road and Valley Road) as well as smaller roads (Main Street, Bulwell and Vernon Road, Basford) are modelled to flood during a 1 in 100 year event and may be impassable.The Robin Hood railway line floods at Southwark Street meander in Basford in a 1 in 50 year event. During a 1 in 100 year flood depths of up to 0.5m are expected on the track at PZ Cussons Soap Factory, Bobbers Mill, Chettles Yard in Radford and Radmarsh Road in Lenton.

- Much of the flooding experienced on the River Leen and Day Brook is attributed to a legacy of unattenuated surface water run-off generated by historic urban development within the Nottingham City boundary and elsewhere.

6.6.26 The River Leen and Day Brook catchment area is located on rocks that are part of the Sherwood Sandstone, which can hold a lot of water. Historically, industry has taken advantage of groundwater for use in their processes and lowered groundwater levels in the Sherwood Sandstone. Reductions in abstraction due to the decline of manufacturing industry and increases in rainfall have resulted in a general rise in groundwater levels and flooding of basements and cellars in the Basford area. However, the groundwater system is complex and the relationship between abstraction and groundwater levels is not straightforward. Within Nottingham City a large area of rising groundwater levels has been identified in Old Basford which causes property flooding.

6.6.27 Sewer Flooding and highway drainage issues have been identified at Daleside Road, Clifton Boulevard, Queens Drive, Lenton Lane, Bagnall Road in Basford/Cinderhill, Moor Road in Bestwood, Ragdale Road, Linby Street and Commercial Road in Bulwell.

Protecting the Railway Line

6.6.28 The SFRA revealed a considerable amount of floodwater flows across, along, or is stored on the Robin Hood Nottingham to Hucknall rail line during times of flood. The railway line in effect becomes a secondary channel for the River Leen during a 1 in 100 year event with water depths of up to 0.5m predicted on it. Major spills of floodwater onto the railway line have occured at Old Basford, PZ Cussons Soap Factory, at Bobbers Mill South and at Chettles Yard. At Old Basford, the railway flooding is part of more extensive flooding and cannot be separated. The SFRA has identified the need to protect the railway line and associated properties from flooding, where possible. In response to this for a new mixed use development at Chettles Yard a wall has been constructed along the railway line as part of a flood risk mitigation strategy to protect this section of the railway line.

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6.6.29 PPS25 [19] points out that road and railway embankments and other linear infrastructure may hold back water or create enclosures to form flood storage areas in addition to their primary function. This may or may not be a deliberate design. It is important that this is recognised, and where use of such infrastructure is proposed for flood management purposes, this should be discussed with the infrastructure owners.

Management of surface water and drainage in Nottingham

6.6.30 The first commencement order for the Flood and Water Management Act 2010 came into force on 1st October 2010 making local authorities legally responsible for preventing surface water flooding. Local authorities are now required to develop local strategies for flood risk management, in partnership with relevant bodies under a new duty to co-operate. Further commencement orders are expected in spring 2011. The Act also establishes new requirements for sustainable drainage for new development, with approval and adoption based on agreed Standards.

6.6.31 The Flood Risk Regulations require Preliminary Flood Risk Assessments and Reports to identify areas of significant risk where maps and plans are needed to manage the risk. PRRAs are to be completed by June 2011 for final agreement by December 2011. Maps and plans for flood risk areas are to be in place by 2013 and 2015 and reviewed on a six yearly cycle.

6.6.32 Flash flooding has occurred in Nottingham in recent years, not necessarily near watercourses, and the causes are not yet fully understood. Work is underway to prepare a Surface Water Management Plan (SWMP) for Nottingham. The aim of the SWMP is to know where it would be likely to flood in the future and to use that information to reduce the risk of flooding by developing an action plan to steer future investment. There are around 10,000 properties at risk of surface water flooding in the City and the aim is to both reduce that number and to identify risks associated with new development to ensure that surface water management is an issue which is taken into account when considering future developments.

6.6.33 There are similar problems with urban flooding in Derby and Leicester so the three cities are working together on a joint Highways Drainage project funded by DfT. The project will seek innovative measures to improve the asset management of highway drainage, including installing Global Positioning System (GPS) devices in gully emptying machines, prioritising highway flooding hotspots and recording new and non-standard drains with a view to building up a detailed history at every location. To date a baseline report has been prepared setting out in detail each city's position with drainage inventory, data management systems and drainage improvement priority systems.

6.6.34 In terms of LTP3, highway layouts, construction methods, drainage for transport schemes can all help to manage flood risk. In turn flood management can help to address road safety, drainage problems, and traffic management.

6.6.35 There are increasing demands from development and climate change on drainage infrastructure. Use of Sustainable Drainage systems (SuDs) can help to manage flood risk at source; Reduce diffuse pollution and storm discharges in rivers and the sea; Increase infiltration and recharge resources, and provide environmental improvements and new

19 PPS25 Paragraph G3 and Practice Guide/Paragraph 7.16

habitats. The design, construction, operation and maintenance of SuDS will be regulated through the Flood and Water Management Act. Defra are currently preparing associated secondary legislation and draft SuDs National Standards.

Use of river and waterway corridors

6.6.36 The River Trent is navigable from Shardlow to the Humber, with canal bypasses at Sawley, Cranfleet and Beeston and several large marinas along the river and bypass canals. The system is used extensively by boaters, mainly cruisers and narrow boats, with numerous sailing clubs and rowing clubs.

6.6.37 The Grantham Canal runs for a distance of 33 miles between the River Trent at Nottingham to Grantham, Lincolnshire. The canal is currently undergoing restoration towards navigation.

6.6.38 Colwick Country Park within the City and the National Watersports Centre at Home Pierrepont south of the City boundary provide facilities for many types of boating activity, including a canoe slalom and white water rafting course, whilst Colwick provides a still water trout fishery. Gravel pits have provided large open waters, used for sailing and other watersports, angling and bird watching.

6.6.39 The Trent Valley Way runs along the river and gives a continuous walk from Attenborough to West Stockwith, but walkers can generally continue along the flood banks to the Humber. Locally the Big Track has been developed as 10 mile circular walking and cycling route along the Trent and the canal from Trent Bridge to Beeston Lock. As well as providing a car-free leisure route the Big Track also provides cycle access to a number of businesses in the NG2 and Lenton Lane area.

6.6.40 The River Trent is an under-utilised transport artery within the East Midlands region. The main freight movements are for aggregates between Newark and Gainsborough to Humberside and West Yorkshire and to transport large components to power stations. The River Trent Water Freight Feasibility Study prepared by emda, emra and British Waterways identifies that there is sufficient capacity on the River Trent to carry an extra million tonnes per annum particularly for the movement of dry bulks and waste. However opportunities are restricted by navigation issues at Newark and currently the largest barges that can reach Nottingham are restricted to 300 tonnes.

6.7 Natural Environment (Landscape, Biodiversity, Soil and Contaminated Land)

6.7.1 As highlighted in Section 6.4 climate change is already occurring and this poses the most serious long-term threat to our natural environment. There is an urgent need to reduce global greenhouse gas pollution if we are to avoid potentially catastrophic impacts on the natural environment and to develop strategies to enable the natural environment to adapt to the impacts of 'locked in' climate change over the coming decades. This requires action on both mitigation and adaptation. Without adequate mitigation we risk reaching dangerous levels of climate change resulting in major impacts on the natural environment and consequential impacts on society.

6.7.2 The impacts of climate change on the natural environment will be both direct and indirect. In order to successfully tackle the threat of climate change we need to address both the causes and the consequences of climate change. Action is needed to ensure that the

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natural environment is resilient in the face of climate change. A resilient natural environment is one that is able to respond to the impacts of climate change in a manner which allows it to continue to function, whilst maintaining and enhancing its overall quality and diversity.

6.7.3 The natural environment can provide a range of low carbon services which can help mitigate the impacts of climate change on development, for example, through the provision of multi-functional 'green infrastructure' in providing collectively for biodiversity, urban cooling, recreation, health and sustainable drainage to support development. This can help mitigate such impacts as flooding, sea-level rise, hotter summers and drought without recourse to artificial measures with a greater carbon footprint.

6.7.4 The LTP provides opportunities to both reduce carbon emissions from transport and for the transport network to assist the natural environment in adapting to climate change. Sound design principles for new transport infrastructure and innovative management of the existing transport network could achieve multiple benefits both for the natural environment and for network resilience.

Open and green space

6.7.5 Nottingham City has a historic network of open and green spaces whose legacy dates back from the early 18th century and, despite the City's tight urban boundary the city has managed to retain a strong provision of parks, gardens and allotments, along with natural and semi-natural spaces, playing pitches and playgrounds. These are all vital for both human wellbeing and for wildlife and biodiversity.

6.7.6 In December 2006 Nottingham City Council adopted a new Open and Green Spaces Framework "Breathing Space" which was updated in 2011. This strategy recognises the importance of the City's network of open and green spaces and sets the framework for the City Council to plan effectively to ensure that Nottingham's citizens retain adequate provision and access to high quality green spaces, outdoor playing pitches and both formal and informal sport and recreation spaces in the event of any future developments and changes that might take place to the City, in terms of built environment; population and demographic changes; economic expansion or changes in neighbourhoods or local estates.

6.7.7 To support this work the City Council has prepared three Area Commentaries for the North West, East/Central and Southern areas of the City. The purpose of these Commentaries is to develop a clearer understanding of the existing gaps, issues and opportunities to inform decisions affecting provision and will be the basis for recommending standards in terms of quality and accessibility, which the emerging LDF Core Strategy can consider with other evidence when establishing strategic guidance and policies on open and green space. The Area Commentaries seek to put together both visually and via data audits, the challenges and opportunities that need to be addressed over the next twenty years for quality open and green space infrastructure provision. The key findings are summarised below.

6.7.8 Key findings for North West Nottingham

- North West Nottingham contains some of the most deprived areas in the city which tend to be concentrated in some of the large local authority-built estates which are characteristic of this area. There is limited car ownership across the area, with relatively

high numbers of households with children, and consequently dependence on public transport, walking or cycling. This creates a specific demand for the local play areas, parks and sports facilities.

- In terms of accessibility, for the typologies where a local standard has been set, the percentage of households in the North West who have access to open and green space provision are high. There is very good provision of both parks and gardens and natural and semi natural green space.

- In terms of quantity, the North West has 35% of the City's population and 36% of the open and green space in the City. This equates to a current level of 5.16 hectares per 1000 population which shows that the North West has good provision of open and green space and that quantity is currently not an issue. However the quality of the open and green space in this area is a major issue with an average score of 37% (below average) across all sites/typologies.

- There is a serious shortfall of allotment provision in the Bestwood, Top Valley and Rise Park areas and also in Broxtowe.

- At local and neighbourhood level play provision in the North West in terms of number of sites is plentiful, with minor gaps around the Broxtowe and Bilborough areas although there is currently a legacy of playgrounds of similar ages, many of which are now in need of refurbishment.

6.7.9 Key Findings for East/Central areas

- The East / Central areas are densely populated and include the city centre and inner city areas such as Radford, Hyson Green, St Ann's, Sneinton, Sherwood which means that the open and green space provision generally is made up of smaller, individual sites.

- There are significant gaps in the natural and semi natural typology and in play above the local hierarchy.

- There are a number of historic sites which are part of the areas landscape character and need to be taken into consideration when looking at future improvement/developments in the area, e.g. St Ann's Allotments, Forest Recreation Ground, Green's Windmill, The Arboretum, etc.

- There are a number of green routes through the areas such as St Ann's Chase and Waterloo Promenade which have the potential to be re-developed/re-instated as green space networks. This will improve links between a number of open and green space sites as well as improving access across the areas. However the natural and semi-natural space at Colwick Park is considered to be relatively inaccessible (judged by distance).

- The quality of the open and green space in this area is a major issue with an average score of 40% (below average) across all sites/typologies.

- At the local level play provision in the area is sufficient. There is however a significant deficiency in provision at a city level which needs to be addressed.

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- There are currently no allotments in Area 4 and there is difficulty in identifying potential new sites as it is a heavily built up area. There is also an under provision of allotments in the Sherwood area.

- The inner city nature of most of this sub-area means that opportunities to provide new open and green space sites are extremely limited. Deficiency could however be addressed by improving the quality of spaces; heightening access to existing spaces (both inside the sub area and close to its boundary) and investigating the potential for changing open space use from one typology to another.

6.7.10 Key Findings for South Nottingham

- South Nottingham is physically and socially diverse. It contains some acutely deprived neighbourhoods, such as the new Meadows estate, and some of the most affluent neighbourhoods, such as Wollaton. There are densely built-up and anonymous residential areas but there are also some of the most attractive and distinctive areas of the city such as Wollaton Park, Highfields and the Embankment.

- There are gaps in provision within all of these areas, as even though there are large open spaces, easy access to these facilities or other local facilities can be limited within specific communities. Wollaton Park for example though very large, only has a limited number of entrances.

- All areas within the South suffer from a lack of quality in parks and gardens. The provision for play, though generally well spread throughout the area is aged and of poor quality, though recent investment is starting to improve this. As with the Parks provision facilities may be available locally. However access to these sites may be hampered by barriers such as major roads, the railway, River Trent and poor access through private or institutional grounds.

- The quality of the open and green space in this area is an issue with an average score of 43% (below average) across all sites / typology scores.

- In terms of accessibility, in the typologies where a local standard has been set, the percentage of households in the South who have access to open and green space provision seems adequate. What further investigation has found is that there are some very large parks with have a limited number of access points which do not show up local deficiencies.

- The absence of allotments in Area 8 and in much of Area 7 means there is significant under provision in parts of Wollaton, Dunkirk and Lenton, Meadows and the City Centre. There is also a high usage of allotments by residents of Rushcliffe which will need to be taken into account when looking at the Clifton Gateway project.

- At local and neighbourhood level, the maps shows that play provision in the South in terms of number of sites is plentiful, with minor gaps around the Broxtowe and Bilborough areas although there is currently a legacy of playgrounds of similar ages, many of which are now in need of refurbishment.

Biodiversity

6.7.11 Biodiversity describes our natural wealth comprising the living landscapes around us which enhance our quality of life, as well as being the source of many ecosystem resources. Without action ecosystem degradation will accelerate as the climate changes, resulting in the loss of the essential services provided by biodiversity. Halting biodiversity loss and meeting the challenge of climate change requires a step-change in our approach to biodiversity conservation by adopting an ecosystem approach to deliver biodiversity enhancements at a landscape-scale which goes beyond only considering protected sites and separate species and habitat action plans.

6.7.12 The way changes in the use of our natural resources are managed present both threats and opportunities to the natural environment and biodiversity. The pace of development is increasing which has a direct effect on the natural environment in terms of land take, particularly when it takes place on greenfield sites. Housing and infrastructure development also has a range of indirect effects: large-scale development in particular can increase disturbance and damage to remaining habitats and landscapes, increase their fragmentation, and decrease the habitat connectivity necessary to adapt to the risks of climate change.

6.7.13 Development also increases the demand for materials, notably for mineral extraction from both terrestrial and marine environments. This can directly affect biodiversity and landscapes and also have indirect effects on water tables and water quality through processes such as excavation, drainage and washing. Other indirect effects of development include impacts on floodplain management through increased rates of water runoff and increased demand for transport.

6.7.14 However development can also offer opportunities. Sustainably built and managed development can give people the chance to experience the natural environment and so derive benefits for their health and wellbeing. Sustainable development should help the natural environment function to provide ecosystem services, for example helping to directly manage environmental threats such as flooding and adapting to climate change. Well designed transport links can also provide 'green infrastructure' or locally accessible green space, with green landscaping in built-up areas forming part of traffic-calming and home-zone approaches. Transport corridors can be valuable green corridors for wildlife.

6.7.15 The City Council has a duty both as a Local Authority and as a land owner to protect and enhance biodiversity to ensure that everyone has a chance to enjoy and benefit from nature now and in the future. Nottingham has a wealth of wildlife rich sites and areas. Over one fifth (20%) of the City's total land area is made of accessible open and green spaces; there are over 400 hectares of land classed as natural and semi natural space including woodlands, river corridors and post industrial land, most of which are accessible to the public and free to enjoy. There is also more wild space in the City that forms part of parks or small but important wildlife stepping stones. The City is home to Water Voles, birds such as the Peregrine Falcon and at least 6 different species of bats. Wildlife also inhabits many other spaces such as walls, roofs and roadside verges that are often over looked.

6.7.16 Within the City boundary there are:

- 655 green and open spaces;

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- 72 geological and biological Sites of Importance for Nature Conservation (SINCs);
- 9 Designated Local Nature Reserves (LNRs): Beeston Sidings; Bulwell Hall Park; Clifton Grove/Clifton Wood/Holme Pit; Colwick Wood; Harrisons Plantation; Martin's Pond; Seller's Wood and Sunrise Hill. Also small areas of Nottingham Canal (Trowell to Balloon Wood) and Alexandrina Plantation fall inside the city boundary.
- 4 Nationally important Sites of Special Scientific Interest (SSSIs): Colwick Wood, Holme Pit (Clifton), Seller's Wood (Bulwell), and Wilwell Cutting.

6.7.17 Evidence suggests that the trends in biodiversity are almost exclusively 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 and in the Biodiversity Position Statement which is due to be completed in 2011. 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. 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.

Green infrastructure

6.7.18 Multi-functional green infrastructure can deliver a range of benefits for the natural environment and local communities, including health and recreation, climate change adaption, flood alleviation and water management, sustainable transport and biodiversity. A green infrastructure network of existing and new Rights of Way, quiet lanes and greenways, and other green spaces and corridors provides an essential framework for an effective non-motorised transport network, linking homes to schools, places of employment, recreational areas and the countryside.

6.7.19 Nottingham City is one of the authorities that make up the 6Cs growth area. Over the period 2001-2026 the area is planned to take around 177,550 new homes. The predicted level of development raises opportunity to plan for and deliver green infrastructure enhancement at a landscape scale. The 6Cs partnership, made up of local authorities and environmental organisations, has developed a Green Infrastructure Strategy for the 6Cs Growth Point in the East Midlands.

6.7.20 The Strategy sets out a long term vision and strategic framework for delivery of green infrastructure across the 6Cs Growth Point. The Strategy aims to protect, enhance and extend networks of green spaces and natural elements in and around the three cities, connecting with their surrounding towns and villages. The Strategy also aims to facilitate a major step-change in the scale, quality and connectivity of green infrastructure assets across the 6Cs area, to match the scale of new growth proposed and provide a focus for attracting and retaining sustainable development and investment. This will be achieved by protecting and enhancing existing assets and creating extensive new green infrastructure, and finding suitably resourced mechanisms for the long term management of both.

Soil and contaminated land

6.7.21 Contamination of land may threaten public health and safety, the natural environment, the built environment and economic activities, through its impacts on the users of the land, and on neighbouring users. The presence of contamination can affect or restrict the beneficial use of land, although development presents an opportunity to deal with it. Land contamination, or the possibility of it, is therefore a material planning consideration in the preparation of development plan documents and in taking decisions on individual planning applications.

6.7.22 "Contaminated Land" is defined in the Environmental Protection Act (1990) (with amendments made in the Environment Act 1995 (Part 2A) and the Radioactive Contaminated Land (Modification of Enactments)(England) Regulations 2006) as: "*Any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in on or under the land, that:*

- *Significant harm is being caused or there is a significant possibility of such harm being caused; or*
- *Pollution of controlled waters is being, or is likely to be caused*"

6.7.23 In order for a site to be determined as "Contaminated Land" under the EPA Part IIA legislation, a "pollutant linkage" must exist. The pollutant linkage consists of a **pollutant** (the contaminant), a **pathway** (the route for the contaminant to move along) and a **receptor** (person, property). All three must be linked in order for the land to be determined as contaminated.

6.7.24 The Government's objectives for dealing with contaminated land are:

- To identify and remove unacceptable risks to human health and the environment;
- To seek to bring damaged land back into beneficial use; and
- To seek to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

6.7.25 The real or perceived costs of treatment/remediation can act as significant barriers to successful development, particularly if the contamination issues and their solutions are not identified early and integrated into the scheme for development of the site. Where land is affected by contamination, development can provide an opportunity to address the problem for the benefit of the wider community and bring the land back into beneficial use.

6.7.26 In practice, most sites with a previous potentially contaminating history are remediated to a condition suitable for use under the planning regime rather than the Part IIA legislation. Part IIA legislation would not normally be applied to sites remediated as suitable for use under the planning process.

6.7.27 The redevelopment of previously developed sites is central to the achievement of the Government's objective of ensuring sustainable development. Such development minimises the need to develop 'greenfield' land.

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6.7.28 Trends in relation to derelict/previously used land (whether contaminated or not) are 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: 95% of housing built in the last seven years was on brownfield sites. **(20)**

6.7.29 The approach under Part IIA focuses on the risks caused by land contamination. It recognises that the risks presented by any given level of contamination will vary according to the use of the land and a wide range of other factors, such as the underlying geology of the site. Part IIA of the 1990 Act focuses on voluntary remediation where possible. Much of this will be secured through the planning system rather than through Part IIA, because development provides both the opportunity and resources to carry out remediation.

6.7.30 Nottingham City Council has a duty to inspect the land within its area to identify contaminated sites and act as an enforcing authority for contaminated land. The identification and safe re-use of contaminated land plays a key part in the sustainable development of the area. The first Contaminated Land Strategy (Phase 1) was published in July 2001. A revised strategy is currently in preparation.

6.7.31 At the present time, no sites have been determined as contaminated land or Special Sites in the Nottingham City Council area

6.7.32 In certain cases, the Environment Agency is the regulatory authority for the contaminated land legislation. This arises if the site under investigation has been used for certain processes, or if the site is situated on bedrock classed as a Major Aquifer (i.e. water-bearing strata). In the legislation, these sites are referred to as "Special Sites". Details are given in Statutory Instrument 2000 No 227 The Contaminated Land (England) Regulations 2000, Section 2 and Schedule 1.

6.7.33 There are two major aquifers in the Nottingham City Council area, the Upper Permian Cadeby Formation (formerly Lower Magnesian Limestone, locally "Bulwell Stone") and the Permo-Triassic Sherwood Sandstone Group rocks, which include the Lenton Sandstone and the Nottingham Castle Sandstone Formations (formerly Lower Mottled Sandstone and Bunter Pebble Beds respectively).

6.7.34 Many of the former quarries and colliery pits were used as landfill, which represents a particular problem for Nottingham. A register of landfill sites was only introduced following The Control of Pollution Act 1974. However, former landfill sites were not included. These sites represent a particular area of concern in relation to contaminated land because of the risk to human health and controlled water from landfill gas and leachate.

6.8 Urban Environment including Townscape and Cultural Heritage

6.8.1 The City of Nottingham sits along the River Trent. Nottingham was built on sandstone, which has been extensively excavated since medieval times. The resultant extensive cave network still survives beneath the City’s surface.

6.8.2 During the industrial revolution much of Nottingham's prosperity was founded on the textile industry, specifically lace, with the City being developed into a powerful manufacturing hub. Once the lace industry began to decline, the rise of other prominent manufacturing industries including Raleigh bikes, Players (Imperial Tobacco) and Boots the Chemist ensured Nottingham maintained its relative success during the interwar period. These industries had a huge impact on the fabric of the city with large warehouses and factories built on a scale that had not been previously seen in Nottingham and many still survive today i.e. Boots D10, the Adams Building, Provident works etc. The prosperity of Nottingham's manufacturing industry can also be linked to the introduction and expansion of the city's rail network and the tram network at this time.

6.8.3 This history means that Nottingham City centre is home to a multitude of different and rich architectural styles, with buildings from all periods of the City's growth sitting cheek by jowl in the dense core of the City centre. The City centre encompasses a medieval street pattern, fine Georgian town houses, excellent industrial buildings in the Lace Market, the striking Council House etc. and this eclectic mix of styles and eras contributes greatly to the character of the City centre.

6.8.4 This character was undermined to an extent from the 1930s once the building of the Council House was completed, which marked the end of an era. Unsympathetic development dating largely from the 1960s, specifically in areas such as Maid Marian Way, allowed cars to dominate to the detriment of the pedestrian environment i.e. the implementation of an inner ring road with pedestrians forced to use subways and the decline of areas adjoining the City centre specifically to the east and south.

6.8.5 Despite this, there are a great number of designated heritage assets within Nottingham. These include 29 Conservation Areas, 795 Listed Buildings (10 Grade I; 31 Grade II* and 754 Grade II), 13 Scheduled Ancient Monuments and 8 Registered Parks and Gardens (2 Grade II* and 6 Grade II) although English Heritage's Heritage At Risk register identifies 10 conservation areas in Nottingham as being at risk. (See www.english-heriatge.org.uk/risk, 2010 data).

6.8.6 There is positive correlation between townscape quality and economic vitality and in the last 10–15 years the character of the City centre has been greatly improved through opportunities provided by regeneration and development, with positive city centre programmes and initiatives. These have included the heritage-led regeneration of the Lace Market, major improvements to the pedestrian network to create strong connections and an extensive network, the redesign of the Old Market Square to create an attractive and usable area of public realm, the implementation and sensitive introduction of NET Line One, the provision and creation of a major centre for contemporary art and the start of the development of the City's regeneration zones. All these have helped to retain the character, attractiveness, vitality, legibility and offer of the City centre.

6.8.7 The character and quality of the residential areas in the City is very diverse. This ranges from significant areas of Victorian residential development e.g. Lenton, Radford, the large private estate of The Park; and major council estates e.g. Clifton, Broxtowe, Top Valley. Considerable work is now being undertaken to address the physical and social problems in some of these residential areas to reduce local deprivation, environmental crime, and improve access/legibility.

6 Baseline Data

6.8.8 The cultural heritage of the built environment is complemented by a vibrant culture and leisure scene, with many nationally recognised facilities, including world class sporting venues such as Trent Bridge (just outside the City boundary), Nottingham Tennis Centre, the National Ice Centre/Trent FM Arena, four theatres, the new Nottingham Contemporary and New Art Exchange galleries, and the Broadway independent cinema and film centre. There are around 300 leisure units, including clubs, pubs, café bars and restaurants, in the City centre. Tourism, centred around Robin Hood, Byron and DH Lawrence, is also a key element of the cultural offer of the wider conurbation. The City's shopping facilities are also well developed and Nottingham is ranked as the 6th best retail centre in Britain in terms of comparison shopping expenditure in 2010. **(21)**

6.9 Equality and Inclusion

6.9.1 The Social Inclusion Unit's report *Making the Connections* (2003) clearly illustrated the critical role which accessibility to jobs, learning, affordable food, essential services, health care, and leisure and cultural facilities have on life chances and well-being. Linking people more effectively with where they need to get to can help to achieve inclusion in society and improve equality of opportunity for the whole community. Ensuring that opportunities and benefits are available to everyone is a key goal for LTP3.

6.9.2 Accessibility is also determined by the suitability and cost of transport options, whether people know what transport is available for them in terms of routes, stops and timetables, whether information and services are suitable for the cultural and language profile of local communities, whether people feel safe making that journey and how, when and where services are delivered. Other barriers affecting access to services are limited travel horizons and the affordability and perceived safety of different transport options, all of which will vary depending on the individual's gender, age and cultural and socio-economic background.

6.9.3 To fulfil the requirements for carrying out an Equalities Impact Assessment this section has been included in addition to the themes normally considered by an SEA and highlights the available socio-demographic data regarding the main groups which should be considered for EqIA i.e. age; ethnicity; disability; gender; sexual orientation and gender reassignment (lesbian, gay, bisexual and transgender or LGBT); and faith communities (religion or belief).

Age

6.9.4 As highlighted in Section 6.3 the City has a very high proportion (32%) of people aged 18 to 29, mainly due to the presence of the two universities; full-time university students account for approximately 1 in 8 of the population. The percentages in other age-groups are commensurately lower than the average for England, with the proportion aged 40 to 74 being particularly low. In the short to medium term, the City is unlikely to follow the national trend of increasing numbers of people over retirement age, although the number aged 85+ is projected to increase.

6.9.5 This "unbalanced" age-structure has become more pronounced in recent years, with growth of the universities and international migrants being generally young adults. Also, 40% of new housing since 2001 is in the city centre and over 70% is flats with 1 or 2 bedrooms. This type of housing tends to appeal to younger, smaller households.

21 CACI 2010 Retail Ranking

6.9.6 In age-structure terms, the City can broadly be categorised into three area types:

- Those with a concentration of younger adults, including students – primarily the city centre, Lenton, Dunkirk, Radford, The Arboretum and Hyson Green.
- Those with a concentration of older people, many of whom have lived in their houses since the house was built – primarily Bilborough, Beechdale, Clifton and parts of Wollaton.
- Other, more mixed areas, although Aspley ward, in particular, has more children.

Older people

6.9.7 Of the 72,200 older people (aged 50+) living in the City, 44% are under pensionable age (60 for women and 65 for men), 31% from pensionable age to 74, and 24% aged 75 and over (2009 mid-year estimates). The highest concentrations of older people (all people aged 50+) are in Wollaton West (38.9%), BulwellForest (36.4%) and Clifton North (35.1%), but the pattern for different age-groups is sometimes very different. BulwellForest and Wollaton West have the highest proportion in their 50s and 60s, Clifton South has much the highest proportion in their 70s followed by Wollaton West and Clifton North whereas Bilborough and Wollaton West are the highest for those aged 80 and over.

6.9.8 The age structure varies considerably between different ethnic groups. BME groups generally have a younger age structure than the overall population and account for more than one in three (37%) of Nottingham school pupils. The mixed groups (46%) and the Pakistani group (30%) have the highest proportion of their total population aged under-16. These compare with only 16% of White British people.

6.9.9 There were similarly high proportions of younger people for the Chinese and 'Other' ethnic groups but these were mainly due to high proportions of people, mostly university students, aged 18 to 24 (45.2% and 36.7% respectively) rather than younger people as in the Asian and Mixed ethnicity groups. The oldest were the Black Caribbean and White groups; particularly the Irish group half of which were aged 50 or over.

6.9.10 Car ownership is much lower amongst households comprising pensioners living alone, 81% of which do not have access to a car. Public transport alongside voluntary and community transport plays an important role for this sector of the community ensuring they can reach essential daily services such as shopping, healthcare as well as providing a vital link to more social activities and journeys. The locallink buses, a network of socially necessary bus services funded by the City Council to complement the commercial network, plays an important role in social inclusion: 65% of locallink passengers travel 2-3 time per week and a quarter travel daily; 75% of passengers use the service for shopping trips.

6.9.11 Community transport in Nottingham is provided by Nottingham Community Transport who operate the Dial-a-Ride service. They also operate transport for youth services, a group hire service and seven of the City's locallink services. The locallinks run with smaller vehicles (13- 18 seats) and have a demand responsive element to their routes which is used by 1 in 10 users. By providing a service that is flexible, has high levels of customer care and is also accessible to disabled people means that Nottingham Community Transport can redeploy key Dial-a-Ride resources more effectively elsewhere in the City. Taxis also provide another transport option for this group.

6 Baseline Data

6.9.12 In 2010, 44,500 citizens had a Senior Citycard, 96% of the eligible population. 90% of locallink service users are concessionary travel card holders. The Senior Citycard scheme currently offers a better concession than the statutory minimum. How to continue to support the needs of an aging population within available resources will be an important issue of the LTP3 Strategy in the long term.

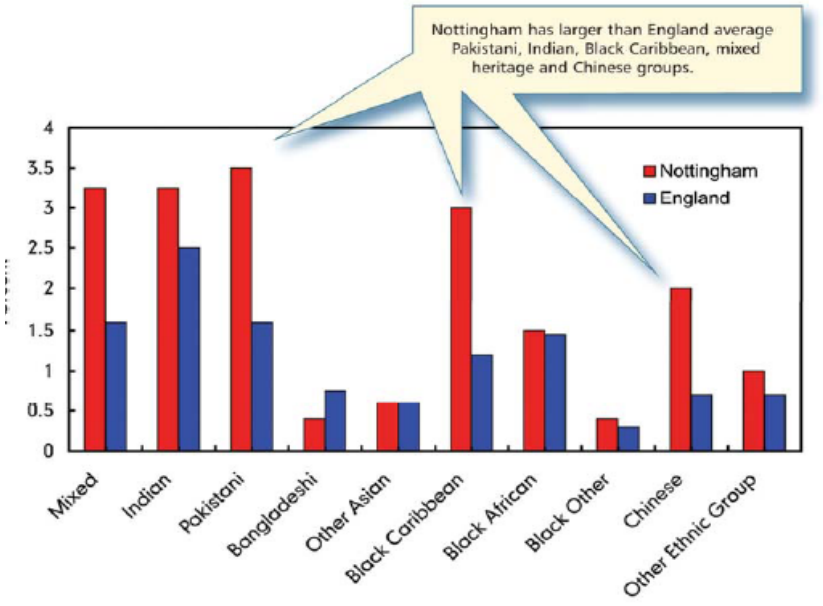
Ethnicity

6.9.13 The large majority of people who live in Nottingham are White British, although 24% of Nottingham's population described themselves as being from Black and minority ethnic (BME) groups, compared to 16% nationally. [(22)] This proportion has been steadily increasing and is projected to increase to at least 25% by 2016. The Pakistani, Indian, African Caribbean and mixed heritage groups are the largest Black and minority ethnic groups within Nottingham.

