

# **A47 Earl Shilton Bypass**

## **Environmental Statement**

### **Volume 1**

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## **A47 EARL SHILTON BYPASS**

### **ENVIRONMENTAL STATEMENT**

This Environmental Statement is issued in accordance with EC Directive 85/337/EEC as applied by Section 105A of the Highways Act 1980.

This Environmental Statement is placed on deposit with the Planning Application for the scheme and may be inspected at the locations shown on the back of this document. Comments on the Environmental Statement can be made by writing to Leicestershire County Council at the address below.

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**A47 EARL SHILTON BYPASS**  
**ENVIRONMENTAL STATEMENT**

This Environmental Statement comprises:

Volume 1 - Part 1 - The Environmental Statement

Volume 1 - Part 2 - Supporting Drawings

Volume 2 - Supporting Documents

**VOLUME 1**

**PART 1**

**Contents**

	Page
<b>1.0 INTRODUCTION TO THE SCHEME</b>	
1.1 Introduction to the Scheme	7
1.2 Scheme Description	7
<b>2.0 PARAMETERS OF THE ASSESSMENT</b>	
2.1 The Environmental Statement	9
2.2 The Environmental Assessment	9
<b>3.0 AIR QUALITY</b>	
3.1 Introduction	11
3.2 Local Impact Assessment	11
3.3 Existing Conditions	11
3.4 Effect of the Scheme on Local Air Quality	12
3.6 Mitigation	12
<b>4.0 CULTURAL HERITAGE</b>	
4.1 Introduction	13
4.2 Archaeological Surveys	13
4.3 Description of Archaeological Sites	13
4.4 Impact of Scheme	16
4.5 Mitigation Proposals	17
<b>5.0 DISRUPTION DUE TO CONSTRUCTION</b>	
5.1 Effect of the Scheme	18
5.2 Mitigation	18
5.3 Disposal of Surplus Material	19

<b>6.0</b>	<b>ECOLOGY AND NATURE CONSERVATION</b>	
6.1	Introduction	20
6.2	Methodology	20
6.3	Results and Evaluation	20
6.4	Impacts	21
6.5	Mitigation	21
6.6	Residual Impacts	21
<b>7.0</b>	<b>LANDSCAPE EFFECTS</b>	
7.1	Introduction and Methodology	22
7.2	Assessment of Impacts	22
7.3	Mitigation Proposals	22
7.4	Statement of Effects	23
<b>8.0</b>	<b>LAND USE</b>	24
<b>9.0</b>	<b>TRAFFIC NOISE AND VIBRATION</b>	
9.1	Introduction	25
9.2	Effect of Scheme	25
9.3	Mitigation	26
9.4	Assessment of Noise Levels	26
9.5	Vibration	27
9.6	Conclusion	27
<b>10.0</b>	<b>PEDESTRIANS, CYCLISTS, EQUESTRIANS AND COMMUNITY EFFECTS</b>	
10.1	Introduction	28
10.2	Rights of Way	28
10.3	New Severance	30
10.4	Existing Community Facilities	31
<b>11.0</b>	<b>VEHICLE TRAVELLERS</b>	
11.1	Introduction	32
11.2	View from the Road	32
11.3	Driver Stress	33
<b>12.0</b>	<b>WATER QUALITY AND DRAINAGE</b>	
12.1	Introduction	35
12.2	Existing Conditions	35
12.3	Proposed Scheme	38
12.4	Impact Assessment	38
12.5	Mitigation Measures	38

<b>13.0</b>	<b>GEOLOGY AND SOILS</b>	
13.1	Introduction	41
13.2	Existing Conditions	41
13.3	Effect of the Scheme	43
<b>14.0</b>	<b>IMPACT OF THE SCHEME ON POLICIES AND PLANS</b>	
14.1	Policies and Plans	44
14.2	Leicestershire Structure Plan	44
14.3	Leicestershire, Leicester and Rutland Structure Plan Deposit Draft	44
14.4	Leicestershire, Leicester and Rutland Structure Plan - June 2002	44
14.5	Leicestershire Local Transport Plan 2001 – 2006	45
14.6	Hinckley and Bosworth Local Plan	45
14.7	Blaby District Local Plan	45
14.8	Regional Planning Guidance for the East Midlands	45
<b>15.0</b>	<b>CONCLUSIONS</b>	46