6.9.14 Analysis of 2001 Census data for Nottingham shows that :

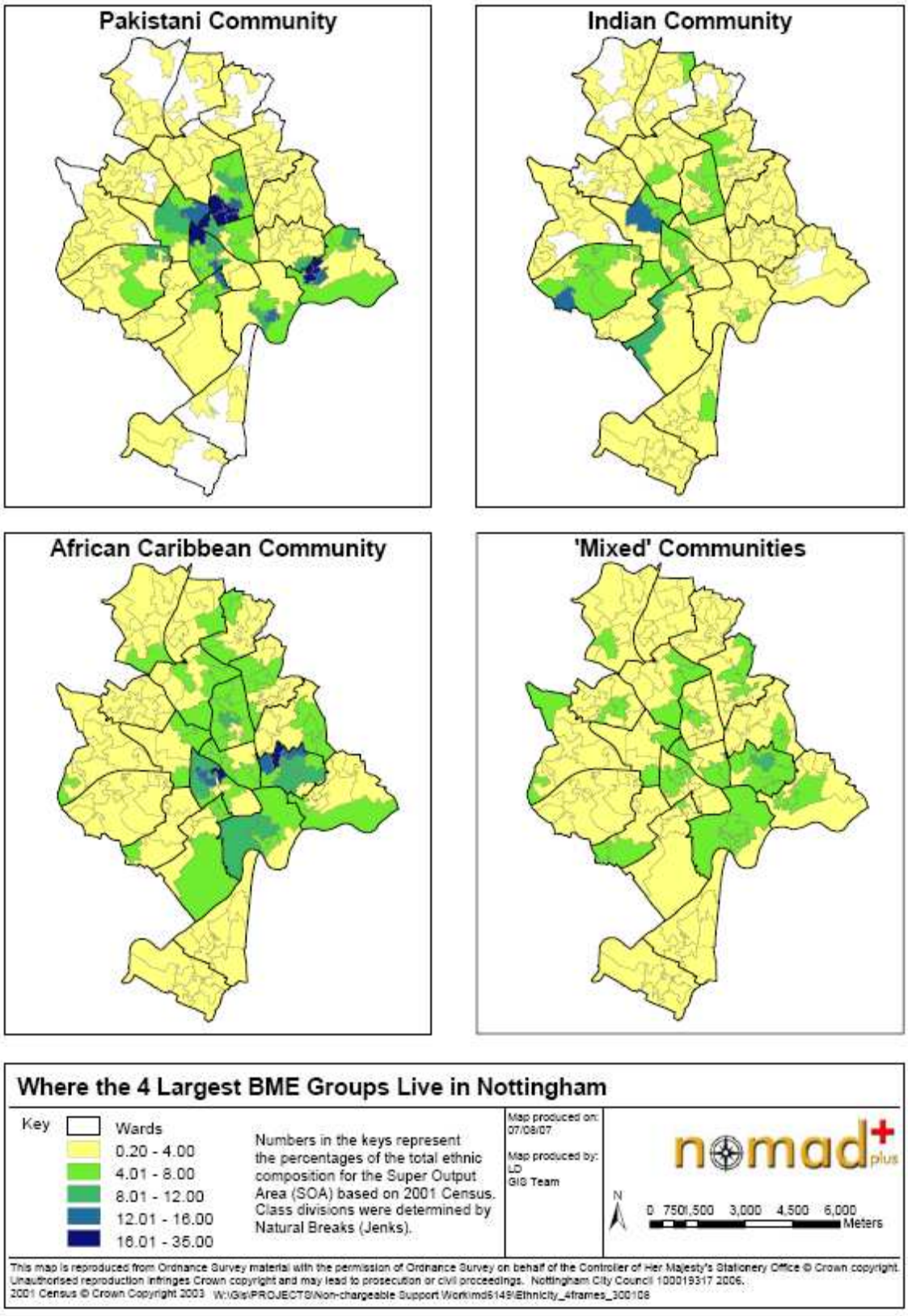
- Half of the Mixed (White and Black Caribbean) ethnic group were aged 13 or under;
- The Indian ethnic group had low levels of both unemployment and people with no qualifications;
- The Black or Black British ethnic groups were the oldest of the non-white ethnic groups. Half of the Black Caribbean ethnic group were aged 36 or over;
- The Chinese population was characterised by a high number of students (63.4% of the population aged 16 to 74).

Figure 6.11 Black and minority ethnic groups in Nottingham compared to England (Source: ONS, 2008)



22 ONS, 2007

Figure 6.12 Where BME groups live in Nottingham

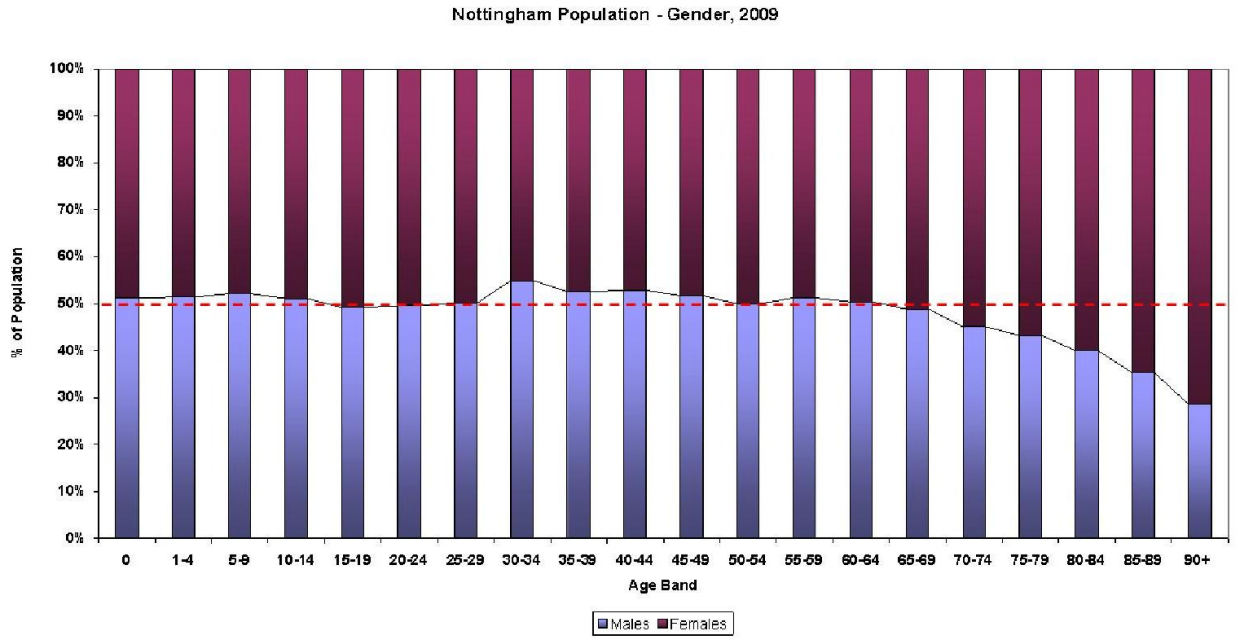


6 Baseline Data

Gender

6.9.15 The proportion of men and women in the overall City population is broadly equal (50.2% compared to 49.8%) with slightly more males in the 30-45 years age groups. However this distribution changes with age as women typically have a longer life expectancy than men (75 years for men compared to 80 years for women) and consequently the older age groups there comprise significantly more women e.g. 59% of the population over 70 years old are female. Figure 5.13 shows the age distribution by gender for the City's population based on 2009 mid-year estimates.

Figure 6.13 Nottingham Population by Age and Gender



Disability

6.9.16 Despite its young age structure, Nottingham has a higher than average rate of people with a limiting long-term illness (LLTI) or disability: 20.1% compared with 17.9% for England in 2001. The percentage reporting that their health was Not Good was 11.0% compared with 9.0%.The same is true for people of working age: 16.0% had a LLTI in Nottingham, compared with 13.3% nationally. Not surprisingly, the percentage with an LLTI rises with age from 32.8% of people in their 50s to 66.9% of those aged 80 and over and older people with physical disabilities or difficulties are the largest social care client group. An estimated 8,700 people have a severe disability of some kind, but only around 15% of this number use health and social care support services. Older people with physical disabilities or difficulties are the largest social care client group.

6.9.17 Currently over 11,000 people have been issued with a Mobility Citycard and over 4,000 have a companion's card (Mobility Plus). Dial-a-Ride and the locallinks bus services are designed to be accessible to disabled people. Taxis also provide another important transport option for this group.

6.9.18 Department of Health data records 770 people registered as blind in Nottingham and 1,090 people registered as partially sighted. There are 615 people registered as hard of hearing and a further 555 registered as deaf, the largest group of which will be aged 65 plus due to increased incidence of hearing impairment with age. This figure is likely to be an undercount as registration is voluntary with no immediate benefit to the individual.

6.9.19 The City Council is already working in partnership with RNIB to improve the accessibility of bus services for blind and partially sighted people including setting up user groups to provide confidence training, a new mobile Travel Centre which became operational in September 2010 will support the ongoing provision of this service, mystery shopper journeys to identify which elements of the journey experience need improvement, providing raised tactile lettering at stops to aid stop identification and developing a set of bus industry standards (tactile lettering has been installed at 97 stops in the City Centre work is underway to install raised lettering at a further 1,200 stops along key radial routes) and awareness training every five years for all bus drivers as part of their Certificate of Professional Confidence.

Learning disability

6.9.20 It is estimated that there are nearly 6,000 people aged 18+ with a learning disability in the City. The South Asian community has a three times higher prevalence of learning disability due to complex factors. The Health Joint Service Needs Assessment 2010 reported that a local mapping exercise of people with learning disabilities concluded that the number of day service users could increase by 73% by 2020.

6.9.21 One Nottingham/GNLP research *Accessibility of Employment and Training Opportunities in Greater Nottingham*[(23)] reported that the format in which information is provided is often unfriendly for dyslexics, people with learning difficulties or low literacy levels. Tailor made information would be helpful to many people and work is now being developed to provide timetable information in a format suitable for people with learning disabilities and user groups have been established to provide confidence training.

6.9.22 To support the review of school travel arrangements and transport for pupils with special educational needs the City Council will be providing travel training on a two year trial basis from September 2011 for SEN pupils to equip those pupils for whom this is appropriate with the skills to make independent journeys. The City Council is also exploring opportunities through the self-directed care budget to better coordinate SEN transport with adult social care transport.

6.9.23 Medical advances, which have increased survival rates of premature babies and life expectancy, are expected to lead to growing numbers of people with disabilities and in particular, more complex disabilities and needs so developing a transport network which enables these citizens to lead fulfilling and independent lives will be an important issue for the strategy in the long term. How to continue to support the needs of this growing population within available resources, including providing locallink and community transport services and concessionary fares will be a challenge for LTP3 Strategy in the long term.

23 Accessibility of Employment and Training Opportunities in Greater Nottingham, SRA Ltd, July 2007

6 Baseline Data

Sexual orientation and gender reassignment

6.9.24 Data on sexual orientation and gender reassignment is not collected through the census which is the main source of demographic data used for planning purposes. There are no plans to include this data in the 2011 census and it is likely that people would not necessarily declare this information even if it was requested. Other national data sources estimate the UK's LGB population to range from 1.5% [24] to 6.6%. [25]

6.9.25 There is no reliable source of information available regarding the number of gay, lesbian, bisexual or transgender people resident in the City but applying these figures would indicate there could be between 4,500 and 19,800 LGB citizens in Nottingham.

6.9.26 For the purposes of this impact assessment it is important to ensure that transport services proposed in LTP3 are planned and delivered in a way that ensures equality of access and eliminates the opportunity for discrimination and harassment, to give people the confidence to make journeys and access services, for example, by implementing measures which will improve personal safety and improve perceptions of safety and ensuring that service providers have received appropriate customer awareness training.

Religion and belief

6.9.27 Census data shows that Christians are the most predominant faith group in Nottingham (57.7% of citizens) although almost a quarter of the population (24.8%) stated they have no religion and around 10% of respondents did not state their religion. The next most prevalent faith group in the City are Muslims with over 12,000 citizens (4.6%) which is higher than the average for England. The proportion of Sikhs in Nottingham is also higher than the national average with over 3,000 citizens (1.2%). Other religious faiths represented in the City include Hinduism (0.8%), Buddhism (0.4%), Judaism (0.2%). A further 0.3% of the population are recorded as member of other religious groups.

6.9.28 Again it will be important to ensure that future transport services are planned and delivered in a way that ensures equality of access and eliminates the opportunity for discrimination and harassment and that information about transport services is made available in appropriate languages, formats and through outlets to reach these different communities.

Qualifications and employment

6.9.29 Qualifications are linked to both age and ethnicity. In general, within each ethnic group the proportion with no qualifications increases with age although the large number of students in the City may exaggerate the differences. The Chinese group shows this in particular.

6.9.30 For some ethnic groups, it is difficult to make comparisons due to small numbers of people in older age categories. However, there are some patterns in the data. The Indian, Black African and Other White groups are consistently below the average level of people

24 OSN survey at http://www.statistics.gov.uk/statbase/Product.asp?vlnk=15381

25 NAO survey frequently cited by Stonewall: Bourne, J. National Audit Office (2004) *Delivering Public Services to a Diverse Society*. London: The Stationary Office

without qualifications. Three groups, Pakistani, Bangladeshi and Mixed (White and Black Caribbean), all have higher than average levels of people without qualifications in all age groups.

6.9.31 These groups do show different trends by looking at changes between age groups. The Pakistani group seems to be fairly constant at around twice the city average, the Mixed (White and Black Caribbean) group seems to be getting higher, rising from just above average for 35 to 49 year olds, to over double the city average for 16 to 24 year olds. The proportion of Bangladeshis with no qualifications however appears to be falling and is just above average for 16 to 24 year olds having been more than double the average in the 25 to 34 and 35 to 49 age groups.

6.9.32 Unemployment rates vary between ethnic groups. Only the White British, Indian and Chinese groups had percentages below the City average. Unemployment was highest in the mixed ethnicity and Black or Black British groups. Unemployment was also high amongst the Pakistani and Bangladeshi groups. Therefore transport measures which improve access to employment should be of particular benefit to these communities.

Access to services

6.9.33 2001 census data shows that there were 84,433 cars or vans in Nottingham available for private use by households. Although the proportion of households in the City with no car or van fell slightly from 49.3% in 1991 to 44.9% in 2001 car ownership in Nottingham is relatively low with 45% of households not having access to a car compared to the average in Greater Nottingham (32%) and England (27%). The *Three Cities DaSTS Agglomeration and Accessibility Study* (May 2010) [(26)] predicts that by 2026 car ownership in the City will still remain amongst the lowest in the region.

6.9.34 Car ownership varies greatly between wards in the City: Wollaton West has the highest percentage of households with access to more than one car or van (77%) whereas 67% of households in St Ann's and over half of households in the Arboretum, Bestwood and Bridge wards do not have access to a car or van. Car ownership is also much lower amongst some types of household than others. The two groups with the lowest car ownership rates are pensioners living alone, 81% of which do not have access to a car or van and lone parents with dependent children (66%). Couple family households tend to have the highest rates of car ownership with 81% having at least one car.

6.9.35 Analysis of the Mosaic geo-demographic dataset shows that a number of Groups and Types are over represented in the City when it comes to not having access to a car, particularly those in Group N: Young people renting flats in high density social housing, but also in group I: Lower income workers in urban terraces in often diverse areas, Group M: Elderly people reliant on state support, and Group G: Young well-educated city dwellers. These Mosaic Groups are concentrated around the Meadows, St Ann's and Sneinton, Lenton and north of the City centre, with the older group also concentrated around Bilborough.

6.9.36 Due to the relatively low levels of car ownership it is important that there is good public transport access to jobs and key services. Because of the City's tight boundaries the vast majority of the City is urban and well served by public transport and services and so the

26 Three Cities DaSTS Agglomeration and Accessibility Study (May 2010)

6 Baseline Data

City scores relatively well in relation to geographical access to services. DfT data shows that the City has high levels of access by public transport to employment opportunities and local services (hospital and GP services, primary, secondary and tertiary education and supermarkets). Only two of the 176 Super Output Areas in the City are the 10% most disadvantaged in the country in terms of the extent of deprivation in terms of 'barriers to housing and services'. Geographical access by public transport remains high with 95% of households in Nottingham City within 30 minutes travel time of a town centre by bus or tram with no more that a 400m walk to the stop.

6.9.37 The Nottingham Local Plan Policy ST4 sets the context for ensuring that new development is located in sustainable locations. An indicator of the success of this overarching policy is that 100% of 716 net residential developments are within 30 minutes public transport time of a hospital, GP, primary and secondary school, employment and a major retail centre.

6.9.38 However this data only measures ease of travel to the nearest facility or location and does not take account of the suitability of the services on offer or that education and health policies actively encourage people to choose which services they use. Therefore to maximise access to opportunities the LTP also considers physical accessibility, affordability, information and awareness.

6.9.39 Much has been done already through LTP2 to improve the physical accessibility of the public transport network in terms of the vehicles, the stop infrastructure and to improve journey interchange:

- 100% of fleet serving the City Centre are low floor buses and Nottingham City Transport and trentbarton fleets are 100% low floor;
- 41% of bus stops have raised kerbs and 42% of bus stops with shelters with seating. Bus stops also have the capacity for audio announcements although this service isn't currently offered;
- Centrelink, a free bus service launched in September 2009, runs every 15 minutes through the City centre between the Victoria and Broadmarsh bus stations making interchange journeys easier;
- On NET Line One, the trams are fully accessible, with 100% low floors, level access from platforms, DDA-compliant features such as wheelchair spaces and audio and visual passenger information as well as conductors providing tickets and help.

6.9.40 As well as providing the right infrastructure, work has been undertaken to specifically support the needs of vulnerable user groups including disabled, blind and partially sighted, elderly people and people with learning disabilities as described above in sections 5.9.21 and 5.9.24.

Affordability

6.9.41 The cost of transport is another important issue that affects equality of access to services. The average income of citizens in Nottingham is below the national average for both individuals and for households. The median gross annual earnings for residents who were in full-time employment in 2008 was about £22,700, compared with £26,100 for England. 10% of people earned below £12,500 and 20% below £15,000. Looking at gross household income and including those City households with no-one in employment, the mean income in 2009 was £28,500, compared with £35,000 for the UK. 2.6% had incomes below £5,000

and 11% below £10,000. Many of the households with the lowest incomes will be retired people dependent upon state pensions. The ward mean varies from £38,200 in Wollaton West to £22,900 in Aspley. There are also high levels of child poverty in the City. In 2008, 39,000 children and young people lived in workless or low income households.

6.9.42 Mosaic analysis has shown that unsurprisingly the most deprived Groups M, N and O, living on benefits or low incomes, are over indexed for having a gross household income less than £10,000. Five Types from these groups including some tenants in flats, older people and young parents, two Types comprised of students plus one lower income Type, are all highly over indexed.

6.9.43 Some 50,000 households in the City fall into these Types, which, at 41%, is over four times the proportion of England, suggesting a greater likelihood of low income in the City, although this may be skewed by the City's student numbers. These Types are found throughout the City, but are particularly prevalent in Aspley, Radford, Lenton, St Ann's, Sneinton, and the Meadows.

6.9.44 The affordability of public transport is a barrier for disadvantaged groups. One Nottingham and the Greater Nottingham Learning Partnership (GNLP) commissioned research to look at barriers to accessing employment and training opportunities **(27)** in 2007 which found that cost of public transport was perceived to be a significant barrier to people on low incomes. Cost is also a deterrent to using public transport for people who have the option of personal transport. There was consensus that the cost of a day ticket (which was £2.70 at the time of the study) is 'too much' for people on low incomes. It is perceived to be more expensive to use the bus than a car for the same trip.

6.9.45 Comparing local fare data with the Retail Price Index shows that these perceptions are valid and that the cost of local bus travel has risen compared with cost of living, particularly for short journeys. The majority of bus services in Nottingham are provided on a commercial basis, with fares determined by each private bus, tram or train operator. Based on analysis of Nottingham City Transport fare data for day and season tickets, fares have risen 60% over the last 5 years compared with the rise in the Retail Price Index of 11%. Analysis and consultation has shown that although prepaid single operator season tickets are competitive, there are several areas of inequality:

- Family and child fares have risen by double the rate of inflation over the past 10 years.
- Cash fares are up to 50% higher than prepaid fares, disadvantaging those unable to purchase travel upfront.
- Multi-operator journeys are significantly higher than multi-route journeys within one operator.

6.9.46 There are also strong indications that the high cost of public transport is a barrier for young people from deprived areas preventing participating in leisure activities. There are no discounts on adult day tickets for children resulting in a reduction in non-school related travel by 15% in the past 2 years with up to 25% reduction in use on routes serving more deprived areas, compared with no reduction on routes serving more affluent areas. **(28)**

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27 Accessibility of Employment and Training Opportunities in Greater Nottingham, SRA Ltd, July 2007

28 NCC Public Transport Team analysis of NCT data

6 Baseline Data

6.9.47 Since 2007, the City Council has promoted the use of the Easyrider Citycard which is a travel smartcard with library membership providing customer discounts at retail outlets and leisure centres. As of 2010 there are around 127,000 Citycards in circulation of which almost 50,000 are Adult Citycard and Easyrider Citycards and over 17,000 travel cards are for young people (under 18). However those without a steady income or regular employment may not be able to benefit from the savings from bulk purchase of a travelcard and so are further disadvantaged by this pricing mechanism.

6.9.48 In addition to the statutory travel concession offered by the Senior and Mobility Citycards and the Easyrider Citycard promotions the City Council has improved the affordability of essential links by providing two free bus services which improve the connectivity of the wider network thereby removing the fare penalty of interchange journeys:

- Centrelink provides free connection service between the two City Centre bus stations, via the Market Square, every 10 minutes, avoiding long connecting walks;
- Medilink provides a frequent free interchange service to both hospitals and employment sites along the ring road, connecting with radial bus services, NET Line One and the park and ride sites at Queens Drive and Wilkinson Street;
- Two localink services (L2 serving Silverdale, Clifton, Ruddington, West Bridgford to Gamston and L8 circular serving Sherwood and Mapperley) are also free to passengers without a concessionary travel entitlement.

6.9.49 How to continue to ensure that transport is an affordable for low income groups will be a particular challenge for the LTP3 Strategy in the current economic climate. It is also likely that future increases in fuel costs due to peak oil will disproportionately impact on low income groups in terms of the affordability of both private and public transport options.

6.10 Human Health including Safety, Air Quality and Noise

6.10.1 There are both positive and negative links between transport and human health: Transport can adversely impact on human health and wellbeing in terms of air pollution, road injuries, stress caused through noise and vibration and severance. However transport is also an enabler of good health and wellbeing by providing access to key services that influence the determinants of good health; including jobs and training and destinations providing opportunities for healthy lifestyles e.g sports, leisure and open spaces and access to healthy affordable food shopping, as well as health care services.

6.10.2 The natural environment can offer opportunities for leisure, recreation and access to nature thereby encouraging healthy lifestyles, improving quality of life and providing associated benefits for health and wellbeing. Access to natural greenspace is now recognised to improve rehabilitation after illness. To achieve these benefits, places where people can access and enjoy the natural environment should be provided and created where they are most wanted and needed: close to where people live; and where they want to visit.; and there should be provision of the widest range of access opportunities for people of all abilities, ages, ethnic groups and social circumstances to actively engage in, value and enjoy the natural environment.

6.10.3 Active travel options are an easy way of building physical activity into everyday routines. The location of development in relation to transport infrastructure is a key consideration to encourage the use of more sustainable modes of transport; in particular

walking and cycling. Ease of access to an efficient and effective, integrated public transport system and a network of improved attractive pedestrian and cycle routes, including links to the Rights of Way network, should be incorporated into the design of new developments.

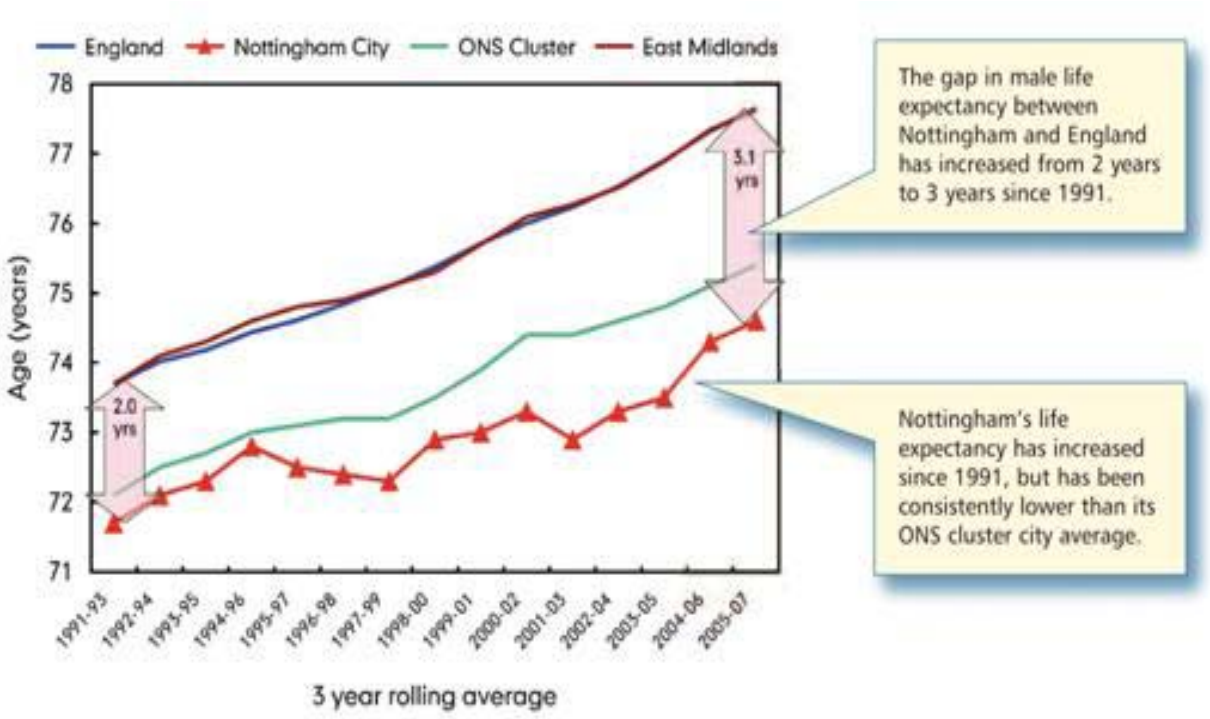
Life expectancy

6.10.4 In overall terms Nottingham's residents are less healthy than elsewhere in the country. The City's high levels of deprivation, high level of unemployment, low educational attainment and unhealthy lifestyle (high smoking, poor diet, low physical activity) are all interrelated determinants of its poor health outcomes and high level of health inequalities.

6.10.5 Life expectancy in Nottingham for men is 75 years, compared with 78 years for Greater Nottingham and for England, and for women 80 years compared with 82 years for Greater Nottingham and England. The gap in life expectancy between Nottingham and England has been widening since the early 1990s (see Figure 5.14**)**. Within the City there are high levels of health inequalities – life expectancy varies by 10 years between the most and least deprived wards of St Ann's and Wollaton West. Fifteen of the 20 wards in the City have significantly lower life expectancy than the regional average.

6.10.6 The most significant disease contributors to lower than average life expectancy for the City's residents are premature deaths caused by cardiovascular disease (CVD), respiratory diseases and cancers. Although the level of premature death from CVD (which includes heart disease and stroke) has fallen significantly in Nottingham (a 46% fall between 1997 and 2007) mirroring the national trend, the gap with the rest of the country is not closing. Locally a marked gap persists between the most deprived and least deprived fifth of areas.

Figure 6.14 The growing gap in life expectancy for men between Nottingham, England and our ONS cluster



6 Baseline Data

Figure 6.15 Proportion of obese children: 2006 - 2009

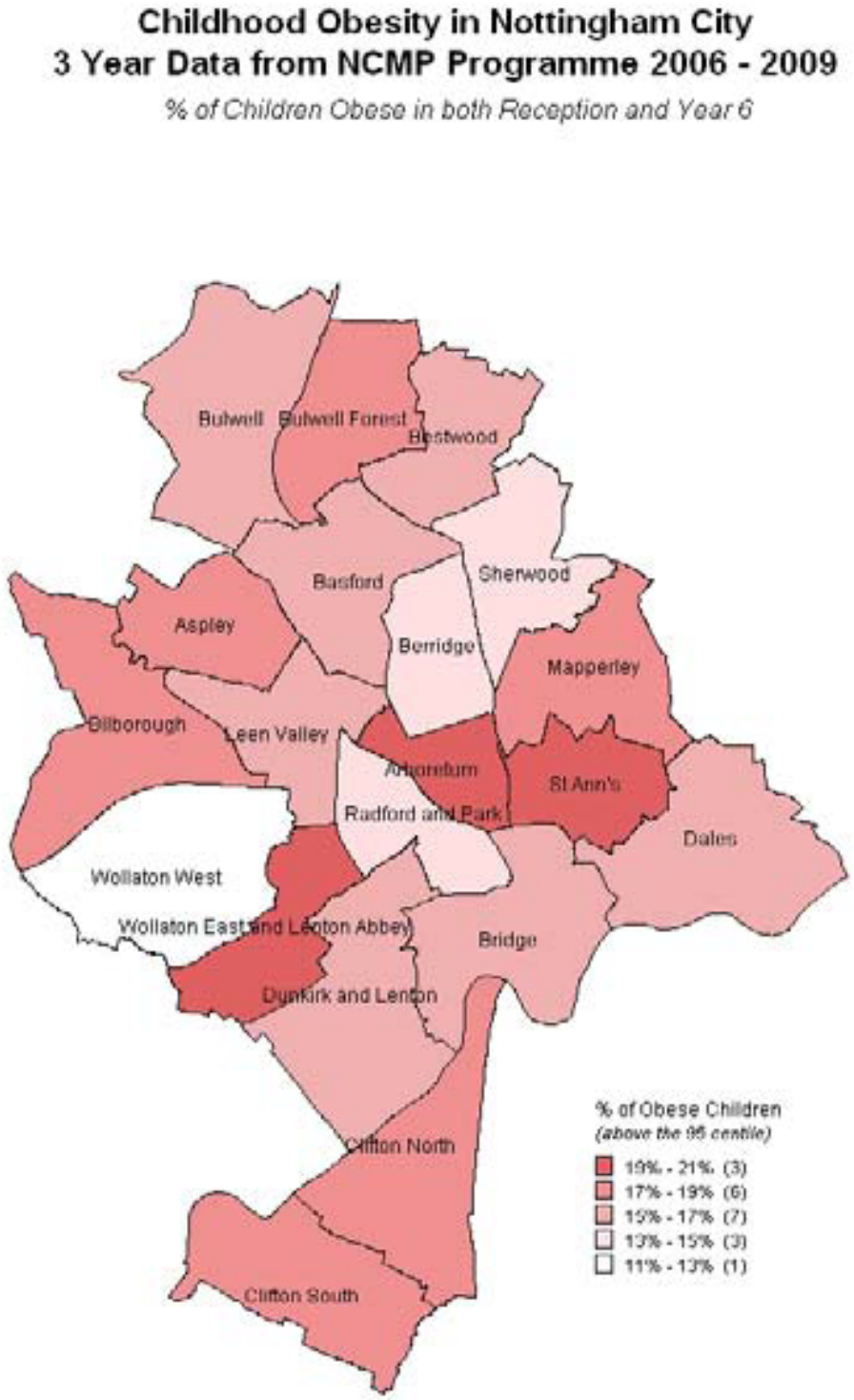


Figure 6.16 Number of obese children: 2006 - 2009



6 Baseline Data

Obesity

6.10.7 **Children and young people**: Nottingham's children have similar levels of obesity than the England average in Reception, although levels are higher than the England rate in Year 6 where 22.6% of those measured were obese (2008/9) and are likely to grow into obese adults at risk of heart disease, stroke and type 2 diabetes.

6.10.8 Mapping illustrates the extent to which obese children are concentrated in the more deprived City areas. The wards with the highest proportion of obese children are: Aspley, Bilborough, Bulwell Forest, St Anns, Arboretum, Mapperely, Lenton Abbey and Clifton (Figure 6.15). In terms of service planning it is useful to examine which wards have the highest number of obese children. This shows a similar, yet slightly different picture with the highest numbers in: Aspley, Bilborough, Bulwell, Bulwell Forest, Bestwood, Berridge, Basford, St Anns, Dales and Clifton (Figure 6.16). These are areas where estimates of adult obesity are also relatively high. [29]

6.10.9 26.7% of children in Nottingham belong to ethnic groups other than White British and about 1.75% of the overall rate in Year 6 children (21.95%) is attributable to ethnic mix.

6.10.10 **Adults**: In England, 37% of people aged 16 and over are overweight and 25% obese. Nationally obesity is predicted to rise from 2006 levels of 24% of men and 24% of women to 60% of men and 50% of women by 2050. It is estimated that adult obesity prevalence in Nottingham is significantly higher than the England average. [30][31] This is partly due to Nottingham's relatively high level of deprivation. It is estimated that nearly 40% of adults are overweight and nearly 30% obese. Areas 3 and 5 in the City have the highest levels of obesity and Area 7 the lowest

Health of older people

6.10.11 Although the city has a relatively young population, analysis using MOSAIC® profiling data shows a higher than average proportion of households with older people living in social housing with high care needs. One third of City residents aged 60 plus claim Pension Credit, an entitlement intended to raise their income to a minimum level, compared to just over one fifth in Greater Nottingham and England. Within Nottingham, areas with the highest proportions of income deprived older people tend to be areas where relatively few older people live, which can create isolation. Those of pensionable age also tend to have low levels of car ownership (unless they live with somebody of a younger age), which can act as a barrier to accessing services.

6.10.12 Older peoples' health is generally much worse than that of other groups, with the Census reporting that nearly half had a limiting long term illness or disability. Two thirds of clients receiving adult social care support are older people. Most of these require help because of a physical disability (including sensory impairment) or frailty, and one in ten needs support due to mental health. Further information about people with disabilities is set out in Section 6.9 above.

29 Local Child Measurement Programme Data, NHSNottinghamCity
30 National Centre for Social Research, 2007
31 Association of Public Health Observatories, 2009

Mental health

6.10.13 Mental health and physical health are interlinked, with people with mental illness experiencing higher rates of morbidity and a lower life expectancy, and people with chronic physical health problems more likely to experience mental health problems. Adults with mental health problems are one of the most socially excluded groups in society, and one in four adults will experience mental health problems at some point in their lives.

6.10.14 Mental illness can be both a cause and effect of not working, and the City has higher than average numbers claiming Incapacity Benefit for mental health reasons. In Nottingham it has been estimated that around 40,000 people have a common mental health problem. The level of severe mental illness in the City is 45% above the national average, with around 1,000 people having a psychotic disorder.

6.10.15 The number of people with mental health problems may increase in the short to medium term because of the current economic climate causing increased financial hardship and unemployment.

Physical activity

6.10.16 Physical activity is hugely important to good health. Walking and cycling is the most cost effective way of addressing coronary heart disease, which is the biggest cause of premature death in the UK, and contributes significantly to combating other major health conditions, including obesity, stroke, Type B Diabetes, cancer and osteoporosis.

6.10.17 **Children and young people:** Using the national proportions from the 2008 Health Survey for England, it is estimated that approximately 29,000 boys and 33,000 girls of the 43,000 resident population in Nottingham City aged between 2-15 years are not meeting the recommended levels of physical activity. We have no data to indicate how accurate this is locally. Boys achieve higher levels of physical activity than girls across age groups. From Year 7 (aged 11-12 years), participation in physical activity decreases, particularly for girls with the lowest levels in Year 11 (aged 15-16 years). This continues into adulthood, with lower physical activity amongst women than men.

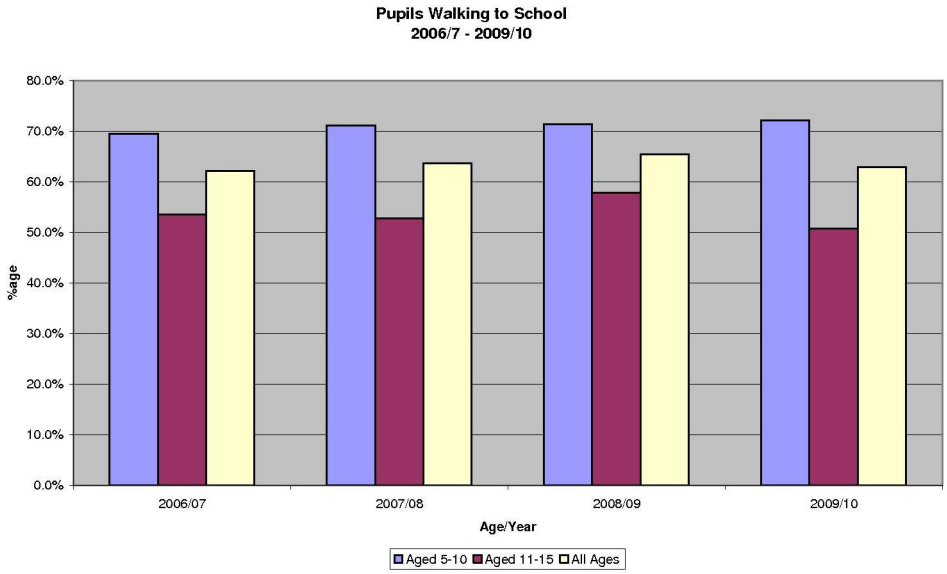
6.10.18 Walking or cycling to school may make a significant contribution to young people's activity levels. With 62.8% of all journeys to school made on foot, Nottingham City has the highest level of walking to school out of the Core Cities and the 8th highest level of walking to school nationally. **(32)** When this is broken down by primary and secondary school pupils, 72.1% and 50.7% of pupils walk to school respectively. The numbers of pupils walking to primary school has increased year on year since the introduction of national school travel plan programme, although numbers walking to secondary school fell in 2009/10 back to 2007/8 levels (see Figure 6.17).

6.10.19 Compared to walking, total numbers of cycling to school in Nottingham are comparatively small at 1.2%, with less than half a percent of primary school pupils and 2.4% of secondary school pupils cycling to school. **(33)**

32 PLASC data, Department for Transport, 2009/10
33 PLASC data, Department for Transport, 2009/10

6 Baseline Data

Figure 6.17 Pupils walking to school (2006/7 – 2009/10)



6.10.20 **Adults aged 16 years and over**: It is estimated that adult physical activity levels in Nottingham are not significantly different from the England average. **(34)** Using this assumption it is estimated in that 157,600 adults are not currently meeting the Chief Medical Officer's recommendations of 5 times 30 minutes moderate activity.

6.10.21 **Adults aged 50-74 years**: A postal survey commissioned by NHS Nottingham City in 2009 found that 29% participated in moderate physical activity (excluding walking) (IPSOS MORI, 2009). This equates to 38,200 people from a population of 53,800 being inactive. Inclusion of walking in the calculation of physical activity levels resulted in a very high prevalence of achievement of physical activity recommendations. This may have been due to over reporting of walking in this population which is reported for the use of the International Physical Activity Questionnaire used to self report physical activity levels.**(35)** This was a slight, but not statistically significant increase from the 2005 survey (27%). Only 7% of these survey respondents were found to correctly describe the physical activity recommendations for health which is similar to the figures reported in the Health Survey for England.

6.10.22 National information shows that physical activity levels are lower for women than men at all ages. It is reasonable to assume that this is the case for Nottingham city.

6.10.23 National information shows that physical activity levels are lowest amongst adults from Pakistani and Indian Communities when compared with the general. **(36)** This is particularly the case for women from these communities. The Pakistani community is one of the largest minority communities in the city. People from this community tend to live in areas of deprivation.

34 Association of Public Health Observatories, 2009.
35 Bauman et al, 2009
36 NHS Information Centre, 2006

6.10.24 National information shows that people with disability have lower sport and active recreation participation levels. This also applies to people with long standing illness. [37] It is reasonable to assume this is the case locally as disability/long standing illness is also identified as a reason as to why people are not active locally. [38]

6.10.25 Nottingham's focus on improving lifestyle risk factors for disease is beginning to have encouraging results, with an increase in physical activity levels in the city. However current national trend of rising obesity levels is set to continue with obese children at high risk of becoming obese adults: 40% of Britons are predicted to be obese by 2025 and nearly 60% of the UK population could be obese by 2050.The levels in the City will almost certainly follow this trend and may well be higher. These factors are likely to detrimentally impact on the recent improvements in life expectancy in the City and are of particular concern given the levels of inactivity noted above.

Safety

6.10.26 Compared to the 94-98 baseline there has been a 49.5% reduction of total road casualties for the Greater Nottingham area (November 2009) and a 75% reduction in child casualties (KSIs killed and seriously injured). This significant reduction shows that the authorities are ahead of the trajectory to meet the 52% reduction from the baseline by 2010. In the City total and child KSIs for 2008 were the lowest on record with 15% fewer total casualties than in 2006.

6.10.27 In relation to crime and the fear of crime, the IPSOS Mori Place Survey 2008 reported that 79% of residents in Nottingham feel safe outside in the day but only 36% feel safe outside at night, whereas 44% state they feel unsafe outside at night. It is unclear to what extent safety may present a barrier to people travelling by public transport at night. LTP2 Local Indicator 16 perception of safety when using the bus at night (after 7pm) is based on user experience of the journey including accessing the bus stop and the wait for the bus measured through quarterly surveys of bus users at the travel centre. In 2007/8 74% of bus users felt safe when using the bus at night representing an 9% increase since 2005/6 when this data was first collected and would appear to show a more positive experience than the Place survey.

6.10.28 The Nottingham Crime and Drugs Partnership report annually through the Joint Strategic Assessment report on levels of crime including Theft from a Vehicle and Theft of a Vehicle which are both measured as part of NI16. Data from the 2009/10 Report shows that:

- **Theft from a vehicle** continues to fall in both the long and short-term with a 35% decrease over the last two years (approximately 4,000 offences per year). [39] However car parks are still vulnerable locations and although offences have reduced there are still occurrences of six or more offences in a single night in some car parks showing that crime has not been designed out. The most vulnerable police beats for Theft from a Vehicle are Lace Market (6%), The Park (4%) and Lenton Triangle (4%). Over a quarter

37 Department of Health, 2009
38 IPSOS MORI, 2009
39 Assessment period: 01/07/2008-30/06/2009 compared 01/07/2006-30/06/2007

6 Baseline Data

of the offences in the Lace Market occurring in Stoney Street NCP car park. (70 offences which equals 26.6% of the Lace Market offences). Lenton Triangle has recorded a 40% increase (from 114 to 160 offences), of offences in vehicles parked on-street.

- **Theft of a vehicle** continues to fall in both the long and short-term with a 34% reduction over the last two years. [(40)] Theft of a vehicle represents almost 2.5% of all crime in the City and at approximately 1,200 offences per year is a much smaller problem in terms of volume compared to burglary or theft from a vehicle. Attempted theft of vehicles has also reduced significantly (-34%) from 1,640 offences to 1,057. The most likely reason for the sustained reduction in Theft of a Vehicle offences is the increasing levels of security in vehicles that primarily makes them harder to steal (Immobilisers and Alarms) and secondly technology that makes them traceable (such as Tracker and Micro Dots). This technology is now limiting the types and age of vehicle able to be stolen.

6.10.29 There are an estimated 4,000 Problem Drug Users in the City. As well causing harm to the individual (including premature death and illness), there is an impact to the immediate family and friends and/or the wider community e.g. violent and acquisitive crime. Drug driving is of increasing concern for road safety

6.10.30 Alcohol misuse is another feature of the City that contributes to lower life expectancy, as well as to greater violence and disorder and mental health problems. It is estimated that there are over 15,000 harmful drinkers and 4,500 dependant drinkers in Nottingham, and that 1 in 20 deaths in the City are alcohol related. There are also rising rates of alcohol-related hospital admissions. Alcohol is also a contributory factor in many road accidents.

Air quality

6.10.31 There are two air quality management areas relating to vehicle use in the City Council area: Nottingham No:2 AQMA is located in the City centre and Nottingham No:3 AQMA is located in the Dunkirk area of the City.

6.10.32 A Detailed Assessment was carried out for:

- Nitrogen dioxide - for a number of roads and junctions with traffic flows meeting the guidance criteria and some of the diffusion tubes monitoring results indicate exceedance of the NO2 annual mean objective.

- Particles (PM10) - for two roads that meet the criteria specified in the guidance.

6.10.33 Nitrogen dioxide is known to cause respiratory problems, particularly to people who already suffer from breathing difficulties as a result for example of asthma.

6.10.34 The Assessment concluded that for **Nitrogen dioxide** the annual mean AQO of 40µg/m3 is likely to be met in the Nottingham City area. However there are parts of the City, mostly near existing AQMAs, where modelling and monitoring results suggest that the objective

40 Assessment period: 01/07/2008-30/06/2009 compared 01/07/2006-30/06/2007

is being exceeded at locations with relevant exposure of members of the public. While it is not necessary to declare any new AQMAs for nitrogen dioxide it is necessary to modify both of the existing AQMAs as follows:

- Nottingham No:2 AQMA to be amended to extend the area of the AQMA to the north and north-west where there are residential properties and remove a bus depot and the Ice Arena.

- Nottingham No:3 to be amended to extend the AQMA along a road to incorporate the residential properties that border it and modifies the area around a major junction. The amendment removes the QMC Hospital campus from the AQMA (three years of continuous monitoring at the site has shown that neither of the nitrogen dioxide objectives have been exceeded).

6.10.35 **For Particles PM10,** the Detailed Assessment of the 2004-2006 monitoring and 2006 modelling results showed that the annual mean Air Quality Objectives have been and are likely to continue to be met at locations of 'relevant exposure' in the Nottingham City area so it is not necessary to declare any AQMAs for this pollutant.

Noise

6.10.36 Environmental Noise arising from transport and industry is an inevitable consequence of a vibrant urban society. Noise is subjective and different people react to it in different ways and what can cause annoyance to some people maybe barely noticeable for others. As the noise level increases it can interrupt conversation and disturb sleep. In general, noise can be classified into fairly broad categories; occupational noise, which is experienced at work, neighbour and neighbourhood noise, and environmental (ambient) noise.

6.10.37 European Directive 2002/49/EC, more commonly known as the Environmental Noise Directive (END), is concerned with noise from road, rail and air traffic and from industry. It focuses on the impact of such noise on individuals, complementing existing EU legislation which sets standards for noise emissions from specific sources. The END requires European Member States to:

- Determine the number of people exposed to noise levels above 55 dB(A) L_{den} and 50 dB(A) L_{night} from major roads, major railways, major airports and in agglomerations (large urban areas) from environmental noise, through noise mapping;

- Provide information on environmental noise and its effects on the public;

- Adopt action plans, based upon noise mapping results, which should be designed to manage noise issues and effects, including noise reduction if necessary;

- Preserve environmental noise quality where it is good.

6 Baseline Data

6.10.38 In England the Directive is implemented through The Environmental Noise (England) Regulations 2006. Those areas/noise sources in England for which noise mapping has occurred are identified in The Environmental Noise (Identification of Noise Sources) (England) Regulations 2007.

6.10.39 Defra have produced a set of noise maps available at http://services.defra.gov.uk/wps/portal/noise to meet the requirements of the Environmental Noise (England) Regulations 2006, and to inform the production of noise action plans for large urban areas, major transport sources, and significant industrial sites in England. The maps provide an overview of the ambient noise environment in large urban areas and from major transport sources in England and allow the determination of the number of people affected by different levels of ambient noise, the source of that noise (i.e. road, rail, air or industry) and the locations of the people affected. The map for the Nottingham agglomeration is shown in Figure 6.16.

Noise Action Plans

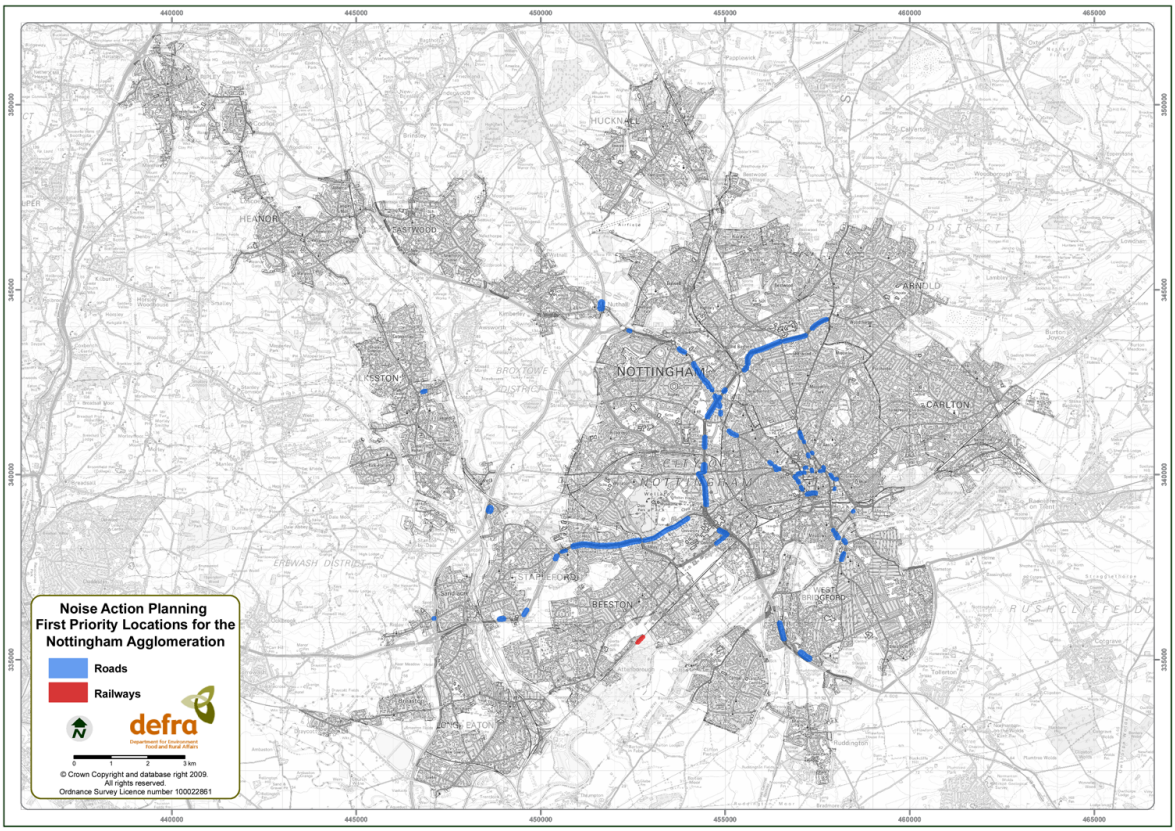
6.10.40 The Secretary of State for Environment, Food and Rural Affairs formally adopted Noise Action Plans for 23 agglomerations (large urban areas), including Nottingham along with major roads and major railways in England on 15th March 2010.

6.10.41 The purpose of Noise Action Plans is to assist in the management of environmental noise and its effects, including noise reduction if necessary, in the context of government policy on sustainable development. Noise Action Plans are based on the results of the strategic noise maps published in 2008.

6.10.42 The Action Plans represent a strategic approach to managing environmental noise. They set out a direction of travel for managing noise, but do not propose any specific noise mitigation measures at this stage. It is intended that any such measures will be identified and agreed at a local level. Responsibility for implementing the plans will fall on those authorities who generate the noise (road, rail and airport authorities).

6.10.43 The Action Plans apply in particular to the most 'Important Areas' as established by the noise mapping and also set out a process for identifying and aiming to protect 'Quiet Areas' from an increase in noise in agglomerations. The Action Plans are intended to apply in particular to the most 'important areas' identified by the noise maps. Therefore, a set of Important Areas and First Priority Locations have been identified for each of the Noise Action Plans. The Noise Action Plan for Nottingham Agglomeration can be downloaded from http://www.defra.gov.uk/environment/quality/noise/environment/documents/actionplan/noiseaction-agglom-nottingham.pdf

Figure 6.18 Noise Action Planning First Priority Locations for the Nottingham Agglomeration



Noise from road traffic in the Nottingham agglomeration

6.10.44 The Regulations required that noise level information be determined in terms of several noise indicators: L_{den} ; L_{night}; and $L_{A10,18h}$. The estimated number of people and dwellings (rounded to the nearest thousand) exposed above various noise levels from the strategic mapping of road traffic noise in this agglomeration are shown in Tables 6.5, 6.6 and 6.7 below:

Table 6.5 Estimated number of people and dwellings above various noise levels due to road traffic noise, L den

Noise Level (L_{den}) (dB)	Number of Dwellings	Number of People
55	278,000	621,000
60	196,000	437,000
65	19,000	44,000
70	7,000	14,000
75	<500	1,000

6 Baseline Data

Figure 6.19 Total Road Noise Population Exposure in Nottingham, Lden

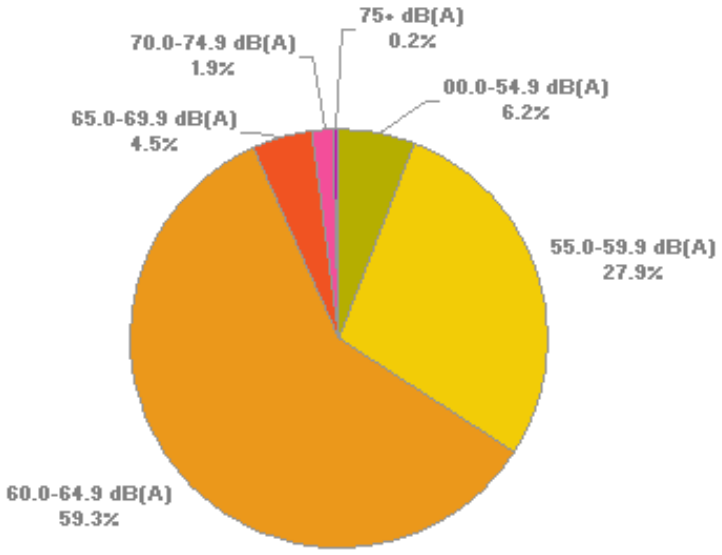


Table 6.6 Estimated number of people and dwellings above various noise levels due to road traffic noise, L night

Noise Level (L_{night}) (dB)	Number of Dwellings	Number of People
50	219,000	491,000
55	31,000	69,000
60	9,000	19,000
65	1,000	2,000
70	<500	<500

Figure 6.20 Total Road Noise Population Exposure in Nottingham Lnight

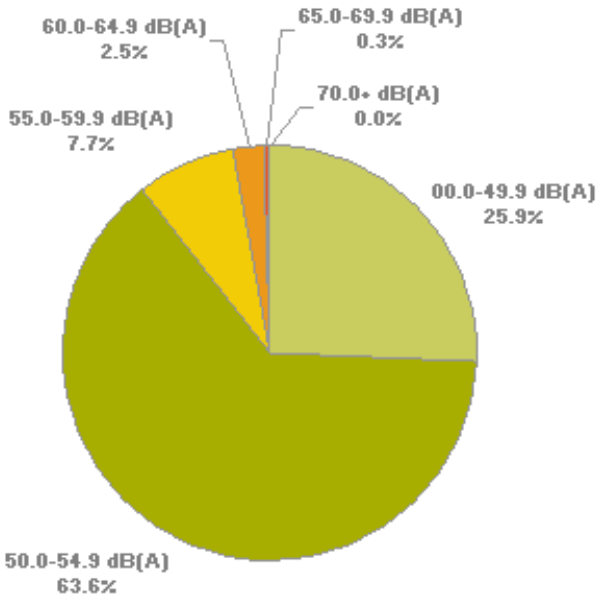


Table 6.7 Estimated number of people and dwellings above various noise levels due to road traffic noise, L A10,18h

Noise Level ($L_{A10,18h}$) (dB)	Number of Dwellings	Number of People
55	278,000	621,000
60	205,000	457,000
65	22,000	48,000
70	8,000	17,000
75	2,000	4,000

6.10.45 It has been decided that the Important Areas with respect to road traffic noise in the Nottingham agglomeration will be where the 1% of the population that are affected by the highest noise levels from those roads mapped for this agglomeration are located according to the results of the strategic noise mapping. This approach has been taken because the population at these locations are likely to be at the greatest risk of experiencing a significant adverse impact to health and quality of life as a result of their exposure to road traffic noise. In addition, those locations where the $L_{A10,18h}$ is at least 76 dB according to the results of the strategic noise mapping have been identified as “First Priority Locations”.

6.10.46 The Noise Action Plan for the Nottingham Agglomeration identifies that in Nottingham City there are approximately 3,000 dwellings (equating to 5.600 of associated population) located in Important Areas of which 1.200 dwellings (equating to 2,200 of associated population) are in First Priority locations. It is envisaged that the highways authorities will investigate as a priority the Important Areas that contain First Priority Locations.

6 Baseline Data

6.10.47 For each Important Area the relevant highway authority will consider what, if any, actions might be taken. This will include, but not be limited to, exploring the scope for (in no particular order): erecting noise barriers; installing low noise road surfaces; local traffic management measures; or improving the sound insulation depending on feasibility and available finances.

Noise from railway sources in the Nottingham agglomeration:

6.10.48 The Regulations required that noise level information be determined in terms of several noise indicators. These include: L_{den}; L_{night}; and $L_{Aeq,18h}$. The estimated number of people and dwellings (rounded to the nearest thousand) exposed above various noise levels from the strategic mapping of railway noise in this agglomeration are shown in Tables 6.8, 6.9 and 6.10 below:

Table 6.8 Estimated number of people and dwellings above various noise levels due to railway noise, L den

Noise Level (L_{den}) (dB)	Number of Dwellings	Number of People
55	5,000	11,000
60	3,000	5,000
65	1,000	1,000
70	<500	<500
75	<500	<500

Table 6.9 Estimated number of people and dwellings above various noise levels due to railway noise, L night

Noise Level (L_{night}) (dB)	Number of Dwellings	Number of People
50	3,000	6,000
55	1,000	2,000
60	<500	<500
65	<500	<500
70	0	0

Table 6.10 Estimated number of people and dwellings above various noise levels due to railway noise , LAeq,18h

Noise Level ($L_{Aeq,18h}$) (dB)	Number of Dwellings	Number of People
55	4,000	8,000
60	1,000	3,000
65	<500	1,000
70	<500	<500
75	0	0

6.10.49 It has been decided that the Important Areas with respect to noise from railway sources in the Nottingham agglomeration will be where, according to the results of the strategic noise mapping, the 1% of the population that are affected by the highest noise levels from the railway sources are located. This approach has been taken because the population at these locations are likely to be at the greatest risk of experiencing a significant adverse impact to health and quality of life as a result of their exposure to rail traffic noise. In addition, those locations where the $L_{Aeq,18h}$ is at least 73 dB according to the results of the strategic noise mapping have been identified as First Priority Locations. It is envisaged that in general the relevant rail authorities will investigate as a priority the Important Areas that contain First Priority Locations. In Nottingham City there are fewer than 50 dwellings (equating to fewer than 100 people) within priority areas and no dwellings within the defined First Priority Areas.

The management of the impact of aircraft noise in the Nottingham agglomeration

6.10.50 For the purposes of the noise action plan for the Nottingham agglomeration, only the noise impact from those airports for which noise mapping was required to be carried out according to the Environmental Noise (England) Regulations 2006 (as amended) has been considered, which included the East Midlands Airport. The Nottingham agglomeration is not affected by noise from any of those airports.

Table 6.11 Key to Noise Measurement Units

$L_{Aeq,T}$	The A-weighted equivalent continuous sound pressure level which is a notional continuous level that, at a given position and over the defined time period, T, contains the same sound energy as the actual fluctuating sound that occurred at the given position over the same time period, T
L_{night}	The L_{Aeq} over the period 2300 – 0700, local time (for strategic noise mapping this is an annual average)
L_{den}	The L_{Aeq} over the period 0000 – 2400, but with the evening values (1900 – 2300) weighted by the addition of 5 dB(A), and the night values (2300 – 0700) weighted by the addition of 10 dB(A) (for strategic noise mapping this is an annual average)
$L_{A10,18h}$	The noise level exceeded for 10% of the time averaged hourly over the period 0600-2400.
$L_{Aeq,18h}$	The L_{Aeq} over the period 0600 – 2400, local time (for strategic noise mapping this is an annual average)

IIA Objectives and Indicators 7

7 IIA Objectives and Indicators

7.1 Developing the IIA objectives

7.1.1 The SEA Directive does not specifically require the use of objectives or indicators, but they are a recognised way in which environmental effects can be described, analysed and compared. The policy review summarised in Section 5 was used to inform the development of a set of Assessment Objectives which were then used to assess the LTP3 Strategic Options in Stage B of the IIA (Appraisal).

7.1.2 Table 7.1 shows how the theme areas considered by the IIA respond to the priorities of the One Nottingham Sustainable Community Strategy (SCS) and the LTP3 Vision and comply with the SEA topics (as set out in the Directive) and the NATA objectives.

7.1.3 A set of ten IIA Assessment Objectives was developed to consider the impacts of the LTP3 Options under the agreed themes. To assist the assessment process a set of key questions was identified for each objective against which the LTP3 options have been appraised. The proposed Objectives and the Assessment criteria are as set out in Table 7.2. Table 7.1 demonstrates that the Assessment Objectives have been derived from and are very much in line with related plans, policies and programmes, which are summarised in Section 5.

7.1.4 The SEA objectives are meant to be separate from the evolving LTP objectives, although the two can influence each other and may overlap. Above all the overall LTP3 objectives should be compatible with the SEA objectives. Therefore the proposed set of IIA Assessment Objectives were tested and refined at a Scoping Workshop in February 2010 involving City Council officers and key external partners, including the statutory consultees. This workshop included exercises to test the internal compatibility of the Assessment Objectives and to test them against the DfT's DaSTS Goals and the emerging LTP3 vision.

7.1.5 The results of these exercises are recorded in Tables 7.3 and 7.4**.** The groups were asked to record compatible objectives with a ✓ ; neutral objectives with a **O**; and incompatible objectives with an **X**. In some cases, where there were both positives and negatives to consider a ✓ and an **X** have been recorded.