**VOLUME 1**

**PART 2**

**LIST OF FIGURE NUMBERS**

<b>Fig No.</b>	<b>Title</b>
9.1	Noise Bands
11.1	Rights of Way
11.2	Rights of Way
13.1	Main Watercourses
13.2	Sewerage Information
13.3	Sewerage Information
13.4	Sewerage Information
14.1	Geological Strata

## **VOLUME 2**

### **Supporting Documents**

- Part 1 Air Quality
- Part 2 Cultural Heritage
- Part 3 Ecology and Nature Conservation
- Part 4 Landscape Effects
- Part 5 Land Use
- Part 6 Traffic Noise and Vibration
- Part 7 Pedestrian, Cyclist, Equestrian and  
Community Effects

## **1.0 Introduction to the Scheme**

### **1.1 Introduction to the Scheme**

The A47, which runs through Earl Shilton, is a principal Road. The Earl Shilton Bypass would be a logical continuation of the Hinckley Northern Perimeter Road completed in March 1996. The scheme will be a 5km long single carriageway road with off carriageway footway/cycleway facilities along the entire length of the scheme.

Traffic congestion and accidents are a problem along the A47 winding its way through Earl Shilton. Around 16,000 vehicles per day pass through the town centre bisecting the many shopping and community facilities that front it. Many of the junctions and accesses are substandard and footways to the east of the town centre are as little as 1.2m wide. Between January 1997 and December 2001 there were 115 personal injury accidents recorded on the A47 between the terminal points of the proposed Bypass of which 23 involved pedestrians and cyclists.

The aim of the Bypass is to improve conditions along the A47 in Earl Shilton by removing through traffic and congestion. This will enable the implementation of a integrated package of complementary improvements in the town centre, including HGV weight restrictions in order to provide a safe, accessible and environmentally more attractive place for the local community.

### **1.2 Scheme Description**

- 1.2.1 The Scheme is approximately 5km (3.0 miles) long and follows the corridor established in the Local Plan which links the A47 Hinckley Northern Perimeter Road from a new roundabout at Carrs Hill to the A47 Leicester Road north of Earl Shilton. The Bypass will be a 7.3 metre wide single carriageway with one metre hard strips alongside quiet road surfacing material is proposed throughout its length.
- 1.2.2 A combined footway/cycleway 2.5m wide will be provided along the length of the Bypass with connections to the existing cycle facilities along the Hinckley Northern Perimeter Road and to the side roads at each junction.
- 1.2.3 It is proposed to apply a speed limit of 40mph over the western end of the route passing through the A47 Carrs Hill roundabout and the two side road junctions at Elmesthorpe Lane and Station Road. The remainder would be de-restricted, complying with national speed limit of 60mph for a single carriageway road.
- 1.2.4 The proposed Bypass from the western end will link up with the A47 Hinckley Northern Perimeter Road by extending the existing dual 2 lane carriageway as far as the new roundabout on Carrs Hill. Two lay-by's would be provided on this length of road, one in each direction.
- 1.2.5 The Bypass would then follow the Local Plan route corridor in an easterly direction crossing Elmesthorpe Lane and Station Road close to existing ground levels. The natural ground levels in this area rise and fall significantly and as a consequence the Bypass passes from shallow cutting to embankment between these side roads. Extensive landscaping features are proposed over this section of the route to mitigate the effects of visual and noise on the nearby residential properties. This will comprise of earth mounding up to 3m in height providing the equivalent of a road in cutting combined with block planting/soft landscaping. In addition the street lighting to be installed between the A47 Carrs Hill roundabout and Station Road will use modern type cut-off lanterns to minimise light pollution.