7 IIA Objectives and Indicators

Table 7.1 Relationship of the Integrated Impact Assessment Themes to Local Priorities and SEA requirements

One Nottingham Sustainable Community Strategy - Priorities				
Develop Nottingham's international standing for science, innovation and culture	Be environmentally sustainable	Ensure all children and young people thrive and achieve	Transform Nottingham's neighbourhoods	Improve health and wellbeing
		Tackle poverty and deprivation by getting local people into local jobs		Reduce crime, fear of crime and anti-social behaviour

LTP3 Vision				
Delivering a world class sustainable transport vision	Creating a low carbon transport system	Promoting equality of opportunity	Improving quality of life and transforming Nottingham's neighbourhoods	Supporting safe, active and healthy citizens

Topics identified for consideration in SEA Directive (Annex If) (Source: TAG Unit 2.11 Table 3.3)				
Material assets	Climatic factors	Population		
			Human Health	
			Air Quality	
			Landscape	
			Cultural Heritage	
			Biodiversity/fauna/flora	
			Soil	
			Water	

NATA Sub-objectives (Source: TAG Unit 2.11 Table 3.3)				
Public Accounts	Greenhouse gases	Community Severance	Noise	Physical fitness
Business users and providers		Access to the transport system	Local Air Quality	Accidents
Consumer Users			Landscape	Security
			Townscape	
			Heritage	
			Biodiversity	
			Water Environment	

Proposed LTP3 Integrated Impact Assessment Themes				
Population and Economy	**Climate/CO2**	**Equality and inclusion** incl. Accessibility & Crime (= EqIA element)	**Natural Environment** (Biodiversity, Landscape & Soil)	**Human health** incl. Noise and Air Quality (= HIA element)
	Material assets (Minerals, Waste, Energy & Fossil Fuels)		**Urban Environment** (Cultural Heritage & Townscape)	
			Water	

Table 7.2 Integrated Impact Assessment Objectives

Themes	Assessment Objectives	Assessment Criteria
Climate/CO2	**1. To reduce carbon and other greenhouse gas emissions from transport and enable the network to assist in the management of, and adaptation to, climate change.**	**To what extent will the LTP3 option:**
		Reduce the need to travel?
		Promote sustainable travel options? (Public transport, cycling and walking)?
		Support low carbon fuel initiatives?
		Create a resilient transport network?
		Contribute to the green infrastructure network to help to mitigate and adapt to climate change?
Material assets (Minerals, Waste, Energy & Fossil Fuels)	**2. To manage scarce resources (minerals, energy and fossil fuels) and minimise waste.**	**To what extent will the LTP3 option:**
		Reduce the use of fossil fuels by reducing drive-alone journeys?
		Foster use of renewable fuels?
		Support sustainable sourcing of transport products and construction materials, including using local supply chains, recycled products and reclaimed materials?
		Minimise waste from construction?
		Support opportunities to develop brownfield sites?
Water	**3. To protect water quality and minimise the impact of flooding.**	**To what extent will the LTP3 option:**
		Manage and improve water quality?
		Reduce the impact of flooding (including contingency planning)?
		Have the capacity to cope with extreme weather conditions ie flood and drought?
		Cope with a rising water table?
		Improve access to and recreational use of river corridors?

Themes	Assessment Objectives	Assessment Criteria
		Increase levels of waterborne freight?
Natural Environment (Biodiversity, Landscape & Soil)	**4. To protect and enhance the rich diversity of the natural environment, including biodiversity, landscape, geodiversity and soils by seeking net environmental gain.**	**To what extent will the LTP3 option:**
		Take account of protected sites for species and habitats within the City?
		Enhance habitats and conservation?
		Provide opportunities to protect and enhance landscape character and quality of all local landscapes including designated landscapes?
		Support access to and enjoyment of green and open spaces for all sectors of the community?
		Deliver green infrastructure?
		Minimise the effects of noise and light pollution from transport on the natural environment?
Urban Environment (Cultural Heritage & Townscape)	**5. To protect and enhance buildings, areas and features of historic, archaeological and architectural interest including designated and other heritage assets and their settings,**	**To what extent will the LTP3 option:**
		Create opportunities to enhance the urban environment including buildings, sites, areas and features of historic, archaeological and architectural interest and heritage assets and their settings?
		Preserve the character of buildings, sites, areas and features of historic, archaeological and architectural interest , designated conservation areas and heritage assets and their settings?
		Reducing the impact of transport by reducing the need to travel and promoting less intrusive and damaging transport options?
		Promote good design which recognises local and regional distinctiveness?
		Provide innovative transport management strategies for buildings, sites, areas and features of historic, archaeological and architectural interest and heritage assets and their settings?

Themes	Assessment Objectives	Assessment Criteria
		Improve access to cultural activities and destinations for all sectors of the community?
Population and Economy (Sustainable Communities)	**6. To respond to the regeneration and growth agendas in a sustainable way.**	**To what extent will the LTP3 option:**
		Improve access to jobs and services for City residents using sustainable travel options?
		Support the use of smart technology for transport and communications?
		Improve regional connectivity for personal and business travel?
		Provide sustainable infrastructure network for freight?
Equality and inclusion incl. Accessibility & Crime (= EqIA element)	**7. To improve access to services and opportunities for all.**	**To what extent will the LTP3 option:**
		Improve access to jobs and key services for those without access to car?
		Address geographical travel barriers for different sectors of the community?
		Address physical travel barriers for different sectors of the community?
		Address cost of travel barriers for different sectors of the community?
		Improve safety of travel including improving lighting and reducing fear of crime for different sectors of the community?
		Provide appropriate information about travel options in formats suitable for different sectors of the community?
		Meet the specific travel needs of different ethnic groups; disabled people; women; older people; young people, the LGBT community and faith communities?
Human health incl. Air Quality & Noise (= HIA element)	**8. To improve health and reduce health inequalities.**	**To what extent will the LTP3 option:**
		Reduce the need to travel?
		Promote sustainable travel options? (Public transport, cycling and walking)

Themes	Assessment Objectives	Assessment Criteria
		Increase the proportion of active journeys (walking and cycling)?
		Improve road safety by reducing traffic speed and danger from traffic?
		Improve access to healthcare facilities?
		Improve access to services, facilities and destinations that support healthy lifestyles eg health food outlets, sports and leisure destinations, open space?
		Improve health and well-being through access to the natural environment?
		Establish links with the health sector to foster partnership working?
	9. To improve air quality in the AQMAs and maintain, and wherever possible, improve air quality across Nottingham City and the wider conurbation.	Improve air quality?
		Reduce the use of fossil fuels for transport?
		Improve the efficiency of the transport network i.e. reduce congestion?
	10. To reduce levels of transport related noise in areas of sensitivity.	Reduce levels of transport related noise and vibration in areas of sensitivity?

Table 7.3 Integrated Impact Assessment Objectives: Internal Compatibility

Climate/ CO2	1. To reduce carbon and other greenhouse gas emissions from transport										
Material assets	2. To manage scarce resources (minerals and fossil fuels) and minimise waste	✓									
Water	3. To protect water quality and minimise the impact of flooding	✓	✓								
Natural Environment	4. To protect & enhance the diversity of the natural environment incl. enhancing & conserving biodiversity	✓	✓	✓							
Urban Environment	5. To protect and enhance buildings, areas and features of historic, archaeological and architectural interest	✓	✓	o	✓						
Population and Economy	6. To respond to the regeneration and growth agendas in a sustainable way	x	✓	✓	✓x	✓x					
Equality and inclusion	7. To improve access to services and opportunities for all	✓	x	✓	x	✓	✓				
Human health incl. Air Quality & Noise	8. To improve health and reduce health inequalities	✓	✓	✓	✓	✓	✓	✓			
	9. To improve air quality in the AQMAs and maintain, and across Nottingham and the wider conurbation	✓x	✓	o	✓	o	x	✓	✓		
	10. To reduce levels of transport related noise and vibration in areas of sensitivity	o	✓	o	✓	✓	✓	o	✓	✓	
Proposed Assessment Objectives		1. To reduce carbon and other greenhouse gas emissions from transport	2. To manage scarce resources (minerals and fossil fuels) and minimise waste	3. To protect water quality and minimise the impact of flooding	4. To protect & enhance the diversity of the natural env incl. enhancing & conserving biodiversity	5. To protect and enhance buildings, areas and features of historic, archaeological and architectural interest	6. To respond to the regeneration and growth agendas in a sustainable way	7. To improve access to services and opportunities for all	8. To improve health and reduce health inequalities	9. To improve air quality in the AQMAs and maintain, and across Nottingham and the wider conurbation	10. To reduce levels of transport related noise and vibration in areas of sensitivity
Integrated Impact Assessment Theme											

Key: ✓ Compatible O Neutral/no link X Incompatible

Table 7.4 Integrated Impact Assessment Objectives: Compatibility with DaSTS Goals and LTP3 Vision

DaSTS Goals/ Emerging LTP3 Vision	**Support Economic Growth** (Create a world class transport system)	x	✓	✓	x	✓ x	✓	✓	✓	x	x
	Reduce CO2 Emissions (Create a low carbon transport system)	✓	✓	✓	✓	✓	✓ x	✓	✓	✓	o
	Promote Equality of Opportunity (Improve access for all to key services, employment and training opportunities)	x	o	✓	x	o	✓	✓	✓	o	o
	Improve Quality of Life and Health Natural Environment (Minimise adverse impacts on the natural environment & improve the quality of citizens' lives)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Contribute to better Safety, Security and Health (Support citizens to live safe, independent and active lifestyles)	x	x	✓	✓	o	✓	✓	✓	✓	✓
Proposed Assessment Objectives		1. To reduce carbon and other greenhouse gas emissions from transport	2. To manage scarce resources (minerals and fossil fuels) and minimise waste	3. To protect water quality and minimise the impact of flooding	4. To protect & enhance the diversity of the natural environment incl. enhancing & conserving biodiversity	5. To protect and enhance buildings, areas and features of historic, archaeological and architectural interest	6. To respond to the regeneration and growth agendas in a sustainable way	7. To improve access to services and opportunities for all	8. To improve health and reduce health inequalities	9. To improve air quality in the AQMAs and maintain, and across Nottingham and the wider conurbation	10. To reduce levels of transport related noise and vibration in areas of sensitivity
Integrated Impact Assessment Themes		**Climate/CO2**	**Material assets (Minerals, Waste, Energy & Fossil Fuels)**	**Water**	**Natural Environment (Biodiversity, Landscape & Soil)**	**Urban Environment (Cultural Heritage & Townscape)**	**Population and Economy (Sustainable Communities)**	**Equality and inclusion incl. Accessibility & Crime**	**Human health incl. Air Quality & Noise**		

Key: ✓ Compatible O Neutral/no link X Incompatible

7.2 Testing the IIA Objectives

7.2.1 The objective compatibility testing exercises at the Scoping Workshop identified a number of areas of possible conflict between individual IIA Objectives and with the DaSTS Goals highlighted in yellow on Tables 7.3 and 7.4 either with an **X** or with a ✓**X** if there were also some positive impacts which the group thought needed to be recorded rather than balancing the positive and negative impacts as a **O**. A note of these potential conflicts was recorded and is summarised below.

7.2.2 Areas of possible conflict between individual IIA Objectives are:

- Responding to the regeneration and growth agenda **(Obj. 6)** may conflict with reducing carbon emissions from transport **(Obj. 1)** as building new housing will create additional travel demand and therefore CO2 emissions from transport. However this also provides an opportunity to create sustainable communities which reduce the need to travel and which are supported by a sustainable transport network providing realistic low carbon travel choices. Also impacts may reduce over time as low carbon personal transport solutions such as electric vehicles become more widely available.

- Improving access by addressing crime and the fear of crime **(Obj. 7)** through provision of increased street lighting may be in conflict with:

  - Managing scarce resources **(Obj. 2)** by increasing use of energy;

  - Protecting the natural environment **(Obj. 4)** where additional lighting results in increased levels of light pollution.

- Increasing access to green and open spaces **(Obj. 7)** may be in conflict with conserving and enhancing biodiversity **(Obj. 4)** so appropriate management strategies will need to be adopted at sensitive sites.

- Reducing carbon emissions from transport **(Obj. 1)** by reducing traffic levels will have some positive health benefits by also reducing air pollution which can exacerbate respiratory conditions. However some low carbon fuel options can reduce air quality **(Obj. 9)** i.e. higher blends of some conventional biofuels (e.g. conventional biodiesel or bioethanol) could increase NOx and VOC emissions. [41] However the term 'biofuels' covers a very wide range of fuels which can be made from a wide variety of feedstocks through a wide variety of processes. Independent studies [42][43] have shown that the reduction in CO2 emissions resulting from using ethanol over fossil fuels is between

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41 Air Pollution: Action in a Changing Climate, March 2010, Defra, page 15 http://www.defra.gov.uk/environment/quality/air/airquality/strategy/documents/air-pollution.PDF

42 Brinkman, N., M. Wang, T. Weber, T. Darlington, 2005, Well-to-Wheels Analysis of Advanced Fuel/Vehicle Systems — A North American Study of Energy Use, Greenhouse Gas Emissions, and Criteria Pollutant Emissions: updated key assumptions in GREET 1.7.

43 Well-to-Wheels analysis of future automotive fuels and powertrains in the European context WELL-to-WHEELS Report Version 2c, March 2007

7 IIA Objectives and Indicators

18% to 87% depending on the source of the ethanol. In the Nottingham Ecolink bus trial the ethanol is derived from Swedish wood waste where the greenhouse gas savings are in the region of 80 percent to 90 percent over petrol. [44] Examples of other beneficial biofuels are biomethane from manure, with emissions savings of over 170 percent.[4] The Scania ethanol fuelled engine also results in significant improvements in air quality: NOx is reduced by 28%, CO by 80%, HC by 50% and Particulate Matter (PM) is reduced by 60% (based on the ESC European Steady Cycle test).

- Responding to the regeneration and growth agenda **(Obj. 6)** may conflict with protecting the natural environment **(Obj. 4)** as new transport infrastructure could involve land take but development also offers opportunities to enhance landscape and habitats through remediation of brownfield sites.

- Responding to the regeneration and growth agenda **(Obj. 6)** may conflict with protecting the urban environment **(Obj. 5)** as new transport infrastructure can involve land take but also offers opportunities for public realm improvements.

- Responding to the regeneration and growth agenda **(Obj. 6)** may conflict with improving air quality **(Obj. 9)** as increased levels of traffic could reduce air quality in the short term but may improve over time with a move to more low emission transport options.

7.2.3 There are also areas of possible conflict between the DaSTS Goals and the IIA Objectives:

Supporting economic growth presents a challenge for achieving:

- **Obj. 1 Reducing carbon emissions**, so LTP3 will need to respond by reducing the need to travel; promoting sustainable transport alternatives and fostering new technology in terms of low carbon travel and ICT solutions. Similarly the DaSTS Goal Reducing CO2 emissions could conflict with Obj. 6 Responding to the regeneration and growth agendas in a sustainable way.

- **Obj. 4 Protecting the natural environment & Obj. 5 Protecting the urban environment** in terms of managing the potential impacts of delivering significant new infrastructure schemes such as NET Phase 2. However this must be balanced against the wider benefits of delivering a high quality sustainable transport system would bring across the area. Site specific issues and appropriate mitigation measures will be picked up by the Environmental Impact Assessment of individual schemes.

44 Towards Sustainable Production and Use of Resources: Assessing Biofuels, International Panel for Sustainable Resource Management, UNEP 2009, ISBN no. 978-92-807-3052-4

- **Obj. 9 Improving air quality** in the short term but may improve over time with a move to more low emission transport options.

- **Obj. 10 Reducing levels of transport-related noise and vibration** in the short term due to increased traffic levels and disruption associated with construction of new transport infrastructure but noise from road transport may reduce over time with the introduction of electric vehicles.

Promoting equality of opportunity:

- Is consistent with **Obj. 1 Reducing carbon emissions** provided that LTP3 delivers better integration of the transport system enabling people to use sustainable travel options;

- Could be in conflict with **Obj. 4 Protecting the natural environment** as increasing access to green and open spaces may impact on sensitive habitats and species unless there are appropriate management strategies in place.

Contributing to better safety, security and health could conflict with:

- **Obj. 1 Reducing carbon emissions & Obj. 2 Managing scarce resources**, if lighting was reduced for carbon reduction reasons thereby increasing perceptions of crime. Measures which impact adversely on people's perceptions of personal safety could create barriers to independent living.

7.2.4 The following additional potential area of conflict was raised in the Scoping Report consultation:

- Should the IIA consider global as well as local impacts of transport proposals e.g. where use of technology or alternative fuels is beneficial to Nottingham's environment and citizens but creates negative impacts elsewhere such as replacement of food crops with fuel crops?

  It is recognised that this is an important point but it was decided that this is outside the scope of the LTP3 IIA which is looking at strategic options comprising a number of interlinked transport interventions and the causal links for global impacts would be too complex with too many unknowns to quantify meaningfully. However this should be considered as appropriate when scoping and assessing the impacts of individual transport schemes and initiatives as part of the feasibility and environmental impact assessment stages.

7.3 IIA Indicators

7.3.1 For each objective, a set of indicators has been identified as summarised in Table 7.5 below. The identified indicators will provide a means for monitoring the performance of LTP3 against the IIA objectives. The indicators have been selected for their relevance to LTP3 and with the aim of making best use of existing data and monitoring programmes wherever possible, to reduce future monitoring burdens. To ensure clarity and to demonstrate

7 IIA Objectives and Indicators

the links to other planning and investment frameworks, indicators have been selected from the National Indicator set or from local indicators in the Local Area Agreement, the Local Development Framework Annual Monitoring Report and Sustainability Appraisal, as well as drawing on data available through the LTP monitoring process.

7.3.2 The next stage will be to define targets which show the direction in which the indicator should progress if sustainability is to be achieved in the longer term. The indicators will show the extent to which progress is being made towards meeting the targets and achieving the overall objectives.

7.3.3 Baseline data for the indicators at a regional and national level have been collected where available alongside contextual socio-demographic and health data. This information is set out in Appendix 2 and a commentary by theme is provided in Section 6.

7.3.4 Table 7.5 suggests preferred indicators for each of the assessment criteria proposed for each theme and then proposes the best match from the data currently available. These indicators will be refined to ensure a cost effective monitoring programme that is integrated with monitoring for other statutory documents in line with the Government's revised requirements on data collection, the details of which are still to be confirmed at the time of writing. Many of the indicators proposed below can be used to monitor progress against desired outcomes common to more than one theme.

Table 7.5 Preferred Indicators and Best Available Data by IIA Theme

Assessment Objectives	Proposed Assessment Criteria To what extent will the LTP3 option:	Preferred Indicators	Available Data
1. To reduce carbon and other greenhouse gas emissions from transport and enable the network to assist in the management of, and adaptation to, climate change.	Reduce the need to travel?	• Volume of traffic on local authority network	• Local indicator Area Wide Traffic a. Greater Nottingham b. City-wide
	Promote sustainable travel options (Public transport, cycling and walking)?	• Public transport trips • Non-car trips to school • Non-car trips to work	• NI 177 Public transport patronage • NI 198 Mode of travel to school • Local indicator Cycling trips • Local indicator Mode share at Inner Traffic Area cordon • Census 2001 Mode of travel to work
	Support low carbon fuel initiatives?	• Availability of alternative fuel options e.g. Electric vehicle charging; biofuels • Ownership of low carbon private transport e.g. hybrid cars, electric cars/mopeds • Proportion of GO2 routes/local bus fleet running on alternative fuels	• NI 186 Per capita CO2 emissions in local authority area
	Create a resilient transport network?	• Highway disruption due to adverse weather events	• NI 188 Adapting to climate change • Number of incidences p.a. of highway disruption caused by adverse weather event

Assessment Objectives	Proposed Assessment Criteria To what extent will the LTP3 option:	Preferred Indicators	Available Data
	Contribute to the green infrastructure network to help to mitigate and adapt to climate change?	• Length of new/improved multi-user paths to green/open space including river and canal corridors • Proportion of transport and public realm schemes p.a. with SUDS	• Length of new/improved multi-user paths to green/open space including river and canal corridors • Number of developments incorporating SUDS
2. To manage scarce resources (minerals, energy and fossil fuels) and minimise waste.	Reduce the use of fossil fuels by reducing drive-alone journeys?	• Mode share of single occupancy vehicles	• Local indicator: Mode share at Inner Traffic Area cordon
	Foster use of renewable fuels?	• Availability of alternative fuel options e.g. Electric vehicle charging; biofuels • Ownership of low carbon private transport e.g. hybrid cars, electric cars/mopeds • Proportion of GO2 routes/local bus fleet running on alternative fuels	• Energy use by road users from petroleum products (GWh) • Per capita energy use for transport across the City (NEP) • Fuel consumption for road transport by type in Nottingham (Source NEP)
	Support sustainable sourcing of transport products and construction materials including using local supply chains, recycled products and reclaimed materials?	• Recycling rate for transport schemes • Sustainable sourcing for transport schemes	• Proportion of recycled aggregates used in transport and public realm schemes • Proportion of materials and products used in transport schemes sourced in the East Midlands
	Minimise waste from construction?	• Recycling rate for transport schemes Construction and demolition waste sent to landfill	• Proportion of recycled aggregates used in transport and public realm schemes

Assessment Objectives	Proposed Assessment Criteria To what extent will the LTP3 option:	Preferred Indicators	Available Data
			• Construction and demolition waste: Amount produced • Construction and demolition waste: Amount sent to landfill
	Support opportunities to develop brownfield sites?	• Proportion of new development on brownfield sites	• Percentage of employment land on previously developed land • Percentage of new and converted dwellings on previously developed land Source: LDF Annual Monitoring Report 2009
3. To protect water quality and minimise the impact of flooding.	Manage and improve water quality?	• Water quality	• Ecological status of rivers, canals and freshwater bodies.
	Reduce the impact of flooding (including contingency planning)?	• Proportion of transport and public realm schemes p.a. with SUDS • Highway disruption due to flooding	• Area of land covered by flood zones 2 & 3 • Number of developments incorporating SUDS • Number of incidences p.a. of highway disruption caused by flooding
	Have the capacity to cope with extreme weather conditions ie flood and drought?		
	Cope with a rising water table?		
	Improve access to and recreational use of river corridors?	• Length of new/improved multi-user paths to river and canal corridors	• Length of new/improved multi-user paths to river and canal corridors

Assessment Objectives	Proposed Assessment Criteria To what extent will the LTP3 option:	Preferred Indicators	Available Data
	Increase levels of waterborne freight?	• Volume of freight carried by river and canal network in Greater Nottingham p.a.	• Regional data from British Waterways
4. To protect and enhance the rich diversity of the natural environment, including biodiversity, landscape, geodiversity and soils by seeking net environmental gain.	Take account of protected sites, species and notable habitats within the City?	• Number of sites protected or enhanced by transport related schemes. • Protected species identified and protected.	• Number and area of Local Nature Reserves • Condition of SSSIs • Area of biological SINCs • Records from NBGRC
	Enhance habitats and conservation?	• Improvement scheme implemented	• Number of improvement scheme implemented p.a.
	Provide opportunities to protect and enhance landscape character and quality of all local landscapes including designated landscapes?	• Transport impact on greenbelt,designated landscapes and other landscape areas.	• Amount of ancient woodland – Total area • Transport development on previous greenbelt land
	Support access to and enjoyment of green and open spaces for all sectors of the community?	• Length of new/improved multi-user paths to green/open space including river and canal corridors • Data in Open Space Commentaries	• Length of new/improved multi-user paths to green/open space including river and canal corridors • Open space managed to Green Flag and PPG17 accessibility standards • Registered parks and gardens – number and area

Assessment Objectives	Proposed Assessment Criteria To what extent will the LTP3 option:	Preferred Indicators	Available Data
	Deliver green infrastructure?	• Length of new/improved multi-user paths to green/open space including river and canal corridors • Proportion of transport and public realm schemes p.a. with SUDS	• Length of new/improved multi-user paths to green/open space including river and canal corridors • Proportion of transport and public realm schemes p.a. with SUDS
	Minimise the effects of noise and light pollution from transport on the natural environment?	• Number of green spaces in the City affected by noise and vibration from transport sources	• Noise Action Plans and noise mapping data supplied by DEFRA focuses on households
5. To protect and enhance buildings, areas and features of historic, archaeological and architectural interestincluding designated and other heriatge assets and their settings.	Promote good design which recognises local and regional distinctiveness?	• Recognition of good design for transport schemes • Number of public realm improvement schemes	• Design awards received for transport and public realm schemes • Area covered by public realm improvement schemes
	Provide innovative transport management strategies for buildings, sites, areas and features of historic, archaeological and architectural interest and heritage assets and their settings?		
	Create opportunities to enhance the urban environment including buildings, sites, areas and features of historic, archaeological and architectural interest and heritage assets and their settings?		
	Preserve the character of buildings, sites, areas and features of historic, archaeological and	• Number of designated sites and buildings negatively impacted by transport related schemes.	• Conservation area – area and number • Number of listed building by grade

Assessment Objectives	Proposed Assessment Criteria To what extent will the LTP3 option:	Preferred Indicators	Available Data
	architectural interest, designated conservation areas and heritage assets and their settings?		• Number of listed buildings in the city on the Nottinghamshire Buildings at Risk register • Number of scheduled ancient monuments • Number of listings in the City on English Heritages' Heritage at Risk register • Number of designated sites and buildings negatively impacted by transport related schemes
	Reducing the impact of transport by reducing the need to travel and promoting less intrusive and damaging transport options?	• Public transport trips • Non-car trips to school • Non-car trips to work	• NI 177 Public transport patronage • NI 198 Mode of travel to school • Local indicator Cycling trips • Local indicator Mode share at Inner Traffic Area cordon • Census 2001 Mode of travel to work
	Improve access to cultural activities and destinations for all sectors of the community?	• Public transport access to museums and galleries • Public transport access to tourist attractions	• Mode share surveys for key leisure and tourist destinations
6. To respond to the regeneration and growth agendas in a sustainable way.	Improve access to jobs and services for City residents using sustainable travel options?	• NI 175 Access to services and facilities • NI 176 Working age people with access to employment	• DFT Core Accessibility Indicators

Assessment Objectives	Proposed Assessment Criteria To what extent will the LTP3 option:	Preferred Indicators	Available Data
	Support the use of smart technology for transport and communications?	• Proportion of home workers within work force • Number of teleworking facilities in Nottingham • Number of residential travel plans supporting home working	• Journey to Work data 2001 census
	Improve regional connectivity for personal and business travel?	• Data on intra and inter regional journey times and frequency by mode	• Travel time and frequency distance times to London and Core Cities by rail –calculated from National Rail timetables
	Provide sustainable infrastructure network for freight?	• Volume of freight carried by river and canal network in Greater Nottingham p.a. • Volume of freight carried by rail network in Greater Nottingham p.a. • Proportion of freight deliveries in City using low carbon vehicles	• Regional data from British Waterways • Network Rail or Regional Transport Strategy Annual Monitoring Report
7. To improve access to services and opportunities for all.	Improve access to jobs and key services for those without access to car?	• Public transport access to jobs and services and facilities	• DfT Core Indicators
	Address geographical travel barriers for different sectors of the community?	• Proportion of key demographic groups within 400m of frequent bus service e.g. over 60s, Jobseekers and Incapacity Benefit/Severe Disablement Allowance/Employment Support Allowance claimants etc	• See Public Transport Accessibility Study for baseline

Assessment Objectives	Proposed Assessment Criteria To what extent will the LTP3 option:	Preferred Indicators	Available Data
	Address physical travel barriers for different sectors of the community?	• Data on DDA compliance bus services and routes	• Local indicator: Number of accessible bus services
	Address cost of travel barriers for different sectors of the community?	• % uptake of Easyrider City cards for different low income groups • Relative costs of bus fares against Retail Price Index	• Local indicator: % uptake of concessionary fare entitlement within eligible population

	Improve safety of travel including improving lighting and reducing fear of crime for different sectors of the community?	• Perceptions of safety when using the bus at night
		• Crime incidents relating to travel and transport which could deter travel by public transport, cycle or walking
			• Local indicator: Perceptions of safety when using the bus at night
			• IPSOS Mori Place Survey: Perceptions of safety
			• Annual police crime stats for
			  ○ Robbery
			  ○ Theft from a motor vehicle
			  ○ Theft of a motor vehicle
			  ○ Violence against a person

	Provide appropriate information about travel options in formats suitable for different sectors of the community?	• Satisfaction with public transport information	• Local indicator: Satisfaction with public transport information
	Meet the specific travel needs of different ethnic groups; disabled people; women; older people; young people, the LGBT community and faith communities?	• Satisfaction of specific groups with public transport services e.g. ethnic groups; disabled people; women; older people; young people, the LGBT community and faith communities.	• Local indicator: Satisfaction with public transport services

Assessment Objectives	Proposed Assessment Criteria To what extent will the LTP3 option:	Preferred Indicators	Available Data
8. To improve health and reduce health inequalities.	Reduce the need to travel?	• Level of traffic on local roads	• Local indicator Area Wide Traffic a. Greater Nottingham b. City-wide
9. To improve air quality in the AQMAs and maintain, and wherever possible, improve air quality across Nottingham City and the wider conurbation.	Promote sustainable travel options (Public transport, cycling and walking)?	• Public transport trips • Non-car trips to school • Non-car trips to work	• NI 177 Public transport patronage • NI 198 Mode of travel to school • Local indicator Cycling trips • Local indicator Mode share at Inner Traffic Area cordon • Census 2001 Mode of travel to work
	Increase the proportion of active journeys (walking and cycling)?	• Cycling trips for commuter and school journeys • Walking trips for commuter and school journeys	
	Improve road safety by reducing traffic speed and danger from traffic?	• Road casualty data	• NI 47 People killed and seriously injured • NI 48 Children Killed and seriously injured
	Improve access to healthcare facilities?	• Access to hospital • Access to GP services	• Public transport access to hospital • Public transport access to GP services
	Improve access to services, facilities and destinations that support healthy lifestyles e.g. health food outlets, sports and leisure destinations, open space?	• Access to leisure opportunities • Access to food shops providing healthy affordable food • Access to parks and open space	• Public transport access to City Council leisure centres • Open spaces meeting PPG17 accessibility standards for Parks & gardens; Natural and semi-natural

Assessment Objectives	Proposed Assessment Criteria To what extent will the LTP3 option:	Preferred Indicators	Available Data
			open space; Play areas; Allotments & community gardens.
	Improve health and wellbeing through access to the natural environment?	• Access to parks and open space	• Open spaces meeting PPG17 accessibility standards for Parks & gardens; Natural and semi-natural open space; Play areas; Allotments & community gardens.
	Establish links with the health sector to foster partnership working?	• Number of households engaged through active travel health promotion activities	• Number of joint health promotion activities on active travel
	Reduce the use of fossil fuels for transport?	• Availability of alternative fuel options e.g. electric vehicle charging; biofuels • Ownership of low carbon private transport e.g. hybrid cars, electric cars/mopeds • Proportion of frequent routes/local bus fleet running on alternative fuels	• Energy use by road users from petroleum products (GWh) • Per capita energy use for transport across the City (Source: NEP) • Fuel consumption for road transport by type in Nottingham (Source NEP)
	Improve the efficiency of the transport network i.e. reduce congestion?	• Congestion data	• NI 167 Congestion (average journey time) • NI 178 Bus services running on time

Assessment Objectives	Proposed Assessment Criteria To what extent will the LTP3 option:	Preferred Indicators	Available Data
	Improve air quality in the AQMAs and maintain, and wherever possible, improve air quality across Nottingham City and the wider conurbation?	• Local air quality data	• Concentration of NO_2 in City Centre AQMA • Concentration of NO_2 in Ring Road AQMA
10. To reduce levels of transport related noise in areas of sensitivity.	Reduce levels of transport related noise and vibration in areas of sensitivity?	• Number of households in the City affected by noise and vibration from transport sources	• Number of dwellings (people) affected by road traffic noise • Number of dwellings (people) affected by rail noise • Number of dwellings (people) affected by airport noise Source: Defra Noise Action Plans

Key Environmental, Health and Equalities Issues 8

8 Key Environmental, Health and Equalities Issues

8.1 Introduction

8.1.1 The SEA Directive states that the Environmental Report should provide information on *"Any existing problems which are relevant to the plan or programme including in particular, those relating to any areas of a particular environmental importance, such as those pursuant to Directives 79/409/EEC and 92/43/EEC" (Annex 1d).*

8.2 Identification of problems and opportunities

8.2.1 Table 8.1 identifies the existing and future problems and opportunities that have been identified as part of the baseline scoping in Section 6 and also the preliminary review of other plans, policies and programmes set out in Section 5. The table also includes recommendations as to how these will be incorporated into LTP3 so that the plan will contribute towards the IIA objectives.

Table 8.1 Problems and Opportunities

Existing problems (can be location specific)	Opportunities provided by the LTP	Evidence	Recommendations Comments
Climate Change/CO2 emissions			
CO2 emissions from transport continue to rise	Transport is a major and growing contributor to CO2 emissions, and LTP3 policies and interventions offer potential to reduce emissions	Transport modelling	Commission further modelling of CO2 from transport options.
Resilience of transport network to changes in weather patterns e.g. local flooding	Design standards for new infrastructure and mitigation measures to reduce local impacts e.g. SUDS	Three Cities Asset Management Study	Implement the recommendations of the Three Cities Study.
Material assets (Minerals, energy, fossil fuels, waste)			
Peak oil impacting on supply and cost of fuels. Rises in fuel prices disproportionately affects low income groups.	Promotion of smarter alternatives (public transport, cycling and walking) and cleaner fuel vehicles	Nottingham Energy Strategy	Consider oil use within scheme appraisal.
Shortage of waste treatment facilities, particularly landfill	Transport projects should specify recycled products wherever possible	Regional Waste Strategy Waste Local Plan	Transport schemes must be designed to minimise waste arising.