- 1.2.6 A 3-arm traffic signal junction is proposed where the Bypass meets Elmesthorpe Lane. Access to Elmesthorpe Lane north of the Bypass will be stopped up to vehicular traffic. Elmesthorpe Lane south of the Bypass will be improved to a standard that can safely carry traffic diverted from Wilkinson Lane. Footway improvements are also included in these proposals. The traffic signals will include safe crossing facilities for pedestrians and cyclists.
- 1.2.7 A 3-arm traffic signal junction is also proposed where the Bypass meets Station Road. Access to Wilkinson Lane south of the Bypass will be stopped up to vehicular traffic. It is intended to implement speed management measures to control traffic along the southern stretch of Station Road in the vicinity of the Bypass as part of the scheme. Details will be the subject of a further public consultation exercise.
- 1.2.8 From Station Road the Bypass continues eastwards to cross Breach Lane close to existing ground level. Breach Lane to the north of the Bypass will be stopped up to vehicular traffic, but access for pedestrians, cyclists and equestrians will be maintained and combined with the diverted footpath T89.
- 1.2.9 The Bypass then crosses open countryside and turns northwards between Breach Lane and Mill Lane. In this area the existing footpath (U17) and bridleway (U16) converge near the Sewerage Treatment Works and will be diverted through an underpass to be constructed at chainage 2,900. This will provide a safe crossing point for pedestrians, cyclists and equestrians for agricultural areas.
- 1.2.10 The Bypass crosses Mill Lane at ground level that will be stopped up to vehicular traffic from the north-west, but access for pedestrians and cyclists will be maintained.
- 1.2.11 Between Mill Lane and Thurlaston Lane the Bypass enters a deep cutting to pass beneath the proposed Thurlaston Lane bridge. There will be no vehicular connections between Thurlastone Lane and the Bypass but access will be provided for pedestrians and cyclists.
- 1.2.12 From Thurlaston Lane the route continues in a northerly direction crossing over Thurlaston Brook before connecting a new roundabout junction at the A47 Leicester Road.
- 1.2.13 Over the length of the Bypass it is proposed that there will be two access road connections serving farms and properties that would otherwise be severed by the road scheme i.e. south of Breach Lane and south of Mill Lane, and seven minor private accesses. For safety reasons these have been kept to a minimum.

## **2.0 Parameters of the Assessment**

### **2.1 The Environmental Statement**

2.2 The statement provides an assessment of the environmental effect of the proposed bypass of Earl Shilton, Leicestershire (Refer Figure 1).

2.1.2 In addition the statement describes existing conditions and discusses the effectiveness of the mitigating measures which form an integral part of the design and planning of scheme. Some mitigation measures are inherently features of the road itself e.g. choice of vertical and horizontal alignment.

2.1.3 The statement is composed of three parts:

Volume 1, Part 1 of the statement describing the existing situation, the changes in the environment which would be brought about by the proposed road improvement, and the proposed measures to mitigate these changes. Part 2 comprises supporting drawings referred to in the statement.

Volume 2 of the statement contains technical details of assessments of environmental effects by subject area. The proposals for the Earl Shilton Bypass do not have sufficient impact to warrant a formal statutory environmental impact assessment as required by the Town and Country Planning (Assessment of Environmental Effects) Regulations 1988 (SI1199). The assessment has therefore been 'informal', although still comprehensive and rigorous at a level of detail appropriate to the issues involved and based on the recommendations and methodology set out in the Department of Transport Design Manual for Roads and Bridges, Volume 11 (DMRB). It should be noted that whilst the design of the scheme has been based on present day traffic flows with the addition of predicted local development, (i.e. with no additional growth assumed), the assessment is based on high growth traffic flows in order to give the worst case scenario.

### **2.2 The Environmental Assessment**

2.2.1 The assessment is based on the following criteria:

2.2.2 Traffic Noise: 'Distance from the road' is used as a readily understandable and consistent parameter and distance bands have been used to identify the number of properties likely to experience a change in noise levels. The noise assessment has been applied to proposed or existing sections of road subject to a traffic change greater than 25%. Locations that are particularly sensitive to noise such as schools, hospitals, Elderly Persons Homes and outdoor recreation areas have been identified separately. Ambient and predicted noise levels have also been either measured or calculated for several typical locations along the route.

2.2.3 Air quality: The air quality assessment identifies buildings or sites within 200m of a route or corridor that might be subject to a change in air quality. Particular attention has been paid to locations where susceptible populations are located and areas likely to exhibit higher pollution concentrations. Localised pollution effects have been calculated to give an indicative assessment of the likely impact on air quality.

2.2.4 Landscape Effects: This section of the appraisal considers both the impact of the scheme on the landscape/townscape quality and its visual impact on local people. Visual change has been categorised according to the following scale:

Substantial adverse or beneficial impact -where the scheme would cause a significant deterioration (or improvement) in the existing view;

Moderate adverse or beneficial impact -where the scheme would cause a noticeable deterioration (or improvement) in the existing view;

Slight adverse or beneficial impact -where the scheme would cause a minor deterioration (or improvement) in the existing view;

No change -no noticeable deterioration (or improvement) in the existing views.