8 Key Environmental, Health and Equalities Issues

Existing problems (can be location specific)	Opportunities provided by the LTP	Evidence	Recommendations Comments
Minerals are a finite resources	Transport projects should specify recycled products wherever possible	Minerals Local Plan	Transport schemes must be designed to minimise use of primary aggregates.
Fossil fuels are a finite resource	Transport policy should seek to reduce vehicle miles and therefore fuel use	Nottingham Energy Strategy	Reducing vehicle use should feature in LTP policy as well as reducing congestion
Extreme weather leading to shortage of salt impacting on costs and storage capacity.	Appropriate winter maintenance regimes.	Highways Asset Management Plan	Use latest technology to minimise salt use through better information about requirements and efficient spreading.
Water			
Water resources may be very limited in the future, particular in the summer. Situation will probably be considerably worse as a result of climate change	Roads must be designed to maximise absorption into the ground	Nottinghamshire Climate Change Plan Environment Agency Catchment data	SUDS should be considered wherever possible in road drainage projects
Flooding is likely to increase dramatically as a result of climate change	Protection of critical transport infrastructure	Nottinghamshire Climate Change Plan Environment Agency Catchment data Evidence from recent flooding events	Care must be taken to avoid new transport projects becoming barriers to the flow of floodwater
Rising water table is a significant issue for parts of the City	Protection of critical transport infrastructure	Strategic Flood Risk Assessments	Highways schemes to provide appropriate drainage and water run off solutions
Contaminated water run off from highways	Highways drainage solutions and use of balance ponds to segregate polluted water from water courses	Environment Agency water quality data	Highways schemes to provide appropriate drainage and water run off solutions
Salt water run off impacting on freshwater ecosystems	Appropriate winter maintenance regimes.	Defra	Use latest technology to minimise salt use through better information about requirements and efficient spreading.

Key Environmental, Health and Equalities Issues 8

Existing problems (can be location specific)	Opportunities provided by the LTP	Evidence	Recommendations Comments
Natural Environment (Biodiversity, flora and fauna, soil, landscape)			
Protection of habitat types of conservation concern.	Emphasis on ensuring protection of existing assets, though may be limited potential for enhancement	Local Biodiversity Action Plan Biodiversity Position Statement 2011	Major transport projects should be assessed for impacts, normally as part of Environmental Impact Assessment. Smaller schemes affecting open spaces and protected species which are not covered by an Environmental Impact Assessment are still subject to ecological surveys and mitigation.
Protection of species of conservation concern (many associated with the above habitats); and species with specific action plans	Emphasis on ensuring protection of existing assets, though may be limited potential for enhancement	Local Biodiversity Action Plan Biodiversity Position Statement 2011	Major transport projects should be assessed for impacts, normally as part of Environmental Impact Assessment. Smaller schemes affecting open spaces and protected species which are not covered by an Environmental Impact Assessment are still subject to ecological surveys and mitigation.
Fragmentation and deterioration of areas of wildlife value	Management of verges and highways land to maximise wildlife potential	Local Biodiversity Action Plan Biodiversity Position Statement 2011	Positive management should be considered. The plan will seek to prevent fragmentation of habitats and promote green corridors to ensure connectivity irrespective of a designation, and to maximise their benefits for human health and well-being
Damage to both designated landscapes and local landscape areas	Sensitive design	Nottinghamshire Historic Landscape Assessment 1999; Greater Nottingham Landscape Character Assessment 2009; Breathing Spaces Strategy 2011; Area Commentaries.	High quality design standards should be applied throughout the City (particular care should be taken in designated areas). Need to consider national designations as well as non- designated features of more local historic interest and value.
Remaining legacy of contaminated and derelict land	New transport projects can bring such land into positive use	Contaminated and derelict land databases Planning policy and targets for use of “brownfield” sites	Bringing derelict land into positive use should be considered benefit in prioritising specific transport projects.

8 Key Environmental, Health and Equalities Issues

Existing problems (can be location specific)	Opportunities provided by the LTP	Evidence	Recommendations Comments
Urban Environment (Townscape, Cultural Heritage)			
Damage to individual sites, monuments and buildings of historical and archaeological interest, heritage assets and their settings	Transport schemes may be able to contribute positively	Sites and monuments record. Historic buildings record. English Heritage Heritage at Risk register. Nottinghamshire Listed Buildings at Risk register.	Careful assessment of the impacts Use of Manual for Streets and the Design Code
General loss of historic character of the built environment	Transport schemes can contribute positively to public realm improvements	Historic landscape characterisations. English Heritage Heritage at Risk register. Nottinghamshire Listed Buildings at Risk register.	Careful design of all transport projects Look for opportunities to deliver public realm enhancements and integration of transport with physical regeneration projects such as Sneinton Market
Damage to Conservation Areas	Sensitive design	Conservation Area designations (including Conservation Area Appraisals). Urban characterisation studies. English Heritage Heritage at Risk register. Nottinghamshire Listed Buildings at Risk register.	High quality design standards should be applied throughout the City (particular care should be taken in designated areas). Need to consider national designations as well as non- designated features of more local historic interest and value.
Particulates from vehicle exhausts can damage buildings.	Promotion of smarter alternatives (public transport, cycling and walking) and cleaner fuel vehicles	Condition of listed buildings	Consider traffic management in most sensitive locations.

Key Environmental, Health and Equalities Issues 8

Existing problems (can be location specific)	Opportunities provided by the LTP	Evidence	Recommendations Comments
Population and Economy			
Outward migration of families from Nottingham City	Support the inward migration of families through improvements in transport infrastructure	Census	Implement integrated transport measures which support the development of family housing particularly Regeneration Zone transport strategies and school travel plan measures.
High demand for housing in the Nottingham area combined with a national trend towards smaller household size.	Ensuring new housing sites are located to benefit from good links to employment sites and services	East Midlands Regional Spatial Strategy Local Development Framework Core Strategy	LTP3 to integrate with the Growth Point proposals to ensure infrastructure is in place to support new housing developments
Better regional connectivity to London, other core cities and the north-east.	Removing transport barriers will facilitate agglomeration bringing economic benefits	East Midlands Regional Spatial Strategy Three Cities DaSTS Study	Continue lobbying for Electrification of Midland Mainline And High Speed Rail
Congestion impacting on business competitiveness	Manage congestion through provision of high quality alternatives and network managment	East Midlands Regional Spatial Strategy Three Cities DaSTS Study	Consider wider economic benefits alongside transport benefits
Regeneration	New infrastructure to support developments	Local development plans	Ensure high quality through application of highway design guides.
Equality and Inclusion			
Access to jobs and key services for disadvantaged groups within Nottingham	Opportunity to reduce travel barriers and broaden travel horizons by improving physical accessibility of, affordability of and access to information about public transport for disadvantaged groups in Nottingham.	Public Transport Team's monitoring of fare prices. One Nottingham GNLP study: *Accessibility of Employment and Training Opportunities in Greater Nottingham*	Build on successful delivery of the Accessibility Strategy for LTP2 by implementing measures described in section 5 of LTP3 and specific measures outlined below.
Cost of travel for low income families and young people.	Improve connectivity of public transport network.	Public Transport Team's monitoring of fare prices.	Improve connectivity of public transport network and work with operators to reduce cost of

8 Key Environmental, Health and Equalities Issues

Existing problems (can be location specific)	Opportunities provided by the LTP	Evidence	Recommendations Comments
		One Nottingham GNLP study: *Accessibility of Employment and Training Opportunities in Greater Nottingham*	interchange journeys. Explore opportunities for funding discounted travel for children and young people from socially excluded areas to education and leisure. N.B. This action is dependent on the availability of revenue funding.
Peak oil impacting on supply and cost of fuels. Rises in fuel prices disproportionately affects low income groups.	Promotion of smarter alternatives (public transport, cycling and walking) and cleaner fuel vehicles	Nottingham Energy Strategy	Promote smarter travel alternatives and develop infrastructure for low carbon vehicles
Some groups may be deterred from making journeys due to perceptions of personal safety or fear of hate crime e.g. women, minority ethnic people, LGBT people and different faith groups.	Improve personal safety when travelling and reduce opportunities for hate crime.	EqIA screening exercise	Continue to implement Respect for Transport initiatives and support bus operators with customer awareness training. N.B These actions are dependent on the availability of revenue funding.
Suitability of public transport for disabled people.	Continue to improve accessibility of public transport for people using pushchairs, wheelchairs and blind and partially sighted people.	EqIA screening exercise. LTP3 Evidence Paper.	100% of fleet serving the City centre are already low floor. Continue investment in raised kerbs and stop infrastructure. Also desirable to continue to support locallink services which provide semi-demand responsive and accessible local links. Continue work with RNIB and bus operators to improve the journey experience for blind and partially sighted people. N.B These last two actions are dependent on the availability of revenue funding.
Need to support the needs of an aging population in the long term.	Provide concessionary travel and locallink network.	LTP3 Evidence Paper	This is long term challenge. Continue to support locallink services which provide semi-demand responsive and accessible local links and provision of Senior Citycard. N.B These actions are dependent on the availability of revenue funding.

Key Environmental, Health and Equalities Issues 8

Existing problems (can be location specific)	Opportunities provided by the LTP	Evidence	Recommendations Comments
Need to support the needs of people with complex disabilities to live fulfilling and independent lives in the long term.	Improve public transport provision and infrastructure to enable more people to travel independently.	LTP3 Evidence Paper	This is long term challenge. Continue to support locallink services which provide semi-demand responsive and accessible local links. Continue provision of Mobility Citycard and Mobility Plus. Explore opportunities to use self-directed car budgets to better co-ordinate SEN and adult social care transport options. Support individuals with independent travel training. N.B These actions are dependent on the availability of revenue funding.
Health			
Health inequalities	Improve road safety, increase opportunities for physical activity and improve air quality	NCC/PCT Joint Service Needs Assessment 2010	Implement casualty reduction measures and Safer Routes to School schemes. Promote more active travel options and improve infrastructure for walking and cycling.
Rates of physical activity are low and there are large numbers of people who have coronary heart disease	Increase opportunities for walking and cycling with the aim of raising levels of physical activity and reducing incidences of coronary heart disease	NCC/PCT Joint Service Needs Assessment 2010	Implement walking and cycling measures and continue to promote school and workplace travel plans.
Large numbers of people who have a respiratory disease	Reduce air pollution in the Greater Nottingham area in order to have an impact on the numbers of people who have a respiratory disease	NCC/PCT Joint Service Needs Assessment 2010	Implement congestion management measures and support the development of clean vehicle technologies e.g. through travel plan and quality partnership initiatives.
Rising levels of obesity in young people	Increase opportunities for physical activity in terms of active travel, improving access to leisure and open spaces, and creating safer communities.	NCC/PCT Joint Service Needs Assessment 2010	Implement casualty reduction measures and Safer Routes to School schemes. Promote more active travel options through School Travel Plans Improve infrastructure for walking and cycling.

8 Key Environmental, Health and Equalities Issues

Existing problems (can be location specific)	Opportunities provided by the LTP	Evidence	Recommendations Comments
			Use Manual For Streets guidelines for new residential development to create places for people.
Air quality hotspots relating to traffic	Policies and measures in the LTP3 can address these pollution hotspots	Air quality monitoring and Air Quality Management Area designations	LTP3 should include specific proposals to address AQMA's and air pollution hotspots where these relate to traffic emissions.
Transport noise negatively impacting on residents' quality of life and health and wellbeing	Monitor and mitigate against noise problems Improved construction practices Improved construction and maintenance practices for road surfaces	Defra noise maps for the Nottingham Agglomeration. Noise Action Plan for the Nottingham Agglomeration.	Utilise noise reducing road surfaces in maintenance schemes. Ensure construction practices take account of potential noise impacts i.e. night working.
Crime (theft of vehicles and personal safety)	Support crime reduction measures through Respect for Transport and local safety improvements	Nottingham Crime and Drugs Partnership Joint Strategic Assessment 2009/10	To be addressed through the Respect for Transport initiative CCTV and improved lighting at public transport stops.

Strategic Alternatives 9

9 Strategic Alternatives

9.1 Introduction

9.1.1 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 IIA should consider alternative scenarios for the overall management of transport in Nottingham to ensure that the range of likely transport effects arising from LTP3 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.

9.1.2 DfT guidelines[45] 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.

9.2 Without Plan scenario

9.2.1 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 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 – establishing what this means for the plan being developed is a significant task, drawing on the need to review other plans and programmes;
- Should assume the continued implementation of strategies and measure 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 – these should be included in the alternatives to be considered.

9.2.2 For LTP3 the "Without Plan" scenario is based on a "Base LTP Package". This includes mandatory and key elements that the Authority must seek to fulfil, whether there is an LTP in place or not, for instance, statutory obligations relating to the authority's role as a highway authority. The Base LTP Package comprises:

- Asset management;
- Network management;
- Road safety; and
- Rights of Way management and maintenance.

45 DfT 'Strategic Environmental Assessment for Transport Plans and Programmes' Tag Unit 2.11, December 2004

9.3 Alternative options to be assessed

9.3.1 In addition to the "Without Plan" scenario (Option A) the LTP3 Board identified four strategic alternatives:

- Option B: Focus on growth with major schemes
- Option C: Focus on growth without major schemes
- Option D: Neighbourhood focus with major schemes
- Option E: Neighbourhood focus without major schemes

9.3.2 These strategic alternatives all include the Base LTP Package described in 9.2.2.

9.3.3 The five options which the IIA assessed are set out in Table 9.1. The table identifies the key differences in each strategy option against the Sustainable Development Commission's hierarchy for sustainable transport:

- Reduce demand;
- Encourage alternatives;
- Improve efficiency;
- Build capacity.

Table 9.1 Strategic Alternatives for Local Transport Plan 2011 – 2026

	Option A **Without Plan Scenario**	Option B **Focus on Growth with Major Schemes**	Option C **Focus on Growth without Major Schemes**	Option D **Neighbourhood focus with Major Schemes**	Option E **Neighbourhood focus without Major Schemes**
Reduce Demand	• Existing policy measures to discourage car commuting retained but no new measures i.e. No Workplace Parking Levy.	• Introduce Workplace Parking Levy scheme with increased parking enforcement and travel plan support.	• Emphasis on travel behaviour change/smarter choices measures. • Constrained car parking provision for new developments.	• Introduce Workplace Parking Levy scheme with increased parking enforcement, travel plan support for business and individualised travel planning support.	• Increased residents parking schemes.
Encourage Alternatives	• Assume existing commercial public transport services continue to operate • Contraction of link bus service over time. • Reactive maintenance for walking and cycling networks.	• Emphasis on NET integration and development of strategic bus corridors including Worklink bus network expansion. • Localised 20 mph zones. • Upgrade strategic walking and cycling networks and green infrastructure links. • Focus on City centre public realm improvements.	• Emphasis on increasing bus use across the commercial network and existing Link services including P&R expansion. • Localised 20 mph zones. • Upgrade strategic walking and cycling networks and green infrastructure links. • Focus on City centre public realm improvements.	• Emphasis on NET integration and development of local link bus network. • Area-wide 20 mph zones. • Focus on walking and cycling for short trips. • Focus on district/local centre public realm improvements.	• Emphasis on small scale neighbourhood transport schemes. • Local link bus network expansion. • Area-wide 20 mph zones. • Focus on walking and cycling for short trips. • Focus on district/local centre public realm improvements.
Improve Efficiency	• Assume networks operate as now.	• Manage existing networks. • Focus on low carbon public transport system and fleets.	• Increased network management solutions. • Focus on low carbon public transport system and fleets.	• Manage existing networks. • Focus on incentives for private low carbon vehicle ownership.	• Manage existing networks. • Focus on incentives for private low carbon vehicle ownership.
Build Capacity	• Maintain only – no additional capacity provision.	• Major new highway infrastructure including A453 and Ring Road upgrading. • Other development related highway improvements.	• Modest capacity improvements focused on increasing public transport priority and junction improvements at congestion hotspots. • Other development related highway improvements.	• Major new highway infrastructure including A453 and Ring Road upgrading. • Small scale localised public transport and highway improvements.	• Small scale localised public transport and highway improvements.

9.4 Impact assessment of the strategic options

9.4.1 This section sets out the findings of the assessment of the strategic options in terms of the environmental, health and equalities impacts. Each broad LTP3 option was considered against the ten IIA objectives using the assessment criteria questions set out in Table 7.2. The results are shown graphically in Tables 9.2 to 9.6 and the explanatory notes from the workshop are in Appendix 4.

Option A: Without Plan Scenario

This option has the highest level of negative impacts across all the themes considered and only minor benefits in terms of material assets and the natural environment on the basis that only implementing a minimal programme would use fewer resources and have minimal land take. However this is outweighed by the missed opportunities to reduce reliance of transport on fossil fuels, potential worsening of air quality and no opportunities to improve the public realm and green infrastructure that can be delivered as part of transport infrastructure investment.

Option B: Focus on Growth with Major Schemes

This option is generally very positive across all the themes considered and is particularly effective in meetings economic, inclusion and health equalities aspirations. It also performs well in addressing climate change. This is due to the high levels of investment and major transport schemes which would improve access to jobs and services by public transport and reduce car dependency. There are also some negative impacts across all the themes but these are mostly outweighed by the positives except when considering material assets and the natural environment due to the high use of resources and need for landtake which could impact on biodiversity.

Option C: Focus on Growth without Major Schemes

This option delivers positive benefits across all the theme areas but to a lesser degree than Option B and the positive impacts are balanced out by negative impacts for most themes except for the health-related considerations (health inequalities, air quality and noise). This is because catering for growth would create a demand for travel and this option relies on behaviour change and promotion of smarter choices to address this but without providing the major transport schemes to cater for increased demand. The likely increased traffic growth would have negative impacts on CO2 emissions, the natural and the urban environment. However the emphasis on active travel and personalised journey planning would bring benefits in terms of health, the focus on alternatives to the car would improve access to opportunities, and in the long term the development of low carbon transport options would improve air quality.

Option D: Neighbourhood focus with Major Schemes

Option D is also effective in meeting economic and inclusion objectives delivered through the development of the link bus network and the major schemes element of the package such as NET Phase 2, A453 widening and the Ring Road upgrading. However the negative impacts are fewer than Option B due to a greater neighbourhood focus as the strategic level investment will be balanced with the promotion of active travel for short trips, individualised travel planning support and local pubic realm improvements supporting a more sustainable

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local economic development model. However the negative impacts for the use of the resources (material assets) and on the natural environment and water balance or outweigh the positives so it will be important to identify mitigation measures for these areas.

Option E: Neighbourhood focus without Major Schemes

This option would deliver positive benefits in terms of the urban environment, health inequalities and noise but would be less effective than Option D without the Major Scheme elements of the package. Generally low levels of negative impacts are predicted except for the Population and Economy theme where this option was considered to perform poorly in terms of improving regional connectivity with a consequently negative impact on business and freight.

Table 9.2 Option A: Without Plan Scenario

LTP3 Option: Option A: Without Plan Scenario

- Existing parking policies to discourage car commuting retained but no new measures i.e. no WPL
- Assume existing commercial public transport services continue to operate.
- Contraction of link bus network over time.
- Reactive maintenance for walking and cycling networks.
- Assume networks operate as now.
- Maintain only – no additional capacity provision.

1. Climate/CO2	2. Material Assets (Minerals, Waste, Energy, Fossil Fuels)	3. Water	4. Natural Environment (Biodiversity, Landscape, Soil)	5.Urban Environment (Cultural heritage & Townscape)	6. Population and Economy	7. Equality & Inclusion	8. Health inequalities	9. Health (Air quality)	10. Health (Noise)	
										Very major/important positive
										Major positive
										Moderate to major positive
										Moderate positive
										Minor positive
										? = unknown impact No Fill = negligible impact or not relevant
										Minor negative
										Moderate negative
										Moderate to major negative
										Major negative
										Very major/important negative

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Table 9.3 Option B: Focus on Growth with Major Schemes

Option B: Focus on Growth with Major Schemes

- Introduce Workplace Parking Levy scheme with increased parking enforcement and travel plan support
- Emphasis on NET integration and development of strategic bus corridors including Worklink bus network expansion
- Localised 20 mph zones
- Upgrade strategic walking and cycling networks and green infrastructure links
- Focus on City centre public realm improvements
- Manage existing networks
- Focus on low carbon public transport system and fleets
- Major capacity improvements including NET extensions and Station Hub
- Major new highway infrastructure including A453 and Ring Road upgrading
- Other development related highway improvements

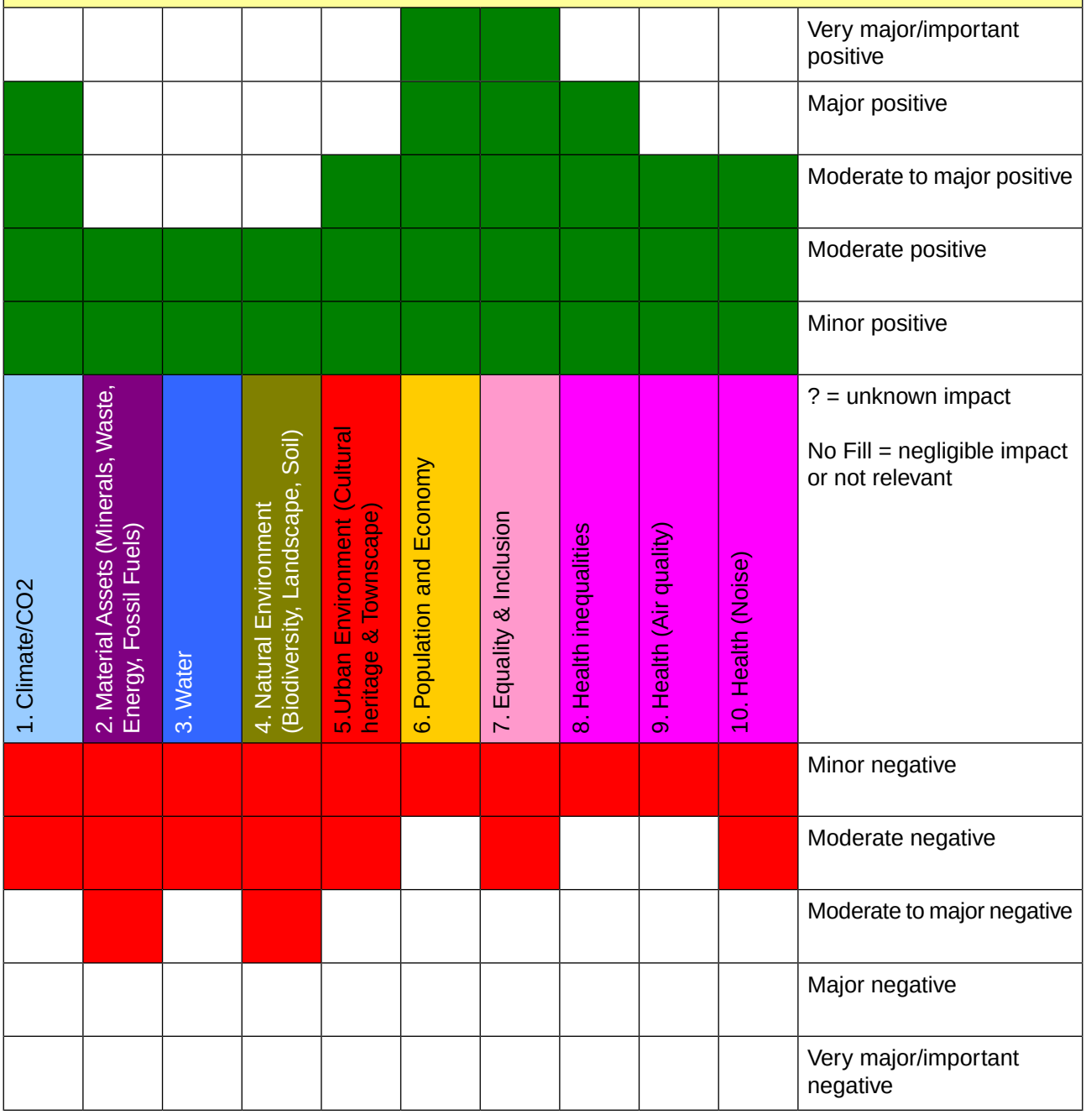


Table 9.4 Option C: Focus on Growth without Major Schemes

Option C: Focus on Growth without Major Schemes

- Emphasis on travel behaviour change/smarter choices measures
- Constrained car parking provision for new developments
- Emphasis on increasing bus use across the commercial network and existing Link services including P&R expansion
- Localised 20 mph zones
- Upgrade strategic walking and cycling networks and green infrastructure links
- Focus on City centre public realm improvements
- Increased network management solutions
- Focus on low carbon public transport system and fleets
- Modest capacity improvements focused on increasing public transport priority and junction improvements at congestion hotspots
- Other development related highway improvements

1. Climate/CO2	2. Material Assets (Minerals, Waste, Energy, Fossil Fuels)	3. Water	4. Natural Environment (Biodiversity, Landscape, Soil)	5.Urban Environment (Cultural heritage & Townscape)	6. Population and Economy	7. Equality & Inclusion	8. Health inequalities	9. Health (Air quality)	10. Health (Noise)	
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										Very major/important negative

9 Strategic Alternatives

Table 9.5 Option D: Neighbourhood focus with Major Schemes

Option D: Neighbourhood focus with Major Schemes

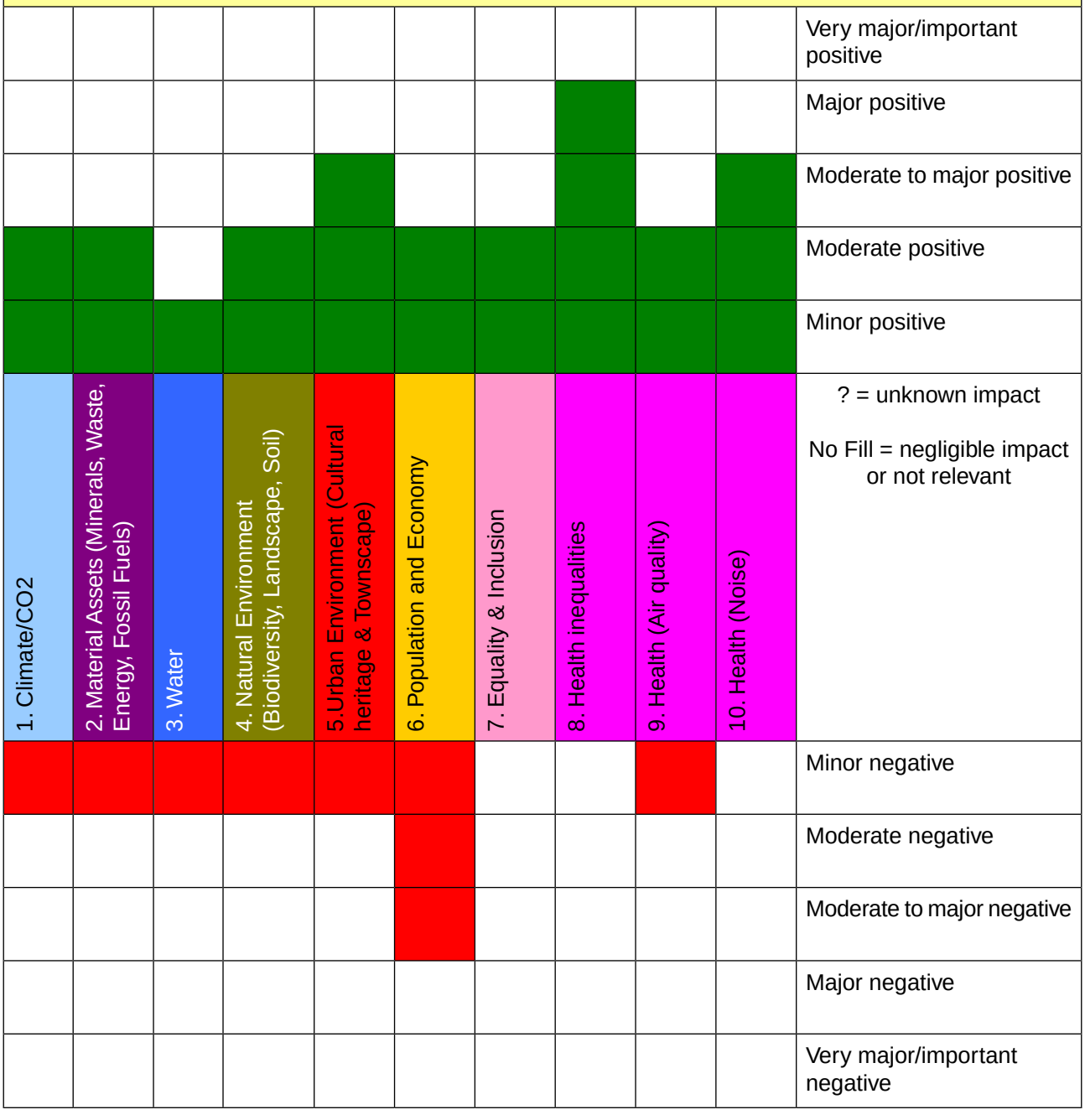
- Introduce Workplace Parking Levy scheme with increased parking enforcement, travel plan support for business and individualised travel planning support
- Emphasis on NET integration and development of local link bus network
- Area-wide 20 mph zones
- Focus on walking and cycling for short trips
- Focus on district/local centre public realm improvements
- Manage existing networks
- Focus on incentives for private low carbon vehicle ownership
- Major capacity improvements including NET extensions
- Major new highway infrastructure including A453 and Ring Road upgrading
- Small scale localised public transport and highway improvements

1. Climate/CO2	2. Material Assets (Minerals, Waste, Energy, Fossil Fuels)	3. Water	4. Natural Environment (Biodiversity, Landscape, Soil)	5.Urban Environment (Cultural heritage & Townscape)	6. Population and Economy	7. Equality & Inclusion	8. Health inequalities	9. Health (Air quality)	10. Health (Noise)	
										Very major/important positive
										Major positive
										Moderate to major positive
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										? = unknown impact No Fill = negligible impact or not relevant
										Minor negative
										Moderate negative
										Moderate to major negative
										Major negative
										Very major/important negative

Table 9.6 Option E: Neighbourhood focus without Major Schemes

Option E: Neighbourhood focus without Major Schemes

- Increased residents parking schemes
- Emphasis on small scale neighbourhood transport schemes
- Local link bus network expansion
- Area-wide 20 mph zones
- Focus on walking and cycling for short trips
- Focus on district/local centre public realm improvements
- Manage existing networks
- Focus on incentives for private low carbon vehicle ownership
- Small scale localised public transport and highway improvements



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9.4.2 A comparison of the assessment of the Strategic Options identifies that Option B (Cater for Growth with Major Schemes) is predicted to offer the greatest positive impact but is also likely to have the most negative impacts. Correspondingly Option E (Neighbourhood focus without Major Schemes) offers the lowest level of negative impacts but also the lowest level of benefits. The option that maximises the positive benefits and minimises the negative impacts is **D: Neighbourhood focus with Major Schemes**.

9.4.3 This information was also analysed by IIA theme allowing a relative comparison of each Strategic Option's performance against each of the IIA objectives as shown in Table 9.8.

9.4.4 This analysis highlights that for the criteria relating to the physical environment in terms of predicted negative impacts Option D performs as well or better than the other options except against Material Assets and performs less well than Option E in terms of the impacts on the Natural and Urban Environments due to the potential impact of the major scheme elements of the package. Considering the socio-economic aspects Option D is predicted to perform as well or better than the other options against all the themes except for Noise for which it has the same level of negative impacts as Option B. Therefore it will be particularly important to consider the mitigation measures of these elements in relation to these themes.

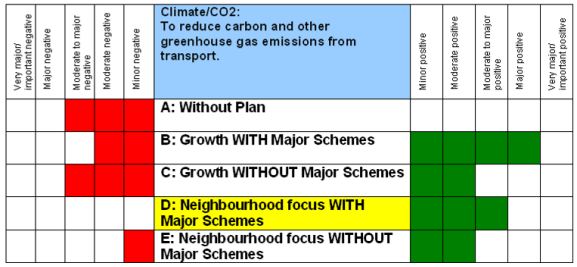
9.4.5 This analysis, along with the findings of the LTP3 Challenges and Options consultation, was used to inform the selection of a modified Option D (Neighbourhood focus with major schemes) as the Preferred LTP3 Option, described in Table 9.7. The Preferred Option was then taken through a more detailed impact assessment process which considered the impacts of the individual programme elements as described in Chapter 10.