- 2.2.5 Community Severance and Amenity: Community severance results from the impact of the new road scheme in terms of significant changes in journey lengths or travel patterns within a community. Where a new road diverts traffic or makes an existing road easier to cross, community severance may be reduced. Amenity for pedestrians, cyclists, etc. is defined as the relative pleasantness of a journey and is related to the degree and duration of people's exposure to traffic and consequent impacts in terms of fear and safety, noise, dirt, air quality and visual intrusion.
- 2.2.6 Cultural Heritage: The appraisal of cultural heritage considers the impact of the scheme on archaeological remains, listed buildings, conservation areas, registered parks and gardens and any other historically important sites and buildings.
- 2.2.7 Ecology and Nature Conservation: This section assesses the implications of the scheme for wildlife species and their habitats taking into account designated sites and other areas of existing or potential importance. The Leicestershire Habitats Evaluation System categorises ecological sites in terms of the diversity and rarity of flora and fauna at three levels: County significance, District significance and Parish significance.
- 2.2.8 Geology and Soils: Road schemes can have a direct impact on geology (surcharging of ground for example may accelerate the natural rate of collapse of underground mine workings) and/or an indirect effect (by altering the hydrology of an area, diverting underground stream flows or preventing aquifer recharge). In addition physical works may have direct impacts on geological or geomorphological features of scientific interest and importance. Contaminated land and any associated hazards and the impact on soils are also considered where appropriate.
- 2.2.9 Water Quality & Drainage: A road scheme may affect surface water courses, groundwater and soil and vegetation close to the road as a result of pollution from surface water run off and surface water spray and pollution from accidental spillage. In addition, civil engineering works (embankments, bridges, etc.) may change water flows and levels that can have implications for the risk of flooding, ground water supplies and the ecology and natural hydrological systems of surrounding water.
- 2.2.10 Land Use: Demolition of property, loss of agricultural and development land and loss of land used by the community are considered.
- 2.2.11 Vehicle Travellers: This section considers the impact of the scheme in terms of the view from the road and driver stress. Driver stress is defined as the adverse mental and physiological effects experienced by a driver traversing a road network.
- 2.2.12 Disruption due to construction: This section considers the effects on people and on the natural environment that can occur between the start of pre-construction work and the end of the contract maintenance period. Typical construction impacts can include a localised increase in noise, vibration, dust and dirt and loss of amenity due to the presence of construction traffic.
- 2.2.13 Policies and Plans: The purpose of this section is to assess how achievement of policy objectives would be hindered or facilitated by the construction of the scheme.

### **3.0 AIR QUALITY**

#### **3.1 Introduction**

- 3.1.1 Air quality can be degraded by motor vehicle emissions through the discharge of carbon monoxide (CO), hydrocarbons (HC), nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM<sub>10</sub>) (including smoke from diesel engines) and lead (petrol engines) into the atmosphere. Vehicle emission concentration reduces rapidly with distance from the source as the emission disperses into the atmosphere or is deposited on the ground. The speed of traffic flow also affects the concentration of emissions, particularly of CO and HC, since slower moving vehicles produce a larger effect as the engine is working less efficiently.
- 3.1.2 The methodology used to carry out the study is based on the recommendations outlined in the Design Manual for Roads and Bridges Volume 11, Section 3, Part 1 (May 1999).
- 3.1.3 The study of air quality in an area near a highway is complex. In order to appraise the affect on air quality due to a highway scheme, it is necessary to consider both the impacts on individual dwellings (local impact assessment) and the overall change in emissions of pollutants over the network (regional impact assessment).
- 3.1.4 It is very important to note that the traffic flows used in the calculations are the highest forecast flows, which represent the worst possible case conditions. The estimated concentrations of pollutants are compared with the objectives set out in the UK's National Air Quality Strategy (NAQS) for 2005.

#### **3.2 Local Impact Assessment**

- 3.2.1 The current air quality levels (Existing 2001) are compared against those anticipated in 2006, both with the Scheme (Scheme 2006) and without the Scheme (Do-Minimum 2006). The comparisons are made at strategic locations along the length of the Scheme.
- 3.2.2 For each location considered, the 2001 air pollution levels were found to be much higher than the predicted 2006 levels, both with and without the Scheme. This is because future vehicle emissions are expected to be much lower, due to technological advances and the imposition of more stringent legislation. Currently new vehicles show a reduction of 80% in emissions of carbon monoxide (CO), hydrocarbons (HC) and oxides of nitrogen (NO<sub>x</sub>) in comparison to values obtained in the early 1970's. All new cars have now to be fitted with 3-way catalysts and be capable of running on lead free petrol. These measures will further reduce emissions as new vehicles replace the older more polluting types.

#### **3.3 Existing Conditions**

- 3.3.1 Estimates of Carbon Monoxide concentrations range from 1.62ppm to 2.03ppm, substantially below the objective for 2005 of 10ppm.
- 3.3.2 Estimates of benzene concentrations range from 0.41ppb to 0.52ppb, substantially below the objective for 2005 of 5ppb.
- 3.3.3 The properties adjacent to the A47 Leicester Road (south)/Carrs Hill experience concentrations of nitrogen oxide (NO<sub>2</sub>) up to 22.3ppb which is in excess of the objective for 2005 of 21ppb.
- 3.3.4 Data obtained from NETCEN shows that because of the level of background concentrations, most properties along the proposed route are subject to levels of particulate matter (PM<sub>10</sub>) slightly below the objective for 2005 of 50µg/m<sup>3</sup>, with properties adjacent to A47 being marginally above the standard.

### **3.4 Effect of the Scheme on Local Air Quality**

- 3.4.1 Estimates of Carbon Monoxide concentrations would range from 1.38ppm to 1.67ppm, substantially below the 10ppm objective.
- 3.4.2 Estimates of benzene concentrations would range from 0.33ppb to 0.39ppb, substantially below the 5ppb objective.
- 3.4.3 The highest estimated concentrations of nitrogen oxide would be experienced by properties adjacent to A47 Leicester Road (south) and are up to 17.9ppb, which fall below the 2005 objective of 21ppb.
- 3.4.4 The assessment indicates that the highest level of particulates (PM<sub>10</sub>) would be experienced by properties adjacent to A47 Leicester Road (south) with the highest level being 45.3µg/m<sup>3</sup> which is below the 50µg/m<sup>3</sup> objective.

### **3.5 Mitigation**

- 3.5.1 Due to technological advances and the imposition of more stringent legislation, vehicle emissions are forecast to fall considerably below existing levels and have a greater influence on air quality than can be achieved through design measures.

## **4.0 CULTURAL HERITAGE**

### **4.1 Introduction**

4.1.1 Archaeology is the study of the past through its surviving structures, artefacts and environmental data. This assessment of the impacts of the Scheme in relation to cultural heritage has been undertaken in accordance with guidance laid down in the Design Manual for Roads and Bridges, Volume 11, Section 3, Part 2.

### **4.2 ARCHAEOLOGICAL SURVEYS**

#### **4.2.1 Desk-Based Survey**

An archaeological desk-based survey of existing aerial photographic, cartographic, geotechnical, printed and sites and monuments record data was conducted during 2001. The desk-based survey considered an approximately 1km wide corridor to either side of the proposed line of the Earl Shilton Bypass. The desk-based survey was supplemented by a walkover survey of the proposed bypass route to identify any landscape features of archaeological significance not previously recorded. The known archaeological remains were assessed, using the full range of archaeological information available, in a manner to reveal their potential in terms of the criteria laid down in Annex 4 of the Department of Environment *Planning Policy Guidance 16: Archaeology and Planning*.

#### **4.2.2 Evaluation**

The desk-based survey was supplemented by field evaluation of the bypass route during 2002. This comprised the fieldwalking of all available fields along the road corridor, the geophysical survey of areas not suited to fieldwalking, auger survey of alluvial deposits in the valleys of watercourses crossed by the scheme and more detailed investigation of sites of archaeological interest likely to be affected by the bypass proposals.

4.2.2.1 Finds from the fieldwalking survey indicated both prehistoric and medieval activity were sparsely located across the area affected by the proposed bypass but these were not present in either the quantity or concentration that would suggest the presence of archaeological sites beyond those identified by the desk-based survey.

4.2.2.2 No features of archaeological significance were identified by the geophysical survey.

4.2.2.3 The auger survey revealed some evidence for alluviation around the existing watercourses but no archaeological deposits were located.

4.2.2.4 Full reports on all of the archaeological surveys are contained within Volume 2 of the Environmental Statement.

### **4.3 DESCRIPTIONS OF ARCHAEOLOGICAL SITES**

4.3.1 Earl Shilton is an area with a rich and diverse archaeology, including activity of the prehistoric, Romano-British, Anglo-Saxon and Medieval periods. The majority of the known archaeological remains are listed by the Leicestershire Sites and Monuments Record (SMR) which records 17 archaeological sites within 1km of the proposed bypass. To these may be added an antiquarian find from Elmesthorpe, cropmark sites at Bracknell Farm and Tooley Farm, earthworks at Huit Farm, Thurlaston Lane and Alexander Drive, Earl Shilton.