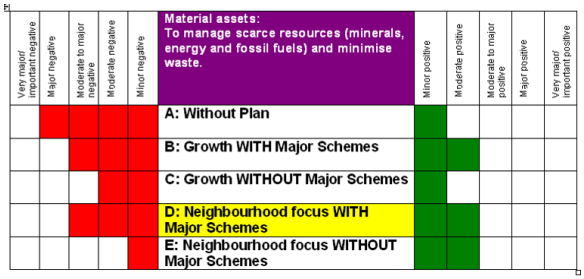
Table 9.7 LTP3 Preferred Option

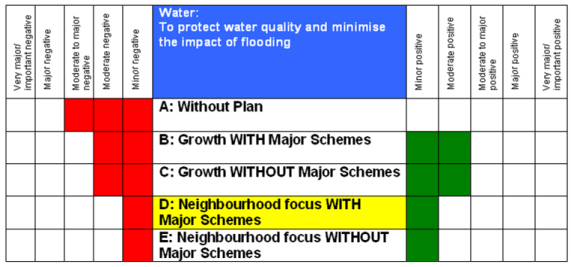
Hierarchy	Measures
	• Maintenance of existing assets
Reduce demand	• WPL with increased parking enforcement • Smarter Choices including business travel plan support and individualised travel planning
Encourage alternatives	• NET Phase 2 and integration with public transport network • Development of bus infrastructure, locallink network, smartcards and information • Improve walking and cycling networks including Rights of Way • Road safety measures including area-wide 20 mph zones • Public realm improvements including district and local centres
Improve efficiency	• Network management • Low carbon transport system with emphasis on public transport and fleet vehicles and charging infrastructure
Build capacity	• Local highway improvements • Major highways schemes

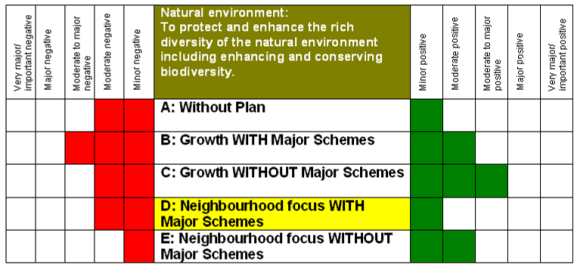
Table 9.8 Comparison of the relative performance of the Strategic Options for each of the IIA themes

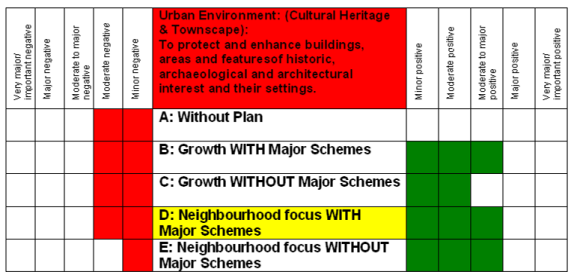
Physical environment themes



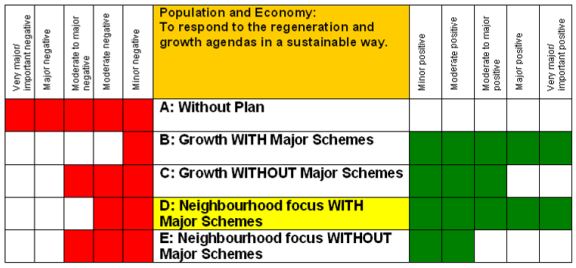


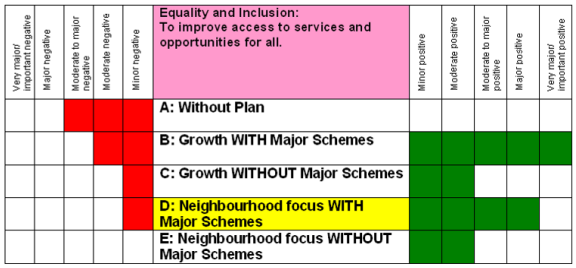


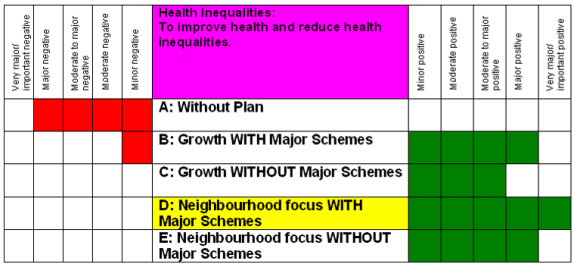


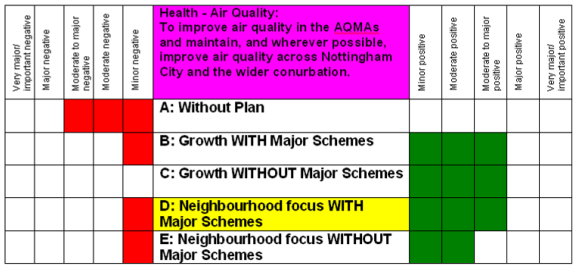


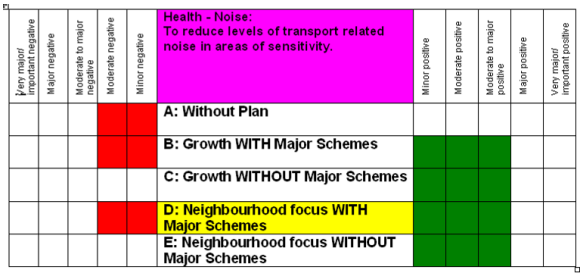
Socio-economic themes











The LTP3 Preferred Option 10

10 The LTP3 Preferred Option

10.1 Approach

10.1.1 The environmental, health and equalities impacts of the different programme strands of the Preferred Option were considered in more detail and assessed for their impact in relation to the IIA objectives and assessment criteria. This was done through a workshop and individual meetings with key expert officers at the City Council.

10.1.2 These assessments were conducted in accordance with the European Directive recommendations and DfT's guidance. Each of the LTP3 Preferred Option workstreams was considered in turn against each of the IIA objectives. This was done in a systematic manner which considered:

- Who/what is the **Receptor**? e.g. a geographical area; ecosystem, species, historical asset or sector of the population;
- The **appropriate boundary** for the Receptor. This is not necessarily the same as the authority's administrative boundary or the LTP3 area;
- The **value and vulnerability** of the area or population likely to be affected e.g. any special characteristics, sensitive locations, resource limits, environmental thresholds;
- The **magnitude** of the effect in terms of:
    - **Likely impact:** Positive; Negative; Neutral; Depends on implementation;
    - **Time period:** Short; Medium; Long term;
    - **Duration:** Permanent; Temporary; Reversible;
    - Any **cumulative, synergistic and secondary** effects.
- Cumulative effects are the total effects of multiple actions on a Receptor. Cumulative effects can be:
    - **Additive** (Sum of all the effects);
    - **Neutralising** (Effects counteract each other to reduce the overall impact);
    - **Synergistic** (Effects interact producing a total effect greater than the sum of the individual effects);
- **Level of uncertainty**: High; Medium; Low;
- **Mitigation measures** required to reduce significant impacts;
- Level of **significance:** Whether the Receptor can accommodate the additional effects.

10.1.3 Decisions were based on professional judgement, drawing upon available data sources, previous LTP experience and existing examples, and the results were recorded in a set of Effects Prediction Assessment Matrices for each of the IIA topics, given in Appendix 5.

10.1.4 The following points relating to the scope of the assessment process were raised in response to the Scoping Report consultation:

- Should the IIA consider global as well as local impacts of transport proposals e.g. where use of technology or alternative fuels is beneficial to Nottingham's environment and

10 The LTP3 Preferred Option

citizens but creates negative impacts elsewhere such as replacement of food crops with fuel crops?

- Should a whole life risk assessment be used for assessing the impacts e.g considering the relative toxicity of different fuel options and their waste products?

10.1.5 It was agreed that these were important points but it was decided that these issues were outside the scope of the LTP3 IIA as this is looking at strategic options comprising a number of interlinked transport interventions and the causal links for global impacts would be too complex with too many unknowns to quantify meaningfully. However these aspects should be considered as appropriate when scoping and assessing the impacts of individual transport schemes and initiatives as part of the feasibility and environmental impact assessment stages.

10.1.6 It should be noted that the Major Schemes proposed in LTP3 have not been assessed in detail in these tables. This is because:

- LTP3 financial allocations are not confirmed at this date, and some schemes may or may not be implemented;
- These schemes will be subject to individual appraisal and accompanying project level environmental impact assessment (EIA) and Equalities Impact Assessment (EqIA) as part of the scheme development;
- In addition, Major Projects, by their very nature, are likely to bear significant effects on the environment. An extensive and exhaustive assessment is therefore required, which is neither possible at this stage of the LTP3 and IIA process, nor necessary.

10.1.7 The headline findings from the EIA for NET Phase 2 (Lines 2 and 3 of the tram) have been included in the assessment matrices for information. The Non Technical Summary of the Environmental Statement for NET Phase 2 (April 2007) is available on the City Council's website at http://www.nottinghamcity.gov.uk/netphase2/index.aspx?articleid=9337 and should be referred to for a more detailed understanding of the environmental impacts and the proposed mitigation measures.

10.2 Assessment of significant environmental impacts

10.2.1 Overall, it was found that the Preferred LTP3 strategic alternative (a modified Option D as set out in Table 9.7) would have a significant positive impact on the environment, health, economy and equality of opportunities in the LTP area. The conclusions of the assessment of significant effects are presented below.

Table 10.1 Summary of the significant effects arising from the Preferred LTP3 strategic option

Theme	Significance of impacts
Climate/CO_2	Transport is the fastest growing source of greenhouse gas emissions in the UK with domestic transport currently contributing 22% of total UK greenhouse gas emissions, the majority of which is from cars. Commuter and business travel constitute nearly 40% of all miles driven by car. Therefore LTP3 will have a significant positive impact on reducing CO_2 emissions from

Theme	Significance of impacts
	transport by reducing the need to travel, encouraging more active travel, and delivering modal shift to public transport and low carbon transport. However new highway infrastructure will increase capacity which could generate additional car trips. It will be possible to reduce carbon emissions over time through technology changes if policies are successful in continuing to constrain traffic growth.
Material Assets (Minerals, Waste, Energy & Fossil fuels)	The transport sector is currently over-reliant on oil and therefore vulnerable to sudden fluctuations in the global oil market. Although petrol vehicle use is falling with an increasing use of more efficient and lower CO_2 emission diesel, it is predicted that by 2025 the UK will be importing 57% of its oil compared to 15% in 2010. LTP3 will play a significant role by providing public transport and low carbon travel options, reducing the need to travel and supporting modal shift thereby helping to reduce use of fossil fuels. LTP3 will also have a medium impact in terms of use of scarce resources. New construction will increase the use of materials and generate construction waste.
Water	LTP3 has the potential to make a positive contribution to reducing flood risk and to ensuring resilience of future transport infrastructure. The level of impact depends on implementation. Increasing impermeable surfaces increases surface water run-off and flooding risks so mitigation will be important to ensure the appropriate management of surface water, design of drainage systems and use of appropriate construction materials and techniques for resilience.
Natural Environment (Biodiversity, Landscape and Soil)	LTP3 is most significant in terms of improving connectivity by improving access to open space and providing opportunities to develop and enhance green infrastructure. Will also provide opportunities to improve access to open spaces by improving the transport network and travel options. However the impacts will be largely dependent on the design and implementation of transport schemes and the ongoing management of individual sites. Some highways schemes could have the potential to reduce public enjoyment of open space which will need to be addressed through appropriate mitigation measures.
Urban Environment (Cultural Heritage & Townscape)	Impact of LTP3 is significant as the City is primarily an urban environment. However the impacts are generally positive as transport investment offers opportunities to upgrade streetscapes through public realm improvements.
Population and Economy (Sustainable communities)	Overall the LTP3 is likely to have a significant positive impact as reduced congestion and benefits to accessibility should support economic development and business competitiveness.

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Theme	Significance of impacts
Equality and Inclusion including Accessibility and Crime	Transport planning plays an important role to improve accessibility and inclusion for all groups. The impacts are mostly positive as many transport improvements are targeted at improving transport accessibility. However reliance of the transport sector on oil is likely to lead to future price fluctuations that will affect the affordability of transport.
Health inequalities including Air Quality and Noise	The gap in health inequalities is of increasing importance in Nottingham with life expectancy in the most deprived wards in the City 10 years below that in the most affluent wards. LTP3 provides a significant opportunity to support active travel modes and to increase physical activity levels. Congested traffic is the primary cause of breeches of air quality standards in the City. Two Air Quality Management Areas (AQMAs) are currently designated in the Plan area. Actions plans are in place to address these air quality problems. Transport related noise is an increasing area of concern. LTP3 provides the opportunity to implement quieter technologies and to upgrade transport infrastructure to reduce noise levels.

10.3 Mitigation measures

10.3.1 The Effects Prediction Assessment exercise identified recommendations for mitigation measures for each of the Plan's proposed workstreams to minimise any predicted negative impacts. Most of these proposed mitigation methods are already an integral part of the normal implementation for LTP schemes. However it was felt that an additional emphasis within the IIA would draw attention to their importance in relation to the environmental, health and equalities objectives; would help in the monitoring of their effectiveness; and would assist in identifying any problems at an early stage during implementation of the Plan.

10.3.2 The recommended mitigation measures for each of the LTP3 workstreams are presented in Table 10.2 and have been highlighted in the corresponding sections of the LTP3 Strategy and Implementation Plan.

Table 10.2 Mitigation measures

Mitigation measures	Trigger for action	IIA topics									
		Climate change/CO2	Material Assets	Water	Natural Environment	Urban Environment	Population & Economy	Equality & Inclusion	Health inequalities	Air Quality	Noise
Maintenance of existing assets											
Adopt best practice to improve network resilience	Design Stage	✓									
Minimise use of new materials and maximise use of recycled materials.	Project Mandate		✓								
Use Site Waste Management Plans to reduce construction waste going to landfill.	Project Brief		✓								
Design needs to be sensitive to areas of biodiversity value and adopt best practice.	Design Stage				✓						
Design needs to be sensitive to areas of townscape value. Streetscape Design Guide and Manual for Streets should be applied.	Design Stage					✓					
Co-ordination of works, advance warning, positive management and promotion of alternative routes during works.	Design Stage and Comms Strategy						✓				
Plan work programme to avoid night time construction in residential areas	Project Mandate										✓
WPL with increased parking enforcement											
Business support for liable businesses to reduce parking demand and parking controls and enforcement in vulnerable areas.	Consultation and Comms Strategy				✓						
Need to reduce streetscape clutter from additional parking restriction signing and lining.	Design Stage					✓					
Businesses with 10 or fewer parking spaces are exempt from the charge.	Project Mandate							✓			

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Mitigation measures	Trigger for action	IIA topics									
		Climate change/CO2	Material Assets	Water	Natural Environment	Urban Environment	Population & Economy	Equality & Inclusion	Health inequalities	Air Quality	Noise
WPL communications need to use the most appropriate information formats for different locations and communities.	Consultation and Comms Strategy							✓			
NET Phase 2 and integration with public transport network *A full assessment of the impacts has been carried out and appropriate mitigation measures to be included in the Code of Construction Practice have been identified through the NET Phase 2 EIA.*											
Minimise use of new materials and maximise use of recycled materials.	Project Mandate		✓								
The Code of Construction Practice will adopt best practice to: • Manage construction waste • Minimise impacts on local water resources • Reduce construction dust • Mitigate construction noise and vibration	Project Mandate		✓	✓						✓	✓
Prioritise released network capacity for sustainable travel options.	Project Mandate		✓								
Explore options for local power generation to reduce demand for non-renewable energy.	Project Mandate		✓								
Ensure resilience of future infrastructure by use of appropriate materials and construction techniques.	Design Stage			✓							
Minimise habitat loss. Where unavoidable appropriate mitigation will be agreed with Natural England and ecological advice will be taken to implement the mitigation measures including:	Design Stage				✓						
• Removal of woodland, trees and bridges will take place outside the bird breeding season.					✓						

Mitigation measures	Trigger for action	IIA topics									
		Climate change/CO2	Material Assets	Water	Natural Environment	Urban Environment	Population & Economy	Equality & Inclusion	Health inequalities	Air Quality	Noise
• Built structures and mature and dead trees will be checked for bats and roosting birds prior to removal.					✓						
• Site drainage will be designed to avoid impact on wetland habitats and water courses				✓	✓						
Direct effects on identified SINCs, LNRs and Wildlife Corridors which intersect the routes will be avoided and opportunities will be taken to enhance habitats of value.	Design Stage				✓						
Work in consultation with English Heritage to ensure there is no significant adverse residual impact on listed buildings and to take account of any potential significant archaeological deposits.	Design Stage					✓					
Adoption of Urban Design and Landscape Statement to guide replacement tree planting, landscaping and streetscape improvements.	Design Stage					✓					
Consider the equalities impact of any future changes to the local bus network and appropriate ways to communicate any changes.	Comms Strategy							✓			
Development of bus infrastructure, locallink network and smartcards and information											
Minimise use of new materials and maximise use of recycled materials.	Project Mandate		✓								
Prioritise released network capacity for sustainable travel options.	Project Mandate		✓								
Explore options for local power generation.	Fleet renewal		✓								

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Mitigation measures	Trigger for action	IIA topics									
		Climate change/CO2	Material Assets	Water	Natural Environment	Urban Environment	Population & Economy	Equality & Inclusion	Health inequalities	Air Quality	Noise
Ensure resilience of future infrastructure and highway assets by steering development away from areas of highest risk and use of appropriate materials and construction techniques.	Design Stage			✓							
Design to be sensitive to areas of biodiversity value and adopt best practice, e.g use SUDs where appropriate.	Design Stage			✓	✓						
Raise awareness of concessions entitlement for eligible communities when promoting new bus services.	Information Strategy							✓			
Maximise accessibility for new vehicles purchased for NCC fleet.	Ongoing fleet renewal							✓			
Public transport information to consider literacy levels and use appropriate formats, languages, plain English, symbols etc.	Information Strategy							✓			
Quality agreement with bus operators could introduce quieter vehicles	Ongoing fleet renewal										✓
Walking and cycling networks including Rights of Way											
Minimise use of new materials and maximise use of recycled materials.	Project Mandate		✓								
Use Site Waste Management Plans to reduce construction waste going to landfill.	Project Brief		✓								
Use public education and site management to reduce impact of increased human activity on ecological quality of water courses and habitats and species.	Project Mandate and ongoing implementation			✓	✓						

Mitigation measures	Trigger for action	IIA topics									
		Climate change/CO2	Material Assets	Water	Natural Environment	Urban Environment	Population & Economy	Equality & Inclusion	Health inequalities	Air Quality	Noise
Appropriate design and construction of green infrastructure for walking and cycling to minimise impact on habitats and species.	Design Stage				✓						
Ensure Rights of Way are fully accessible for disabled people through appropriate design of barriers, gates etc	Design Stage							✓			
Road safety measures including area-wide 20 mph zones											
Use appropriate Streetscape Design Guide and Manual for Streets principles to reduce car dominance by reducing forward visibility and horizontal deflections rather than relying on vertical deflections to reduce vehicle speeds and to reduce stop/start driving.	Design Stage	✓				✓				✓	✓
Minimise use of new materials and maximise use of recycled materials.	Project Mandate		✓								
Use Site Waste Management Plans to reduce construction waste going to landfill.	Project Brief		✓								
Use of appropriate materials and construction techniques including SUDS and porous materials.	Design Stage			✓	✓						
Improve drainage systems in line with Surface Water Management Plan and 3 Cities Drainage Study.	Design Stage			✓							
Consultation and promotion of suitable alternative routes to avoid delays and divert traffic away from residential areas	Comms Strategy						✓				
Balance the needs of different sectors of the community when designing road safety schemes.	Design Stage							✓			

10 The LTP3 Preferred Option

Mitigation measures	Trigger for action	IIA topics									
		Climate change/CO2	Material Assets	Water	Natural Environment	Urban Environment	Population & Economy	Equality & Inclusion	Health inequalities	Air Quality	Noise
Driver education to adopt smoother driving techniques to maximise engine efficiencies	Comms Strategy									✓	
Public realm improvements including district and local centres											
Minimise use of new materials and maximise use of recycled materials.	Project Mandate		✓								
Use Site Waste Management Plans to reduce construction waste going to landfill.	Project Brief		✓								
Use of appropriate materials and construction techniques including SUDS and porous materials.	Design Stage			✓	✓						
Improve drainage systems in line with Surface Water Management Plan and 3 Cities Drainage Study.	Design Stage			✓							
Use appropriate Streetscape Design Guide and Manual for Streets principles	Design Stage					✓					
Consider the needs of disabled people and adopt best practice.	Design Stage							✓			
Balance demands for additional parking with improving access by walking, cycling	Development Brief									✓	✓
Low carbon transport system with emphasis on public transport and fleet vehicles and charging infrastructure											
Prioritise public transport and fleets for low carbon investment to manage congestion and ensure EV charging for private vehicles is compatible with local parking policies e.g. provide EV charging at Park & Ride sites.	LTP3 Objective	✓					✓	✓			
Consider whole life costing of different fuel options.	Project Mandate		✓		✓						
Explore options for local power generation.	Project Mandate		✓								

Mitigation measures	Trigger for action	IIA topics									
		Climate change/CO2	Material Assets	Water	Natural Environment	Urban Environment	Population & Economy	Equality & Inclusion	Health inequalities	Air Quality	Noise
Consider impact of on-street EV charging points on streetscape.	Design Stage					✓					
EU legislation is considering ways to ensure electric vehicles are audible.	Legislation							✓			✓
Network management											
Prioritise released capacity for sustainable travel modes.	Design Stage	✓	✓							✓	✓
Location, type and timing of pedestrian crossings and signage should respond to the needs and profile of the local population	Design Stage							✓			
Implement complementary measures to improve alternative travel options to ensure does not increase car use.	LTP3 Objective								✓		
Local highway improvements											
Implement complementary measures to improve alternative travel options.	LTP3 Objective	✓							✓		
Minimise use of new materials and maximise use of recycled materials.	Project Mandate		✓								
Improvements should prioritise sustainable travel options.	Project Mandate		✓								
Use of appropriate materials and construction techniques including SUDS and porous materials.	Design Stage			✓	✓						
Improve drainage systems in line with Surface Water Management Plan and 3 Cities Drainage Study.	Design Stage			✓							
Apply Manual for Streets principles and use appropriate Streetscape Design Guide	Design Stage					✓					

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Mitigation measures	Trigger for action	IIA topics									
		Climate change/CO2	Material Assets	Water	Natural Environment	Urban Environment	Population & Economy	Equality & Inclusion	Health inequalities	Air Quality	Noise
Minimise disruption during construction	Comms Strategy and implementation						✓				
Design should respond to the needs and profile of the local population e.g. Location, type and timing of pedestrian crossings, signage, ensure pavement widths are maintained, footbridge design needs to be suitable for pushchairs and wheelchairs.	Design Stage							✓			
Ensure released capacity is prioritised for sustainable transport.	Design Stage									✓	✓
Major highways schemes ***These schemes will require EIAs and EqIAs to consider the impacts and mitigation in more detail.***											
Implement complementary measures to improve alternative travel options.	LTP3 Objective	✓							✓		
Minimise use of new materials and maximise use of recycled materials.	Project Mandate		✓								
Released network capacity to be prioritised for sustainable travel options.	Project Mandate		✓								
Ensure resilience of future infrastructure and highway assets by steering development away from areas of highest risk.	Development Brief			✓							
Use of appropriate materials and construction techniques including SUDS and porous materials.	Design Stage			✓	✓						
Improve drainage systems in line with Surface Water Management Plan and 3 Cities Drainage Study.	Design Stage			✓							

Mitigation measures	Trigger for action	IIA topics									
		Climate change/CO2	Material Assets	Water	Natural Environment	Urban Environment	Population & Economy	Equality & Inclusion	Health inequalities	Air Quality	Noise
Carry out EIAs for all major highways schemes to identify the full impacts and appropriate mitigation measures.	Project Mandate				✓	✓					
Use appropriate Streetscape Design Guide	Design Stage					✓					
Minimise disruption during construction	Comms Strategy and implementation						✓				
Carry out EqIAs for all major highways schemes.	Project Mandate							✓			
Design should respond to the needs and profile of the local population e.g. Location, type and timing of pedestrian crossings, signage, ensure pavement widths are maintained, footbridge design needs to be suitable for pushchairs and wheelchairs.	Design Stage							✓			
Ensure released capacity is prioritised for sustainable transport.	Design Stage									✓	✓

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10.3.3 The key mitigation measures recommended for addressing areas of particular value and vulnerability (where a significant effect has been predicted), and a trigger for their implementation, are summarised below:

Table 10.3 Recommended mitigation measures

Key mitigation measures	Trigger for action
Ensure resilience of future infrastructure and highway assets by steering development away from areas of highest risk and use of appropriate materials and construction techniques.	Design Stage
Minimise use of new material and maximise use of recycled ones	Project Mandate
Use Site Waste Management Plans to reduce construction waste going to landfill.	Project Brief
Ensure ecological surveys are carried out prior to works likely to affect protected species or sites. This approach should be also be adopted for Biodiversity Action Plan habitats and for other species which can potentially be affected by projects along water courses.	Project Brief
Design needs to be sensitive to areas of townscape value - apply principles of Manual for Streets and the Streetscape Manual Code of Practice to ensure high quality public realm	Design stage
Use of Sustainable Urban Drainage Systems should be considered whenever possible to both improve water quality of road run-off and to increase areas for wildlife	Design stage
Avoid night-time construction in residential areas	Project Mandate
Consider needs of different users to maximise accessibility including for disabled people	Design stage
Ensure release capacity is prioritised for sustainable transport	Project Mandate
Develop appropriate communications strategies and public education programmes to support schemes	Project Mandate

Implementation and Monitoring 11

11 Implementation and Monitoring

11.1 Introduction

11.1.1 The Directive requires that the significant environmental effects of implementing the plan or programme are monitored "*in order, inter alia, to identify at an early stage unforeseen adverse effects, and to be able to take appropriate remedial action.*" (Article 10(1)). "*The Environmental Report should provide information on a description of the measures envisaged concerning monitoring.*" (Annex I (i))

11.1.2 Monitoring provides the means by which the authorities can measure the performance of the LTP3 against the IIA objectives and targets. Monitoring also provides the opportunity to determine whether the mitigation of significant environmental, health and equalities impacts identified during the integrated impact assessment is being carried out, and allows any further significant effects that may arise during the Plan period, to be identified and addressed at an early stage.

11.1.3 For LTP3, effective monitoring will be used to manage and reduce uncertainty, improve knowledge about the Plan area in terms of environment, health and equalities, and enhance the authority's accountability through transparent and accurate reporting. The monitoring arrangements have also been determined by considering the cost effectiveness of collecting and analysing the information and the hierarchy with existing sources of data and environmental monitoring.

11.2 Monitoring measures

11.2.1 The authority will be responsible for co-ordinating and leading the monitoring of the environmental, health and equalities effects of the Local Transport Plan.

11.2.2 The LTP3 Implementation Plan which complements the LTP3 Strategy sets out the three year programme for the period 2011 - 2014 . The City Council proposes to assess progress against the Plan objectives by monitoring a number of key transport performance measures as set out below.

Table 11.1 LTP3 Key Performance Indicators

Ref	Indicator	Frequency	Comment
PI 1	Local public transport (bus and tram) patronage	Quarterly	City only. Target within Nottingham Plan
PI 2	Carbon emissions for city traffic area	Annually	Indicator to be determined
PI 3	Percentage of employees covered by a commuter travel plan	Annually	Workplace Parking Levy business support. Definition of 'live' plan to be determined
PI 4	Cycling trips	Annually	

Ref	Indicator	Frequency	Comment
PI 5	Air quality (nitrogen dioxide in AQMAs) for a) city centre and b) ring road	Annually	
PI 6	Access to services and facilities	Annually	
PI 7	Working age people with access to employment by public transport	Annually	DfT Core Accessibility Indicators
PI 8	Mode of journeys to school	Annually	National school census data
PI 9	Children killed and seriously injured	Six monthly	Revised to report data on a 4 month delay (following processing and verification). Currently on 15 month delay
PI 10	Total killed and seriously injured	Six monthly	
PI 11	Journey time (vehicle journey time per mile)	Annually	

11.2.3 The Nottingham Plan (Sustainable Community Strategy) includes an indicator to monitor public transport use as a measure of economic performance. The Nottingham Plan also includes a number of additional cross-cutting indicators included in which transport has a direct bearing on, such as overall employment rates, provision of housing stock, improving community involvement in local decision making, carbon emissions, reducing obesity amongst children and cardiovascular disease amongst adults.

11.2.4 A number of additional sources of information across the Plan area will also be used to inform the monitoring process. They include:

- Major and regeneration projects. These will be subject to detailed Environmental Impact Assessments and Equalities Impact Assessments, the results of which will be published when available;
- Air Quality Management Plans annual progress reports;
- Annual Monitoring Report for the Local Plan/Local Development Framework;
- The Energy Strategy;
- The Climate Change Strategy.

11.2.5 The monitoring of the IIA will focus on the LTP3 as a whole, to ensure that cumulative effects are taken into account. This is especially relevant since:

- Many of the identified mitigation measures recommend ensuring synergies between packages of measures are maximised;
- The overall positive impact assessment of LTP3 depends on successful implementation of the transport measures as integrated measures.

11 Implementation and Monitoring

11.2.6 In addition the Authority will monitor the IIA indicators to assess the performance of the LTP3 against the IIA objectives, subject to data availability from the sources set out in Table 7.5. The identified likely significant impacts of the LTP3 as presented in Section 10 and Appendix 5 will receive particular attention during the monitoring process. The measures recommended to mitigate the potential or actual foreseen negative effects of the Plan on the environment and on health and equality for citizens are identified along with trigger points in Tables 10.2 and 10.3. These will be checked for active implementation alongside the LTP3 measures.

11.3 Reporting arrangements

11.3.1 The monitoring for the IIA will be reported in accordance with the Government's requirements for data reporting on local transport performance. In February 2011, the Department for Communities and Local Government published a single data list local authority reporting. The list of transport data can be found on the Communities website at: http://www.communities.gov.uk/localgovernment/decentralisation/tacklingburdens/databurdens/

11.3.2 Any discrepancies, anomalies, uncertainty or trend against the indicators will be reported through the LTP3 monitoring process and will trigger a review of the mitigation measures or of the implementation programme, as appropriate.

11.3.3 The Council intends to communicate progress on the delivery of LTP3 with citizens, key stakeholders and partners through existing forums and networks and through online and social media. Ongoing progress and delivery will be reported at least on an annual basis and published on the City Council's transport web pages at www.mynottingham.gov.uk/ltp3

Next Steps 12

12 Next Steps

12.1 Work completed

Section 3 provides an outline of the main stages of the IIA. In accordance with the Government's SEA guidance, this Final IIA Report covers all the stages of the process up to Stage D.

12.2 Monitoring and reporting

The final stage of the SEA process is Stage E Monitoring which should be ongoing over the life of the Plan. Section 11 provides an outline of the measures which will be taken to monitor the the impacts of the LTP3 Strategy and the reporting arrangements. The details of the mitigation measures and the trigger for their implementation is given in Section 10.

12.3 Useful contacts

For further information about this document please contact:

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Appendix 1

Appendix 1

Appendix 1

Document Review - see separate report

Appendix 2

Appendix 2

Baseline Data

Baseline Data

The baseline data set out below was that available at the time of publication of the Draft Report.

Baseline data - contextual

Contextual data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Population	300,800	Primary Urban Area = 635,900Housing Market Area = 778,600Travel to Work area = 786,600	Greater Nottingham is one of the 10 largest conurbations in England	Contextual – no target	Rising trend with projected rise to 309,900 by 2014 and 318,100 by 2019		ONS mid year estimate 2009
Age/Gender	**0-14 yrs = 15%** M= 23,900 F= 22,500 **15 -29 yrs = 35%** M = 51,800 F = 52,500 **30-44 yrs = 20%** M = 32,200 F = 28,000 **45-64 M** = 28,100 **45-59 F** = 21,400 **= 16%** **65yrs & over** M = 15,000 **60yrs & over** F = 25,400 **= 13%**	**0-14 yrs = 16%** M= 54,200 F= 51,400 **15 -29 yrs = 26%** M = 86,200 F = 84,700 **30-44 yrs = 21%** M = 70,300 F = 66,600 **45-64 M** = 77,200 **45-59 F** = 59,200 **= 20%** **65yrs & over** M = 43,500 **60yrs & over** F = 73,500	**England:** 0-14 yrs = 18% 15 -29 yrs = 20% 30-44 yrs = 21% 45-59 yrs = 19% 60+ yrs = 22%	Contextual – no target	Young population partly due to 2 universities (students comprise 1 in 8 of the resident population). Unlikely to follow the national trend on increasing numbers of people over retirement age in the short to medium term.		ONS mid year estimate 2009

Contextual data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
		= 18%					
Ethnicity	White: 84.9% Mixed:3.1% Asian/Asian British:6.5% Black/Black British:4.3% Chinese:0.6% Other: 0.5%	White: 91.3% Mixed:1.9% Asian/Asian British:3.8% Black/Black British:2.2% Chinese:0.5% Other: 0.3%	**England:** White: 90.9% Mixed:1.3% Asian/Asian British:4.6% Black/Black British:2.3% Chinese:0.5% Other: 0.4%	Contextual – no target	Next census due 2011	Nottingham has a more diverse population. This data won't record any impact of asylum seekers or economic migrants from the accession states.	Census 2001
Unemployment % of working age population claiming JSA	Jan'10 = 6.2%	Jan'10 = 4.7%	East Mids = 4.2% England = 4.3%		Unemployment has increased since 2009 at the same rate as nationally. Unemployment rate has stayed at 6.2% since Oct09 but remains at its highest level since Apr09.		ONS NCC Benefits Bulleting Feb 2010
Incapacity Benefit/Severe Disablement Allowance and	Aug04 = 9.8% Aug08 = 8.7% Jan10 = 8.5%	Aug04 = 9.4% Aug08 = 5.9% Jan10 = 6.9%	**East Midlands:** Aug04 = 8.2% Aug08 = 4.6% Jan10 = 6.6% **England:** Aug04 = 10.4%		Slight fall in claimants in the City in the last year and a small increase in Gtr Nott'm compared		ONS NCC Benefits Bulleting Feb 2010

Contextual data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Employment Support Allowance % of working age population			Aug08 = 4.7% Jan10 = 6.7%		to slightly larger increases regionally and nationally		
Car ownership	None car households = 44.9%	None car households = 31.8%	East Midlands: None car households = 24.3% England: None car households = 26.8%		Below national and regional levels	Below national and regional levels	Census 2001
Dwellings (total)	2005/6: 125,122 2006/7: 126,389 2007/8:				Increase of 1%		LDF Core Strategy SA

Baseline data - IIA Indicators

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
NI 47 People killed and seriously injured	3 year rolling average (number) 2005 = 210 2006 = 202 2007 = 187 2008 = 186 2009 = 172			Reduce to 150 by 2010 = 20% reduction from 2007 baseline	7.5% reduction since 2007	Slowly going in the right direction but not fast enough to meet new LAA stretch target	City Council LTP monitoring Police Stats 19 returns
NI 48 Children Killed and seriously injured	2005 = 32.0 2006 = 29.7 2007 = 28.3 2008 = 25.0 2009 = 19.7			Reduce to 22.8 by 2010 = 20% reduction from 2007 baseline	30% reduction since 2007	Ahead of trajectory to meet the 2010 target.	City Council LTP monitoring Police Stats 19 returns
NI 167 Congestion (average journey time per mile during the morning peak)		**Journey times in minutes per person mile** 2005/6 = 3.8 mins 2006/7 = 3.9 mins 2007/8 = 3.8 mins 2008/9 = 3.8 mins **Person miles** 2005/6 = 321,000		To achieve no more than 10.5% increase in person journey times by 2010/11 in the context of projected 4.2% increase in person mils travelled on the monitored network.	Person journey times are at base year levels. N.B. Person miles travelled has reduced by 2.5% since 2005/6		City Council LTP monitoring

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
		2006/7 = 318,000 2007/8 = 317,000 2008/9 = 313,000					
NI 175 Access to services and facilities (N.B. Indicator locally defined through LTP2)		2006 = 93% 2007 = 94% 2008 = 95%		% of households within 30 minutes travel time of a town centre by bus tram or train with no more than 400m walk to a stop. To maintain baseline level of accessibility.	Accessibility levels have increased year on year from an already high base.		City Council LTP monitoring
NI 176 Working age people with access to employment	2007 = 85% 2008 = 85%			Retain level of accessibility by 2010	Access to employment has remained constant since 2007. 2009 data will be available in Nov-10	On track	DfT dataset
NI 177 Public transport patronage **(Includes bus and tram)**	2007/8 = 56.0M 2008/9 = 56.3M 2009/10 = 55.0M	2007/8 = 75.1M 2008/9 = 75.9M		Increase patronage level to 2 million by 2020/21	Patronage levels increasing year on year until 2008/9.	On track	City Council LTP2 monitoring

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
NI 178 Bus services running on time **% of non frequent services on time**	2005/6 = 87% 2006/7 = 86% 2007/8 = 84% 2008/9 = 84% 2009/10 = 85%	2007/8 = 84% 2008/9 = 86% 2009/10 = 86%		DfT target for 90% of services to be within Traffic Commissioners timeframe (1 min early to 5 mins late) by 2014	Improving	On track	
NI 178 Bus services running on time **Excess waiting time of frequent services (mins)**	2005/6 = 0.71 2006/7 = 0.59 2007/8 = 0.61 2008/9 = 0.58 2009/10 = 0.58	2005/6 = 0.71 2006/7 = 0.57 2007/8 = 0.63 2008/9 = 0.60 2009/10 = 0.63		Target for Gtr Nott'm = 0.66 minutes by 2010/11	Improved since 2005/6	Within Traffic Commissioners maximum excess waiting time of 1.25 minutes	
NI 186 Per capita CO2 emissions in LA area	2005 = 6.5 tonnes CO2 published autumn 2008 2006 = 6.4 tonnes CO2 published autumn 2009			2008/9 = 3% decrease 2009/10 = 7% decrease 2010/11 = 12.6% decrease	Decrease of 1.56% so below target. N.B. Data has 2 year time lag	Decreasing but below trajectory	LAA 2008/9 Q4 End of Year Performance Report
NI 188 Adapting to climate change	Awaiting data						
NI 198 Mode of travel to school: Reduce % of car travel	2005/6 = 26.0% 2006/7 = 19.5 % 2007/8 = 19.4% 2008/9 = 17.9%		Ranked joint second nationally (excluding London Boroughs). Also lowest number	Decrease to 20% by 2010/11	Year on year decrease. 2009/10 data due Sept 2010.	Target achieved in 2008/9	LTP monitoring 2005/6 data = City Council hands up survey returns

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Age 5-15 years			of trips to school by car of the Core Cities and in the region.				2006/7 onwards = DCSF PLASC data
Local indicator Area Wide Traffic a) Greater Nottingham b) City-wide (Million vehicle kms p.a.)	2004 = 979 2005 = 968 2006 = 973 2007 = 965 2008 = 946 2009 = 960	2004 = 2933 2005 = 2921 2006 = 2921 2007 = 2917 2008 = 2852 2009 = 2869		Target for Greater Nottingham = 3109 by 2010 i.e keep traffic growth below 1% p.a.			City Council LTP monitoring
Local indicator Cycling trips		2003 = 100 2004 = 104.7 2005 = 105.3 2006 = 103.8 2007 = 94.8 2008 = 99.1 2009 = 98.4		To achieve 7% increase by 2010 based on index. Baseline = 2003.		Sharp decrease in 2007 attributed to heavy and persistent rain in the summer. 2009 level has increased but still below target.	City Council LTP monitoring
Local indicator Mode share at Inner Traffic Area cordon – Public transport mode share %	2002 = 34.4 2003 = 34.0 2004 = 36.1 2005 = 34.8 2006 = 35.9 2007 = 36.0 2008 = 35.1 2009 = 34.6			No target set		Slight overall increase since 2002 though dropped in 2005 and decreased year on year since 2007	City Council LTP monitoring

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Local indicator: Number of fully accessible bus services	2005/6 = 2 2006/7 = 3 2007/8 = 3 2008/9 = 2009/10 = 2010/11 =	2005/6 = 2 2006/7 = 3 2007/8 = 3 2008/9 = 2009/10 = 2010/11 =		To add 1 complete service each year resulting in 7 fully accessible services in operation in 2010/11			City Council LTP monitoring
Local indicator: % uptake of concessionary fare entitlement within eligible population		2005/6 = 62% 2006/7 = 70% 2007/8 = 85%		To achieve 70% by 2010/11	Improving	Above target	LTP monitoring
Local indicator: Perceptions of safety when using the bus at night		2005/6 = 65% 2006/7 = 74% 2007/8 = 74%		To achieve 67% by 2010/11	Improving	Above target	Council monitoring for LTP based on quarterly survey of users at bus station
Local indicator: Satisfaction with public transport services **% of users**	2006/7 = 74.0% 2008/9 = 76.9%		Highest level of satisfaction nationally (excluding London Boroughs)		Improving		IPSOS MORI PlaceSurvey

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Local indicator: Satisfaction with public transport information **% of users**	2006/7 = 70.0% 2008/9 = 70.5%		Highest level of satisfaction nationally (excluding London Boroughs)	LTP2 target of 60% by 2009/10	Improving	Above target	IPSOS MORI PlaceSurvey
Mode of travel to work	Car driver/ passenger: 51% Public transport: 23% Active Travel: 18% Work at Home: 7%	Car driver/ passenger: 60% Public transport: 17% Active Travel: 14% Work at Home: 8%	**East Midlands:** Car driver/ passenger: 67% Public transport: 8% Active Travel: 14% Work at Home: 9% **England:** Car driver/ passenger: 61% Public transport: 15% Active Travel: 13% Work at Home: 9%		Next census due 2011	Levels of public transport and active travel are higher in the City than in Gtr Nottm, regionally and nationally	Census 2001
Number of incidences p.a. of highway disruption caused by adverse weather	Awaiting data						
Number of incidences p.a. of highway disruption caused by flooding	Awaiting data						

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Energy use by road users from petroleum products (GWh)	**2006:** 1096.20GWh **2005:** 1098.84GWh	**2006:** 4,614.71GWh **2005:** 4,613.09GWh	**East Midlands** **2006:** 40,534.52GWh **2005:** 40,191.34GWh **England** **2006:** 48,945.58GWh **2005:** 48,764.47GWh		Slight reduction in City. Slightly better than EM and England		BERR
Per capita energy use for transport across the City	Awaiting data				Fallen by 3.2% from 2005 to 2007		Nottingham Energy Partnership
Fuel consumption for road transport by type in Nottingham **Private transport (car/motorcycle)**	Thousands of tonnes of fuel 2003 = 64.5 2004 = 64.3 2005 = 72.2 2006 = 71.8 2007 = 70.0				Rising until 2005. Now falling slightly		Nottingham Energy Partnership
Fuel consumption for road transport by type in Nottingham **Buses**	Thousands of tonnes of fuel 2003 = 6.0 2004 = 5.5 2005 = 4.8 2006 = 4.9 2007 = 5.0				After initial decrease remained stable.		Nottingham Energy Partnership

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Fuel consumption for road transport by type in Nottingham **Freight**	Thousands of tonnes of fuel 2003 = 23.3 2004 = 23.9 2005 = 29.8 2006 = 30.4 2007 = 30.5				Rate of increase has slowed		Nottingham Energy Partnership
Construction and demolition waste: Amount produced	Awaiting data						
Construction and demolition waste: Amount sent to landfill	Awaiting data						
Percentage of recycled aggregates used in transport and public realm schemes	Awaiting data						
Percentage of materials and products used in transport schemes sourced in the East Midlands	Awaiting data						

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Percentage of employment land on previously developed land	2008/9: 6,387 sqm = 100% of floorspace was on brownfield land			At least 60% to be built on brownfield land	2000 – 2005 = 69.3% of ha of development land on brownfield sites including ng2	On track	Nottingham Local Development Framework Annual Monitoring Report 2009
Percentage of new and converted dwellings on previously developed land	2000/1: 80.5% 2001/2: 97.1% 2002/3: 99.2% 2003/4: 93.9% 2004/5: 83.0% 2005/6: 100.0% 2006/7: 99.7% 2007/8: 97.4% 2008/9: 89.4%		Regional: 55.3% (2002) National: 63% (2001)	At least 85% over Local Plan period	2000 – 2009: 95.3%	On track	Nottingham Local Development Framework Annual Monitoring Report 2009
Area of land covered by flood zones 2 & 3 (ha)	2008 = 1,598.27 2009 = 1,768.09	2008 = 10,286.67 2009 = 10,523.61			10% increase in City area.	Could be due to changes in EA data.	Environment Agency
Number of developments incorporating SUDS	2005/6 = 1 2006/7 = 2 2007/8 = NA	2005/6 = 2 2006/7 = 3 2007/8 = 0			Slight improvement but data limited		LDF Core Strategy SA
Number and area of Local Nature Reserves	2008 = 11 LNRs = 120.54ha 2009 = 11 LNRs = 120.54ha	2008 = 31 LNRs = 252.35ha 2009 = 31 LNRs = 289.98ha			No change		LDF Core Strategy SA

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Condition of SSSIs	**SSSIs in favourable condition** 2006 = 2.8ha 2009 = 2.8ha **SSSIs in unfavourable declining condition** 2006 = 0ha 2009 = 0ha **SSSIs in unfavourable recovering condition** 2006 = 4.97 2009 = 4.97	**SSSIs in favourable condition** 2006 = 80.74ha 2009 = 79.85ha **SSSIs in unfavourable/ declining** condition 2006 = 1.05ha 2009 = 0ha **SSSIs in unfavourable recovering condition** 2006 = 140.72 2009 = 250.19			No change for City		LDF Core Strategy SA
Area of biological SINCs	2008 = 676.85ha 2009 = 676.40ha	2008 = 4554.63ha 2009 = 4575.62ha			Small loss in City		Nottinghamshire Biological and Geological Records Centre
Number of improvement schemes	Awaiting data						
Amount of ancient woodland – Total area and area per SOA	2009 = 38.63ha	2009 = 342.04ha	East Midlands 2009 = 24,261ha England		No trend data available		Natural England

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
			2009 = 353,385ha				
Ecological status of river and lake bodies in the Lower Trent and Erewash catchment	**Water bodies in Nottingham:** River Leen from source to Day Brook = Moderate River Leen from Day Brook to River Trent = Moderate Day Brook from source to River Leen = Moderate Nottingham & Beeston Canal= Moderate River Trent from River Soar to Carlton on Trent = Moderate Fairham Brook = Poor		**Ecological status of river and lake bodies in the Lower Trent and Erewash catchment 2009:** At good ecological status or potential = 5% At good or high biological status (60 water bodies assessed) = 17% At good chemical status (14 water bodies assessed) = 86% At good status overall (chemical and ecological) = 5%	**Ecological status of river and lake bodies in the Lower Trent and Erewash catchment 2015:** At good ecological status or potential = 5% At good or high biological status = 17% At good chemical status = 86% At good status overall = 5% Improving for one or more element in rivers = 12%			Environment Agency
Length of new/improved multiuser paths to green/open space	Awaiting data						

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Length of new/improved multiuser paths to river and canal corridors	Awaiting data						
Volume of freight carried by rail network in Gtr Nottingham p.a.	Awaiting data						
Volume of freight carried by river and canal network in Gtr Nottingham p.a.	Awaiting data						
Proportion of freight deliveries in the City using low carbon vehicles	Awaiting data						
Open spaces meeting PPG17 accessibility standards % of households within 600m	**Parks & gardens:** City = 98% North West Area = 99% East Central area = 98% **Natural and semi-natural** City = 66% North West Area = 71%				Baseline established		NCC PPG17 audit of open space typologies 2009 draft reports

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
	East Central area = 51% **Play provision:** City = 88% North West Area = 82% East Central area = 94% **Allotments and community gardens:** City = 65% East Central area = 64%						
Registered parks and gardens – number and area	**2008** = 9 = 313.58ha **2009** = 9 = 313.58ha	**2008** = 17 = 1,037.85ha **2009** = 17 = 1,037.85ha	East Midlands **2008** = 136 = 21,624.07ha **2009** = 136 = 21,624.07ha England **2008** = 1,595 = 171,300.98ha **2009** = 1,595 = 171,300.98ha		No change		English Heritage Nottinghamshire County Council
Design awards received for transport and public realm schemes	Awaiting data						

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Conservation Areas – area and number	**2008** = 29 = 771.16ha **2009** = 29 = 771.16ha	**2008** = 100 = 2,316ha **2009** = 100 = 2,316ha			No change in the City		LDF Core Strategy SA
Number of listed building by grade	**2008** Grade I = 9 Grade II = 750 Grade II* = 31 **2009** Grade I = 10 Grade II = 754 Grade II* = 31	**2008** Grade I = 64 Grade II = 1,847 Grade II* = 95 **2009** Grade I = 64 Grade II = 1,852 Grade II* = 96			Improvement in the City in terms of quality of Grade I & II		English Heritage
Number of scheduled ancient monuments	2008 = 13 2009 = 13	2008 = 65 2009 = 65			No change in the City		English Heritage
Number of buildings and heritage assets at risk	**EH HAR 2010:** 10 conservation areas **Nottinghamshire BAR 2004**: 51/388 listed buildings (of which 2 at Grade II* and 49 at Grade II)= 6.5%	**EH HAR 2010:** 11 conservation areas 5 listed buildings 3 scheduled monuments **Nottinghamshire BAR 2004:**		To have no heritage assets at risk	No of Listed Buildings at Risk in the City has decreased from 110 in 1993		Nottinghamshire Buildings at Risk Register 2004;English Heritage Heritage at Risk register 2010

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
		134/1763 listed buildings = 7.6% of which 6 at Grade I, 7 at Grade II* and 126 at Grade II					
Number of designated sites and buildings negatively impacted by transport related schemes	Awaiting data						
Travel time and frequency to London and CoreCities by rail	Awaiting data						
Annual police crime stats for Robbery	2006 = 1,313 2007 = 1,479 2008 = 1,497 2009 = 1,259	2006 = 1,659 2007 = 1,911 2008 = 1,904 2009 = 1,676	2006 = 1,811 2007 = 2,175 2008 = 2,170 2009 = 1,986		Reduction from 2008 and now lower than 2006 level		Nottinghamshire Police from www.nottinghaminsight.org.uk
Annual police crime stats for Theft from a motor vehicle	2006 = 5,123 2007 = 5,791 2008 = 4,802 2009 = 3,294	2006 = 8,312 2007 = 9,306 2008 = 7,304 2009 = 5,628	2006 = 12,019 2007 = 14,609 2008 = 12,023 2009 = 9,046		Year on year reduction from 2007 and now lower than 2006 level		Nottinghamshire Police from www.nottinghaminsight.org.uk

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Annual police crime stats for **Theft of a motor vehicle**	2006 = 1,342 2007 = 1,684 2008 = 1,297 2009 = 973	2006 = 2,108 2007 = 2,473 2008 = 1,994 2009 = 1,522	2006 = 3,428 2007 = 4,433 2008 = 3,650 2009 = 2,871		Year on year reduction from 2007 and now lower than 2006 level		Nottinghamshire Police from www.nottinghaminsight.org.uk
Annual police crime stats for **Violence against a person**	2006 = 8,209 2007 = 9,914 2008 = 9,191 2009 = 8,286	2006 = 11,330 2007 = 13,509 2008 = 12,470 2009 = 11,360	2006 = 17,933 2007 = 21,299 2008 = 20,233 2009 = 19,328		Year on year reduction from 2007 but still higher than 2006 levels		Nottinghamshire Police from www.nottinghaminsight.org.uk
Public transport access to hospital: % of households without a car within 30 minutes travel time of a hospital	2005 = 94.92% 2007 = 100%	2007 = 96.3%	Nottinghamshire = 94.3% in 2007		Level increased for an already high base		
Public transport access to GP services: % of households without a car within 15 minutes travel time of a GP	2005 = 93.97% 2007 = 100%	2007 = 98.4%	Nottinghamshire = 98.2% in 2007		Level increased for an already high base		
Public transport access to City Council leisure centres	Awaiting data						

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Concentration of NO_2 in City Centre AQMA *u*gm^{-3}	2005 = 43 2006 = 39 2007 = 42 2008 = 44 2009 = 40			Target is 38*u*gm^{-3} by 2010	Levels initially dropped in 2006 but rose each year until 2008. Significant decrease in 2009 but above target.		LTP monitoring
Concentration of NO_2 in Ring Road AQMA *u*gm^{-3}	2005 = 42 2006 = 35 2007 = 34 2008 = 35 2009 = 35			Target is 38*u*gm^{-3} by 2010	Levels dropped below target in 2006 and have remained stable.	On track	LTP monitoring
Number of dwellings (people) affected by road traffic noise above 55dB (A) L_{den} and 50dB (A) L_{night}	There are approx 1,200 dwellings (2,200 people) in Nottingham City within "First Priority" locations where the $L_{A10,18h}$ is at least 76dB.	In the Nottingham agglomeration 500,500 households or 1,117,000 people are affected by noise above 55dB in the daytime and 260,500 households or 581,500 people are affected by noise above 50dB at night.					Defra Noise Action Plan for the Nottingham Agglomeration 2010

IIA Indicator Available Data	Nottingham City	Greater Nottingham	Regional/ National Context	Target if available	Trend	Indicator Status and Comments	Data Source
Number of dwellings (people) affected by rail noise above 55dB (A) L_{den} and 50dB (A) L_{night}	There are fewer than 50 dwellings fewer than 100 people) in Nottingham City within "First Priority" locations where the L_{Aeq}, 18h is at least 73dB.	In the Nottingham agglomeration 10,000 households or 18,000 people are affected by noise above 55dB (in the daytime and 5,000 households or 9,000 people by noise above 50dB at night.					Defra Noise Action Plan for the Nottingham Agglomeration 2010
Number of dwellings (people) affected by airport noise above 55dB (A) L_{den} and 50dB (A) L_{night}	There are no dwellings in Nottingham City affected by noise from airports.	The Nottingham agglomeration is not affected by noise from airports.					Defra Noise Action Plan for the Nottingham Agglomeration 2010

Appendix 2

Appendix 3

Appendix 3

Results of the statutory consultation on the IIA Scoping Report

** Where amendments to specific paragraphs or tables in the Scoping Report have been recommended the changes have been made to the corresponding paragraphs and tables which have been carried forward in the draft IIA Report rather than amending the original Scoping Report. References to tables and paragraphs refer to the relevant section of the Scoping Report.*

Ref	Comment	Response *
A	**Environment Agency**	
A1	Support the proposed IIA Objectives which seek to: • Minimise waste from construction • Manage and improve water quality • Reduce the impact on flooding • Ensure the transport network is resilient to the impacts of climate change • Protect and enhance biodiversity	Support noted
A2	The way waters are classified by the EA has changed and the Water Framework Directive now looks at the ecological status of water bodies, which is a more holistic way of classifying water quality that looks wider than biological and chemical quality.	Objective 3 regarding water quality in the Assessment Framework in Table 4.6 and associated data information has been amended to consider ecological status rather than biological and chemical quality
A3	Environmental objectives and actions to achieve improvement in the ecological status of rivers and water bodies are set out in a River Basin Management Plan. The Humber River Basin Management Plan should be referred to in the Scoping Report.	Reference included.
A4	Recommend that the Scoping Report has regard to the emerging Nottingham Surface Water Management Plan which aims to identify hotspots within the City at risk from surface water flooding and to develop an Action Plan to steer further investment.	Reference included.
B	**English Heritage**	
B1	Table 3.5 and Appendix 1 outline the implications of the historic environment for LTP3 and the IIA. Referring to a hierarchy of	Text amended to clarify that this grouping has been used as a means of classification and does not imply a

Appendix 3

Ref	Comment	Response *
	internationally, nationally, regionally and locally designated sites and monuments is misleading, as it suggests that the level of significance goes with the level of designation. Conservation areas are designated at the local level but can constitute locations of national or international importance (such as Nottingham City Centre). Similarly, there may be undesignated archaeological sites that are of equal significance to scheduled monuments that are not picked up at all by the current wording.	hierarchy or any differences in significance of the different designations based on spatial grounds.
B2	The new Planning Policy Statement for the historic environment (PPS5) refers to "heritage assets" as "the valued components of the historic environment", including buildings, monuments, sites, places, areas or landscapes positively identified as having a degree of significance meriting consideration in planning decisions. "Designated heritage assets" are those designated under the relevant legislation and include scheduled monuments, listed buildings, registered parks and gardens, and conservation areas. They generally have greater significance than heritage assets, although some undesignated archaeology sites can have equal significance to scheduled monuments (paragraph HE9.6). We recommend that reference in Table 5.3 and Appendix 1 to "internationally, nationally, regionally and locally designated sites and monuments, including their settings" is replaced with "designated heritage assets, including their settings", and that "other sites of cultural heritage interest" is replaced with "heritage assets". The explicit reference to conservation areas is probably not needed.	Table 3.5 and Appendix 1 amended accordingly.
B3	The historic environment is not identified as a key characteristic in Table 5.1.	Table 5.1 has been drawn from the LDF Core Strategy and is not intended to be an exhaustive list of characteristics.

Appendix 3

Ref	Comment	Response *
B4	There is little discussion of the inter-relationship between transport and the historic environment within the city and how previous transport developments have affected the quality of the city's cultural heritage.	Section 5.8 has been strengthened to reflect the inter-relationship between transport and the historic environment within the city
B5	Paragraph 5.8.2 needs to state that there are eight registered parks and gardens within the city, including two Grade II* and six Grade II.	Amended accordingly
B6	Disagree with the first sentence of paragraph 5.8.3, as there are formal measures of the quality of conservation areas and townscape character. Conservation area appraisals assess the condition of conservation areas, whilst English Heritage's Heritage at Risk register includes conservation areas "at risk". There are currently 10 conservation areas within Nottingham on the 2010 register (see www.englishheritage.org.uk/risk).	Amended accordingly including reference to the information in the Heritage at Risk register.
B7	In Table 4.3 we welcome Objective 5 relating to the historic environment, although it needs to refer to "settings", as does the first two criteria.	Objective 5 has been amended accordingly.
B8	In Table 4.6 the fourth criteria relating to 'preserving' needs to refer to the number of designated heritage assets on the Nottinghamshire [Listed] Building at Risk register and English Heritage's Heritage at Risk (HAR) register in the associated indicator and data boxes. The City of Nottingham currently has 10 conservation areas "at risk" listed on the 2010 HAR register (see www.english-heritage.org.uk/risk).	Table 4.6 has been amended accordingly.
B9	In Table 6.1 damage to and loss of historic features and character can be measured in part through Building at Risk and Heritage at Risk data as stated above.	Table 6.1 has been amended to reflect this.
B10	In Appendix 2 County Building at Risk data should be included within the baseline along with Heritage at Risk data. HAR data is updated yearly, so it is possible to record trends, whilst the target should be to have no designated heritage assets "at risk". Heritage	This additional data has been included in Appendix 2.

Appendix 3

Ref	Comment	Response *
	Counts data should be used to enter the regional and national figures for conservation areas, listed buildings, scheduled monuments and registered parks and gardens.	
B11	In the cultural heritage section of Appendix 2, the references to PPGs 15 and 16 should be replaced with reference to PPS5, which was published in March 2010.	Appendix 1 has been amended accordingly.
B12	In the cultural heritage section of Appendix 2, the1979 Ancient Monuments and Archaeological Areas Act should be referred to as this is the legislation that covers scheduled monuments).	A reference to the1979 Ancient Monuments and Archaeological Areas Act has been included in Appendix 1.
B13	In the landscape and townscape section of Appendix 2, PPG15 should be replaced with PPS5, and PPS6 should be replaced with PPS4. PPS1 should be included as the overarching national policy document on design.	Appendix 1 has been updated accordingly.
B14	At an international level, reference should be made to the European Landscape Convention (ELC), which the United Kingdom became a signatory to a few years ago (the ELC can be viewed at: http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm).	Appendix 1 has been updated accordingly.
B15	English Heritage has produced national advice on the preparation of the third generation of Local Transport Plans and guidance on the preparation of SEAs.	This guidance has been referred to in the preparation of the IIA process and documents.
C	**Natural England**	
C1	Natural England has provided a summary of key issues of importance from their perspective regarding biodiversity, climate change and human health.	This information has been used to supplement the text for Section 5 (Baseline Data) where appropriate.
C2	There are strong links between LTP3 and the 6Cs Green Infrastructure Strategy and it is recommended that the extent to which these two strategic documents can be integrated should be explored.	The Green Infrastructure strategy is the strategic document for delivering green infrastructure across the growth point area. The LTP3 Strategy has taken account of the Green Infrastructure Strategy where appropriate e.g. green transport networks, Rights of Way, use

Appendix 3

Ref	Comment	Response *
		of river corridors and construction techniques that manage water and support biodiversity e.g. SUDs.
C3	Policy wording should establish the principle of landscape character led consideration of development proposals, emphasise the need for landscape and visual assessment as part of planning applications, and require development to take forward the positive enhancement of local landscapes, particularly where landscape character has been degraded.	Noted but this is the domain of the LDF Core Strategy and local Development Plan Documents rather than the LTP.
C4	The IIA Framework should assess the extent to which the LTP3 provides opportunities to protect and enhance landscape character and quality, and this should not be restricted to designated landscapes but include all local landscapes.	The assessment framework criteria in Tables 3.4, 4.3 and 4.6 have been amended accordingly. However the scope of this IIA is to consider the LTP options at a strategic level rather than specific site level schemes and at this headline level the environment is principally of an urban nature. The impacts of transport schemes supporting new development on landscape character would need to be considered through the development management process and for major strategic transport schemes identified through environmental impact assessment.
C5	The IIA Framework for **Climate and CO_2** should consider the extent to which LTP3 maximises opportunities to: • Help to mitigate and adapt to the impacts of climate change through the contribution to the GI network. Recognise the role that transport networks and their associated green infrastructure can play in providing valuable ecosystem services that assist in the management of, and adaption to, climate change e.g. carbon storage, drainage and water conservation, and cooling urban heat islands; • Consider the effects of climate-proofing transport schemes on the natural environment. Ensure that the	The implications of the IIA Framework set out in Table 3.1 and the Assessment Criteria in Tables 4.3 and 4.6 have been updated accordingly.

Appendix 3

Ref	Comment	Response *
	implementation of these measures does not reduce the ability of wildlife to adapt.	
C6	The IIA Framework for **Natural Environment** should consider the extent to which LTP3 maximises opportunities to: • Protect and enhance the natural environment, including biodiversity, landscape, geodiversity and soils by seeking net environmental gain from necessary transport development whilst avoiding, mitigating or compensating for negative impacts; • Deliver green infrastructure; • Consider the effects of noise and light pollution from transport on the natural environment.	The implications of the IIA Framework set out in Table 3.4 and the Assessment Criteria in Tables 4.3 and 4.6 have been amended to reflect this.
C7	The IIA Framework for **Equality and Inclusion** should consider the extent to which LTP3 maximises opportunities to: • Improve accessibility to, and within, the natural environment taking account of the needs of disadvantaged groups and communities, particularly in relation to health and obesity; • Recognise the importance of providing and maintaining a network of green infrastructure; including RoW, quality greenspaces, quiet lanes, greenways and corridors, for an effective non-motorised transport network threading through urban areas and linking to more rural areas.	The implications of the IIA Framework set out in Table 3.7 have been amended to reflect this. However it is considered that the equalities aspect is already covered by the Assessment Criteria for the Natural Environment and for Health. Again the increased emphasis on green infrastructure has been reflected by the amendments to the Assessment Critera for the Natural Environment.
C8	The IIA Framework for **Human Health** should consider the extent to which LTP3 maximises opportunities to: • Recognise the link between healthy communities and access to the natural environment and establish links with the health sector to foster partnership working and improve health and	The implications of the IIA Framework set out in Table 3.8 and the Assessment Criteria have been amended to reflect this.

Appendix 3

Ref	Comment	Response *
	well-being through access to the natural environment.	
C9	There is a need for an integrated approach to climate change, addressing both adaptation and mitigation. Therefore the assessment objective and the assessment criteria should be extended to test what role the transport networks and their associated green infrastructure is helping to mitigate and adapt to the impacts of climate change.	The assessment objective for Climate/CO_2 in Tables 4.3 and 4.6 has been amended to "To reduce carbon and other greenhouse gas emissions from transport and enable the network to assist in the management of, and adaptation to, climate change."
C10	The objective for Natural Environment should be extended to cover the following elements of the natural environment: To protect and enhance the rich diversity of the natural environment, including biodiversity, landscape, geodiversity and soils by seeking net environmental gain. The assessment criteria should assess to what extent the LTP3 option contributes to Green Infrastructure and integrates with 6Cs GI Strategy.	The assessment objective for Natural Environment in Tables 4.3 and 4.6 has been amended to "To protect and enhance the rich diversity of the natural environment, including biodiversity, landscape, geodiversity and soils by seeking net environmental gain." The assessment criteria have been amended to also consider to what extent the LTP3 option contributes to Green Infrastructure and integrates with 6Cs GI Strategy.
C11	Human Health The assessment criteria should consider access to the natural environment.	The criteria "Improve access to services, facilities and destinations that support healthy lifestyles e.g. healthy food outlets, sports and leisure destinations, open space etc" was intended to include this but this link will be made explicitly in Tables 4.3 and 4.6.
D	**Greater Nottingham Transport Partnership**	
D1	Should we be assessing global and local impacts of transport proposals? With alternative fuels and ways of using transport the use of technology results in environmental and social benefit in Nottingham but could cause corresponding harm elsewhere, for example some bio-fuels might help us but cause harm elsewhere as farmers' traditional local produce is substituted by the source of the bio-fuel.	Considering equality and health impacts of decisions outside the UK is beyond the scope of the LTP3 IIA. However this is an important point which has been noted and should be considered when scoping specific transport projects which are likely to have an impact beyond the City's administrative boundary.

Appendix 3

Ref	Comment	Response *
	Should the IIA be looking at equality and health impacts of decisions in the country of source?	
D2	Toxicity of waste. Many wastes direct from transport might be more costly and harmful to handle than others e.g. a nuclear fuelled car. Should this whole life risk and cost be used in the assessments?	Carrying out a whole life risk assessment for each strand of the individual projects which make up the LTP3 programme is beyond the scope of this IIA. However this is an important point which has been flagged for consideration when scoping individual transport projects.
D3	Insufficient emphasis on the impact of active travel as part of the commute in the health section. Would like to see more indicators regarding active travel.	Active travel is identified in the Preferred Indicators set out in Table 4.6. However currently the City Council only holds robust data on walking and cycling to school. Equivalent data from workplace travel surveys is too partial to present an accurate picture and data collected for the national Physical Activity Survey only focuses on walking and cycling for leisure. The active travel data presented in Section 5 has been drawn from the JSNA 2010. However active travel is a key element of the LTP3 Strategy.
D4	Section 5.0 Baseline and Appendices 1 and 2 could include information from the Big Idea survey on company and public beliefs about climate change and carbon reduction.	This has not been included as the baseline data is focusing on evidence rather than perceptions.
D5	Page 32 – It is not just about creating employment – it's the right employment (higher skilled etc). Should you be targeting the 'right types of employment'?	Point noted and text clarified.
D6	References to Integrated Regional Strategy are out of date.	National and local policy context has been updated to reflect the current Government priorities.
E	**Vincent Bryce, Equality and Diversity Consultant, Nottingham City Council**	
E1	EqIA scoping in Table 6.2 has identified the key issues. However in Section 5.3 and Appendix 2 Population & Economy there is no mention of disability or proportion of parents, which are both relevant to transport (eg if above UK average and/or rising). Some mention of related benefits given in Appendix 2. If there was fuller coverage elsewhere in	Disability data is included in Sections 5.9 and 5.10 of the baseline data section. In Appendix 2 the indicator for IB/SDA is used as a proxy for level of disability in relation to economic status.

Appendix 3

Ref	Comment	Response *
	the report, the scoping report itself would technically qualify as the 'full EqIA' noted in the EqIA screening document.	
E2	Local indicator Satisfaction with public transport services should include a sub indicator on disabled users as this is a target in the City Council equality scheme. Optionally could also do this for satisfaction with public transport info, and/or add sub indicators for different equality strands e.g. LGBT, BME, faith groups on perceptions of safety	Indicators proposed have focused on data which is already collected for other monitoring purposes. Transport indicators and monitoring requirements for LTP3 and the IIA are being reviewed in line with the new Government's reporting requirements.
E3	For completeness under 'Baseline data' disability, religion/belief, sexual orientation (6% national estimate from Stonewall) be added. However the key issues and groups are picked up in the EqIA scoping.	The key issues and groups are identified in the EqIA Scoping in Table 6.2. Information about these communities has been added to Section 5.9.

Appendix 4

Appendix 4

Commentary from Stage 1 Assessment Workshop of LTP3 Strategic Options

Option A: Without Plan Scenario	Option B: Cater for Growth with Major Schemes	Option C: Cater for Growth without Major Schemes	Option D: Neighbourhood focus with Major Schemes	Option E: Neighbourhood focus without Major Schemes
• Existing parking policies to discourage car commuting retained but no new measures i.e. no WPL • Assume existing commercial public transport services continue to operate. • Contraction of link bus network over time. • Reactive maintenance for walking and cycling networks. • Assume networks operate as now. • Maintain only – no additional capacity provision.	• Introduce Workplace Parking Levy scheme with increased parking enforcement and travel plan support • Emphasis on NET integration and development of strategic bus corridors including Worklink bus network expansion • Localised 20 mph zones • Upgrade strategic walking and cycling networks and green infrastructure links • Focus on City centre public realm improvements • Manage existing networks • Focus on low carbon public transport system and fleets • Major capacity improvements including NET extensions and Station Hub • Major new highway infrastructure including A453 and Ring Road upgrading • Other development related highway improvements	• Emphasis on travel behaviour change/smarter choices measures • Constrained car parking provision for new developments • Emphasis on increasing bus use across the commercial network and existing Link services including P&R expansion • Localised 20 mph zones • Upgrade strategic walking and cycling networks and green infrastructure links • Focus on City centre public realm improvements • Increased network management solutions • Focus on low carbon public transport system and fleets • Modest capacity improvements focused on increasing public transport priority and junction improvements at congestion hotspots • Other development related highway improvements	• Introduce Workplace Parking Levy scheme with increased parking enforcement, travel plan support for business and individualised travel planning support • Emphasis on NET integration and development of local link bus network • Area-wide 20 mph zones • Focus on walking and cycling for short trips • Focus on district/local centre public realm improvements • Manage existing networks • Focus on incentives for private low carbon vehicle ownership • Major capacity improvements including NET extensions • Major new highway infrastructure including A453 and Ring Road upgrading • Small scale localised public transport and highway improvements	• Increased residents parking schemes • Emphasis on small scale neighbourhood transport schemes • Local link bus network expansion • Area-wide 20 mph zones • Focus on walking and cycling for short trips • Focus on district/local centre public realm improvements • Manage existing networks • Focus on incentives for private low carbon vehicle ownership • Small scale localised public transport and highway improvements

Climate/CO2: **To reduce carbon and other greenhouse gas emissions from transport and enable the network to assist in the management of, and adaptation to, climate change.**

To what extent will the LTP3 option:

- Reduce the need to travel?
- Promote sustainable travel options (public transport, cycling and walking)?
- Support low carbon fuel initiatives?
- Create a resilient transport network?
- Contribute to the green infrastructure network to help to mitigate and adapt to climate change?

Option A: Without Plan Scenario	Option B: Cater for Growth with Major Schemes	Option C: Cater for Growth without Major Schemes	Option D: Neighbourhood focus with Major Schemes	Option E: Neighbourhood focus without Major Schemes
Only be possible to deliver reactive solutions. No wider co-ordination making it difficult to achieve objectives so NEGATIVE impact, unless the traffic problems get so bad that people seek alternatives.	Good opportunity to build in sustainable travel schemes. More growth could create more travel demand so strong positive and also minor negative.	Demand for growth is still there and more demand for travel is being created but without major schemes to mitigate the traffic growth. However soft transport options will help reduce negative impacts. Lack of infrastructure to cope with growth being created. More negative than positive.	Mostly positive with less growth to create more trips but major schemes there to reduce harmful climate CO2 issues. No negative impacts created by new growth	Weaker then Option D. No new net additional problems but limited changes and opportunities for improvement without major schemes. More positive than negative.

Material assets: To manage scarce resources (minerals, energy and fossil fuels) and minimise waste.				
To what extent will the LTP3 option: • Reduce the use of fossil fuels by reducing drive-alone journeys? • Foster use of renewable fuels? • Support sustainable sourcing of transport products and construction materials, including using local supply chains, recycled products and reclaimed materials? • Minimise waste from construction? • Support opportunities to develop brownfield sites?				
Option A: Without Plan Scenario	**Option B: Cater for Growth with Major Schemes**	**Option C: Cater for Growth without Major Schemes**	**Option D: Neighbourhood focus with Major Schemes**	**Option E: Neighbourhood focus without Major Schemes**
Less construction and development so requires less materials so a small positive. However mainly negative impacts.	Greater use of materials and some greenfield development so some negative impacts. Majority of brownfield development is positive and will boost local economy. Resource intensive option, more negative than positive. Scale of investment could lead to better environmental building techniques.	More negative than Option B but retains positive impacts of brownfield development. Behaviour change would help to accommodate growth	Less resource intensive than Options B and C but major transport schemes still require resources. The schemes to promote smarter choices will have positive benefits.	Least negative due to least development. Slightly positive.

Water:: To protect water quality and minimise the impact of flooding.				
To what extent will the LTP3 option: • Manage and improve water quality? • Reduce the impact of flooding (including contingency planning)? • Have the capacity to cope with extreme weather conditions i.e. flood and drought? • Cope with a rising water table? • Improve access to and recreational use of river corridors? • Increase levels of waterborne freight?				
Option A: Without Plan Scenario	**Option B: Cater for Growth with Major Schemes**	**Option C: Cater for Growth without Major Schemes**	**Option D: Neighbourhood focus with Major Schemes**	**Option E: Neighbourhood focus without Major Schemes**
This option won't deliver anything so moderate to major negative impacts including flooding problems could be an issue and localised neighbourhood issues impacting on transport.	Transport networks do contribute to localised flooding. Problems of flash flooding and drain capacity. Sustainable travel contributes positively be reducing demand for new/wider roads. More development may cause negative problems. Correct design may reduce problems but all negative as will be in addition to current issues. More building on open land putting pressure on natural environment but does create opportunities to deal with new and current issues. Overall balance of negatives and positives.	More negative than positive, similar to option B but without the opportunities that are delivered through the major schemes.	More positive than negative but harder to deal with current problems as it requires retrofitting improvements which is costly and difficult.	Similar to Option D. Equal positives and negatives across all options

Natural Environment(Biodiversity, Landscape & Soil):To protect and enhance the rich diversity of the natural environment, including biodiversity, landscape, geodiversity and soils by seeking net environmental gain.				
To what extent will the LTP3 option: • Take account of protected sites for species and habitats within the City? • Enhance habitats and conservation? • Provide opportunities to protect and enhance landscape character and quality of all local landscapes including designated landscapes? • Support access to and enjoyment of green and open spaces for all sectors of the community? • Deliver green infrastructure? • Minimise the effects of noise and light pollution from transport on the natural environment?				
Option A: Without Plan Scenario	**Option B: Cater for Growth with Major Schemes**	**Option C: Cater for Growth without Major Schemes**	**Option D: Neighbourhood focus with Major Schemes**	**Option E: Neighbourhood focus without Major Schemes**
Minor to moderate negative impacts. This option will impact negatively on air quality affecting the environment. No additional building so will not require new land providing a small benefit but no opportunities to make improvements.	Negative impacts but with opportunities to create improvements for green infrastructure. Increased use of smarter choices create positives which may or may not offset growth. Overall more negative than positive.	As Option B but without increased use of major schemes off-setting negative impacts of growth thereby creating more traffic negatively impacting on the natural environment. Making best use of existing infrastructure and no new scheme developments. Few positives but overall less negatives than Option B.	Less negative than Option B but still negative due to major scheme creation. Enhancements to cater for modal shift to sustainable travel options.	No development has no negative impacts. However traffic growth could cause negative impacts. Less modal split improvements than Option D. Similar to Option D but less negative as no major schemes and traffic growth continues. Offers some limited opportunities for improvements.

Urban Environment(Cultural Heritage & Townscape):To protect and enhance buildings, areas and features of historic, archaeological and architectural interest including designated and other heritage assets and their settings.

To what extent will the LTP3 option:

- Create opportunities to enhance the urban environment including buildings, sites, areas and features of historic, archaeological and architectural interest and heritage assets and their settings?
- Preserve the character of buildings, sites, areas and features of historic, archaeological and architectural interest , designated conservation areas and heritage assets and their settings?
- Reducing the impact of transport by reducing the need to travel and promoting less intrusive and damaging transport options?
- Promote good design which recognises local and regional distinctiveness?
- Provide innovative transport management strategies for buildings, sites, areas and features of historic, archaeological and architectural interest and heritage assets and their settings?
- Improve access to cultural activities and destinations for all sectors of the community?

Option A: Without Plan Scenario	Option B: Cater for Growth with Major Schemes	Option C: Cater for Growth without Major Schemes	Option D: Neighbourhood focus with Major Schemes	Option E: Neighbourhood focus without Major Schemes
Major negative. One small positive is no new schemes to negatively impact on urban areas. However generally transport investment provides opportunities to enhance urban environment so the potential positive impacts won't be available with this option.	Major schemes create an opportunity to improve the urban environment but some schemes may make the environment worse. On the whole major schemes bring improvements. Negatives are similar for both Options B & C. However Option B provides more positive benefits than Option C.	Less scope for improving the Urban Environment without the opportunities of major schemes plus more traffic generation.	Improves existing environment. Options D & E have the greatest benefits for this theme, with majors also presenting further opportunities. Could be some negative impacts associated with majors depending on the type of scheme	Improve existing environment. Less negative without majors when compared with Option D.

Population and Economy(Sustainable Communities):To respond to the regeneration and growth agendas in a sustainable way.				
To what extent will the LTP3 option: • Improve access to jobs and services for City residents using sustainable travel options? • Support the use of smart technology for transport and communications? • Improve regional connectivity for personal and business travel? • Provide sustainable infrastructure network for freight?				
Option A: Without Plan Scenario	**Option B: Cater for Growth with Major Schemes**	**Option C: Cater for Growth without Major Schemes**	**Option D: Neighbourhood focus with Major Schemes**	**Option E: Neighbourhood focus without Major Schemes**
Strong negative impacts due to congestion getting worse. Increased congestion will lead to increased damage to the economy. Very major negative impacts on freight, connectivity and ultimately the movement of people.	Negatives - Operational costs of WPL to business may deter employers from locating in the City with impacts for the wider economy. Could be a minor negative for business with getting staff to sites and attracting people to those jobs. Positives – WPL will provide revenue to fund investment to improve the quality and attractiveness of the city via delivery of its associated measures ie NET expansion, Linkbus network etc.	Lost many of the advantages compared to Option B - big issues are negative for smart technology, infrastructure improvements and for freight. Loss of the strategic capacity, just promoting/working within what is already there.	Positives - may help regenerate local areas and encourage businesses to stay or set up in local shopping areas, district centres etc. Already have excellent access into the city, weakness more about the gaps to/within/across areas.The district centres are seeing a decline in employment - need to encourage alternative employment sites in local areas which can support local shops therefore leading to more sustainable growth and more sustainable communities.	Negative impact on freight and regional connectivity. Ok for local population via adequate access to jobs using sustainable modes.

Equality and inclusion incl. Accessibility & Crime:To improve access to services and opportunities for all.

To what extent will the LTP3 option:

- Improve access to jobs and key services for those without access to car?
- Address geographical travel barriers for different sectors of the community?
- Address physical travel barriers for different sectors of the community?
- Address cost of travel barriers for different sectors of the community?
- Improve safety of travel including improving lighting and reducing fear of crime for different sectors of the community?
- Provide appropriate information about travel options in formats suitable for different sectors of the community?
- Meet the specific travel needs of different ethnic groups; disabled people; women; older people; young people, the LGBT community and faith communities?

Option A: Without Plan Scenario	Option B: Cater for Growth with Major Schemes	Option C: Cater for Growth without Major Schemes	Option D: Neighbourhood focus with Major Schemes	Option E: Neighbourhood focus without Major Schemes
Major negative - these groups are least likely to benefit. Mitigating aspect is that Nottingham already has a relatively high level of accessibility - impacts may not be immediate but would deteriorate over a longer term. Public transport network is primarily commercial so this network may not suffer as a result. Greatest impacts will be localised affecting specific areas and population groups. Without a strategic framework for investment in transport improvements the people who shout the loudest would get more.	Investing in city centre rather than focusing on neighbourhoods may create issues for people getting about local areas/ and to local services. Note "growth" includes business and inward investment as well as employment growth and population growth. Access to services may not increase equality for minority groups who may not be the beneficiaries of specific services. Need to consider local aspects of equality and inclusion e.g. Pakistani women are less physically active - would this option address the issues for this group?	Emphasis on travel behaviour change will be more personalised, also currently got good high quality public transport network relative to other areas. This option would place a bigger emphasis on smarter choices which could help to reduce inequalities by opening up opportunities for different groups. Access to a car has big implications for access to food, medical care etc. Discussed car parking constraints for new developments. Is constraining personal car use in new residential developments desirable?	Improving access to employment and employers locating in more local areas can help reduce inequalities. Area-wide 20mph can help improve safety and the local environment. Scope to drill down and look at individual travel needs. Negative impacts as neighbourhood focus could encourage areas to become more insular and inward looking e.g. ethnicity of the local population changes over time so a transient community but each community is quite insular. This will continue to be an issue unless communities have more confidence to travel into other areas – need to remove the barriers for people to provide a stepping stone.	Only moderate positive but no real negative. People with mobility issues are not well served by a focus on walking and cycling - people are living a long time with disabilities so these travel options are not suitable for their needs. However the development of the local link bus network specifically caters for the travel needs of older and disabled people.

Human health including Air Quality & Noise				
To improve health and reduce health inequalities.				
To what extent will the LTP3 option: • Reduce the need to travel? • Promote sustainable travel options (public transport, cycling and walking)? • Increase the proportion of active journeys (walking and cycling)? • Improve road safety by reducing traffic speed and danger from traffic? • Improve access to healthcare facilities? • Improve access to services, facilities and destinations that support healthy lifestyles e.g. health food outlets, sports and leisure destinations, open space? • Improve health and well-being through access to the natural environment? • Establish links with the health sector to foster partnership working?				
Option A: Without Plan Scenario	**Option B: Cater for Growth with Major Schemes**	**Option C: Cater for Growth without Major Schemes**	**Option D: Neighbourhood focus with Major Schemes**	**Option E: Neighbourhood focus without Major Schemes**
Active journeys would reduce without support from the LTP unless national interventions take effect or other partners introduce schemes to help achieve this target. Traffic problems could get so bad that people voluntarily seek alternatives but conditions for active travel may also become worse. Increasing obesity prevalence would continue. Overall moderate/major impact.	Similar issues to above. Health inequalities have two aspects – Nottingham City compared to the rest of England, and inequalities within the City itself. Overall this option would be good for health of Nottingham at a macro level but within the City areas there may be certain groups who don't fully benefit.	If travel behaviour change is targeted at the right groups this option could be more positive and would help to promote active journeys.	This option will create more opportunities for local people by encouraging them to walk and cycle. Also positive impacts for the community aspect by improving liveability of areas and encouraging children to be more active and play outside.	Major positive. Personalised travel planning will help to broaden people's travel horizons.

To improve air quality in the AQMAs and maintain, and wherever possible, improve air quality across Nottingham City and the wider conurbation.				
To what extent will the LTP3 option: • Improve air quality? • Reduce the use of fossil fuels for transport? • Improve the efficiency of the transport network i.e. reduce congestion?				
Option A: Without Plan Scenario	**Option B: Cater for Growth with Major Schemes**	**Option C: Cater for Growth without Major Schemes**	**Option D: Neighbourhood focus with Major Schemes**	**Option E: Neighbourhood focus without Major Schemes**
Worse in the short term as increased use of private vehicles take effect. However improved vehicle technology in the future may slowly bring improvements. Overall a moderate to major negative.	Capacity improvements created by NET Phase 2 will be a positive impact. Trend isn't for air pollution to remain level and there is potential for this to create a negative impact over different timescales. WPL investment in public transport would help. Pollution created by cars using ring road and arterial roads would only be resolved through vehicle and fuel technology improvements. NET extensions would create disruption in the short term so have slower longer term gains.	Promotion of low carbon fleet should be broadly positive although there will be a time lag before the positive benefits are seen. The emphasis on walking, cycling and PT should be positive.	The major scheme elements create negative impacts for air quality and noise	Impacts likely to be moderate without the major schemes if we assume people will be making local trips. Will still have through traffic but with a low carbon fleet.

To reduce levels of transport related noise in areas of sensitivity.				
To what extent will the LTP3 option: Reduce levels of transport related noise and vibration in areas of sensitivity?				
Option A: Without Plan Scenario	**Option B: Cater for Growth with Major Schemes**	**Option C: Cater for Growth without Major Schemes**	**Option D: Neighbourhood focus with Major Schemes**	**Option E: Neighbourhood focus without Major Schemes**
Same principles apply that will get worse in the short term. Ambient noise is shown to affect people's mental health. No new measures could mean no real improvements. However increased congestion could lead to lower noise as vehicles travel slower. Moderate negative.	Temporary disruption where NET lines curve along the roads. Also impacts on residents near railways. NET runs along less congested quieter residential roads so noise impact is relatively higher compared to car noise. Strategic walking and cycling routes encourage people to use those modes and reduce journeys by car counteracting the negative impacts.	This option is more positive as no major schemes. For the A453 the objective is to smooth the flow of traffic so this it not a wholly negative impact.	The major scheme elements create negative impacts for air quality and noise	

Appendix 5

Appendix 5

Preferred LTP3 Strategic Option Effects Prediction Matrices - see separate report

These matrices record the results of the impact assessment of the Preferred LTP3 Strategic Option.

Appendix 6

Appendix 6

Results of the public consultation on the Draft IIA Report

** Where amendments to specific paragraphs or tables in the Draft IIA Report have been recommended the changes have been made to the corresponding paragraphs and tables in the Final IIA Report. References to tables, paragraphs and page numbers in the Response column refer to the relevant section of the Final Report.*

Ref	Comment	Response *
A	**Environment Agency**	
A1	Supports the scope and content of the draft Integrated Impact Assessment (IIA) report, which addresses their main environmental concerns and the key policies, plans and programmes that the Local Transport Plan should consider.	Support noted
A2	**Paragraph 5.6.5 (Page 58)** of the draft report deals with the Baseline Data on Water and makes reference to the Environment Agency's Catchment Abstraction Management Strategies (CAMS). Please note that the 2nd Cycle of CAMS assessments are currently being undertaken, which is utilising a different methodology. Please refer to the Environment Agency's Managing Water Abstraction for further information, a copy of which is available at: http://publications.environment-agency.gov.uk/pdf/GEHO0310BSBH-E-E.pdf	Paragraph 6.6.5 updated accordingly.
A3	Welcomes the references to the Water Framework Directive and Humber River Basin Management Plan in the draft report. However, the indicators in **Appendix 2** relate to the superseded General Quality Assessment way of measuring river quality, which looked at the chemical and biological quality of rivers. These indicators should be replaced with an indicator associated with the Water Framework Directive such as the ecological status of water bodies.	These indicators have been replaced with indicators for the ecological status of water bodies.
A4	**Paragraph 5.6.28 (Page 63)** of the draft report deals with the Baseline Data on flood risk management and mentions the major spills onto the railway line from the River	The reference to Chettles Yard in paragraph 6.6.28 has been updated accordingly.

Appendix 6

Ref	Comment	Response *
	Leen. It should be noted that a wall has been constructed along the railway line as part of the Chettles Yard development, which is part of the flood risk mitigation strategy for the mixed-use development and is designed to protect this part of the railway line from flooding.	
B	**English Heritage**	
B1	Welcomes the addition of historic environment information and data to the IIA Report following the comments on the scoping document. There do not appear to be any significant historic environment data missing from the IIA Report, although reference to the City Council's Urban Archaeological Database would be useful to identify undesignated heritage assets.	Noted
B2	Most of the relevant historic environment problems, opportunities and issues have been identified by the IIA. We would like the LTP to make greater reference to the opportunities to enhance the urban and historic environment through various measures including relieving traffic congestion and improving public realm, particularly as the IIA attempts to focus on enhancement issues (Table 4.5). Reference to preserving the historic environment is also largely absent from the main LTP document. It should be noted that maintenance of existing transport assets, including bridges and structures, will include heritage assets that will require careful management in order to preserve and enhance their heritage significance whilst retaining their transport function.	Referred to the LTP3 consultation response.
B3	Welcome the amendments to the historic environment objectives and indicators following the comments in the scoping document, and these are now considered to be appropriate.	No further action required.
B4	The testing of alternatives appears to be relatively clear and adequately reviewed. Notes the identification of a Preferred Option	No action required.

Appendix 6

Ref	Comment	Response *
	(a modification of Option D: Neighbourhood Focus with Major Schemes), which has the potential to benefit the historic environment through targeted local improvements to streets and spaces, but also the potential to harm through the implementation of major schemes.	
B5	There appear to be differences in the proposals listed in the main LTP Strategy compared to the IIA Report. They are broadly similar in some respects, but it is not clear that all of the proposals in the LTP have been properly appraised by the IIA. A number of specific proposals in the main LTP document have historic environment implications, including PP4, NET2, AM3, CP2, BCA1, GC1, W1 and RC2, but it is not clear whether these proposals have been fully assessed by the IIA.	The purpose of the IIA is to assess the impacts of the 15 year LTP Strategy in terms of its broad strategic direction. The Effects Prediction Matrices assessed the impacts of each of the individual workstreams of the Preferred LTP3 Strategy against each of the IIA themes. The referenced measures set out in the LTP3 Strategy provide more detail about how each of these workstreams will be delivered but have not changed the strategic direction of the Preferred Option and therefore no further impact assessment is required at this stage.
B6	The four major schemes, as set out in Section 4 of the LTP Implementation Plan, all have historic environment issues, such as the redevelopment of the Broadmarsh shopping centre and its impact on the surrounding area (which could be both positive and negative). However, the schemes are not clearly assessed by the IIA.	Correct. However the purpose of the IIA is to assess the impacts of strategic direction of the LTP3 Strategy. Individual major schemes such as Broadmarsh will be subject to a full Strategic Environmental Assessment at the required stage as part of each project's development and is therefore outside the scope of the IIA for LTP3.
B7	The impact of the proposals (as described by the IIA) on the historic environment as described in Appendix 5 are broadly accurate. Many of the proposals should have beneficial impacts on the historic environment, although some will depend on implementation (including the NET extension). It is unfortunate that the LTP does not make greater reference to the historic environment and opportunities to improve its presentation and enhancement.	Please note that NET Phase 2 has already been through an SEA as part of the project appraisal and the information included regarding NET in the IIA is only a headline summary of the results of this more detailed assessment. These comments have been referred to the LTP3 consultation response.

Appendix 6

Ref	Comment	Response *
B8	The mitigation measures outlined inTable 9.2are largely correct for the urban environment, although EIAs for major highway schemes apply equally to the urban environment as they do for the natural environment (see top of page 157).	A tick has been added to Table 10.2 under Urban Environment to reflect this.
C	**Biodiversity and Greenspace Officer, Nottingham City Council**	
C1	Biodiversity and open and green space has been considered throughout both documents, with reference to green infrastructure, biodiversity and the Councils recently updated Breathing Space Plan. Documents refer to the benefits of developing and improving access to green infrastructure corridors and states that '*green infrastructure networks can contribute to achieving the type of high quality natural and built environment required to deliver sustainable communities'.* This complements the Breathing Space plan and upcoming Biodiversity Position Statement review.	No action required.
C2	**Paragraph 1.6.3:** Within the mitigation table, it is recommended that ecological surveys are included and completed prior to works likely to affect protected species or sites.	Will add a line to update table. This table is the same as Table 10.3 so will also reflect the comments below regarding Table 10.3.
C3	**Paragraph 4.4:** Under the heading of 'Implications for IIA' could this be amended to read similar to 'Take account of protected sites, habitats and species within the City that are covered under National and European legislation'? This would then ensure that species and habitats are considered. Under the heading of 'Transport Authority', it is also essential that any necessary surveying, licensing and mitigation for protected species and sites is considered, addition to European legislation e.g. SSSI, LNR and SINC. Under the first bullet points add 'Whether UK protected sites are likely to be affected such as SSSI's and LNR's and ensure necessary consents and mitigation'. For protected species such as water voles along waterways for example, 'The transport authority will need to consider whether	Text in Table 5.4 amended accordingly.

Appendix 6

Ref	Comment	Response *
	protected species are likely to be affected by projects under the LTP. Necessary surveying and potential licensing and mitigation are required'	
C4	**Table 5.1:** Within the 'Key Characteristics' table under section on environmental please can you also include 3 SSSIs, 655 'open and green spaces' in addition to LNRs.	Data added to Table 6.1.
C5	**Paragraph 5.7.6:** Within the text on open and green space, the section covering the Breathing Space should be updated as this plan was updated in 2011. The Biodiversity Position Statement is also due for completion in 2011.	Text in paras 6.7.6 and 6.7.17 amended to reflect this and key bullet points from the South Area open space commentary added
C6	**Para 5.7.17:** Under the heading 'Green Infrastructure' please can you include the number of Parks and Open Spaces (655).	Data included in para 6.7.16.
C7	**Table 6.5:** Under the Natural Environment heading, the preferred indicators for taking into account protected species and sites are negative, referring to protected sites damaged or destroyed.Other indicators throughout the table are positive including paths improved, water quality and public realm improvement schemes. Could this section be amended to read 'number of designated sites protected/ enhanced'? Reference to protected species should also be included within the 2nd and 3rd columns of the first line. The first column says take account of protected sites for species and habitats, but could this be re-worded to say 'take account of protected sites and species and notable habitats'. This will then cover species also not on a protected site (e.g. water voles in a pond near a pathway for example). Protected species can be added into the other columns such as preferred indicators – protected species identified and protected and available data – records from NBGRC.	• Indicator in Table 7.5 amended to read 'number of designated sites protected/ enhanced'. • The first column has been re-worded to say 'take account of protected sites and species and notable habitats'. • Text added to Preferred Indicators column to include "protected species identified and protected" and to Available Data column to include "Records from NBGRC".

Appendix 6

Ref	Comment	Response *
C8	**Table 7.1:** Within the problems and opportunities table, it's important to also note that smaller schemes affecting open spaces/ protected species which are not covered by an EIA, are still subject to ecological surveys and mitigation (depending on the individual project and impact on open space). Within the evidence section, please include the Breathing Space and underlying policies and strategies such as Area Commentaries and Biodiversity Position Statement.	Amended text in the first 2 rows of the table under Natural Environment. Reference to Breathing Spaces, Area Commentaries and Biodiversity Position Statement included in the Evidence column.
C9	**Table 9.2 p150:** Please change English Nature to Natural England	Text amended in Table 10.2.
C10	**Table 9.3:** Within the mitigation table, it is recommended that ecological surveys are included and completed prior to works likely to affect protected species or sites. It is important to also include other protected species (additional to bats and birds) which can potentially be affected by projects along water courses for example. These include water voles, herptiles and white clawed crayfish. Also need to include details of planning policies affecting loss of open and green space if this were to occur - would be useful to reference Planning Policy R1 which covers development of open space. Not only consider protected sites, also important BAP habitat.	• This table is intended as summary of the more detailed Table 10.2 which was derived from the assessment matrices in Appendix 5. • Table 10.3 has been amended to reflect these points. Have also made the same changes to Table 1.6.3 in the Executive Summary.