4.3.2 Eight specific sites of archaeological significance in areas likely to be impacted upon by the bypass were identified by the survey. The sites are described below. An attempt has been

made to indicate the importance of each site by using the non-statutory categories of importance defined below:

**National** sites of national importance, usually Scheduled Ancient Monuments, monuments in the process of being scheduled or monuments worthy of adding to the schedule but not yet under active consideration.

**Regional** sites of regional or county importance.

**Local** sites of district or local importance.

#### **4.3.3 Site A: Medieval Manorial Complex at Elmesthorpe (SP459966)**

4.3.3.1 Earthworks and a surviving medieval church form the Elmesthorpe manorial complex. This group of high quality archaeological remains contains the following elements:

**4.3.3.2 Earthworks of Medieval fishponds.** The part of the manorial complex north of Elmesthorpe Lane includes the remains of at least three substantial ponds of probable medieval date (SMR 49.NE, Z, AG and AJ) together with another possible pond (SMR 49NE.AY).

4.3.3.3 The largest pond (SMR 49NE.AJ) at the northern end of the complex is typical of medieval fishponds constructed on gently sloping valley floors and comprises earthworks embankments on three sides, probably constructed largely of material quarried from the interior of the pond. The earthwork dam, closing off the outfall from the pond at its eastern end, now lies beneath the line of Wilkinson Lane. A small island, perhaps associated with fishing or waterfowl, lies towards the western end of the pond. Such large, relatively shallow ponds are typically associated with stock holding in medieval fisheries. Four smaller square ponds to the south-west (SMR 49NE.AG) form part of a rectilinear group of shallow ponds with low earthworks embankments around each pond. Ponds of this sort, commonly termed "stews", are often associated with spawning and breeding in medieval fisheries.

4.3.3.4 A sub-rectangular pond on the eastern edge of the group, adjacent to Wilkinson Lane (SMR 49NE.Z) may form part of the medieval fishery or might perhaps be associated with the formal gardens occupying the site in the Post-Medieval period, either newly constructed or modified from a pre-existing fishpond.

4.3.3.5 At the south-western edge of the group an irregular pond (SMR 49NE.AY) may be associated with the medieval fishery, or might relate to the formal gardens, or a more recent sand/gravel pit to the west, shown on the six-inch Ordnance Survey map of 1887 but now gone beneath houses on Elmesthorpe Lane. A number of other ponds lay to the south of Elmesthorpe Lane and are part of the larger fishery complex, but not directly affected by the proposed bypass.

**4.3.3.6 Buried remains of medieval manorial buildings and Post-Medieval hall.** The site of Elmesthorpe manor is not certain, but is most likely to be within close proximity of the church and fishponds, both of which are important manorial structures. Burton (1622) implies that the church and chief (manor) house lay close together, while Thorsby (1790) indicates that Church Farm, on the site of the present grammar school, occupies the site of the old Hall, traces of which had been unearthed by the 18<sup>th</sup> century tenant farmer. While none of the earthworks presently surviving can be attributed to the manorial buildings it is most likely that buried archaeological deposits associated with the manor buildings do survive across the site, focused on the area formerly occupied by Church Farm. Some possible evidence for the remains of a building were identified by the geophysical survey undertaken as part of the evaluation of this site.

- 4.3.3.7 Medieval parish church.** The surviving nave and west tower of Elmesthorpe parish church (SMR 49NE.G) dates from the 12<sup>th</sup> or 13<sup>th</sup> century. The buildings is listed and protected as a Scheduled Ancient Monument (Leicestershire SAM 96). The building has important historical associations with the battle of Bosworth Field in 1485.
- 4.3.3.8 Earthworks and buried remains of Post-Medieval formal gardens.** A group of rectilinear earthworks on the eastern part of the complex (SMR 49NE.) are probably associated with the formal “pleasure gardens” described by Throsby in 1790. Formal gardens are frequently a feature of the grounds of halls and great houses from the 16<sup>th</sup> century onward and often reuse and modify existing redundant landscape features. As well as the surviving earthworks buried traces of garden features are likely to survive across the former garden area.
- 4.3.3.9 Agricultural earthworks.** Much of the areas between and around the fishponds and garden earthworks is covered with earthwork ridge and furrow. The ridge and furrow was created by ploughing in either the medieval or post-medieval periods and forms a significant landscape feature, preserving evidence for past land use.
- 4.3.3.10 In its entirety, this site is of **regional importance**. It contains one element, Elmesthorpe church, which is a scheduled ancient monument and therefore is of **national importance**.
- 4.3.4 Site B: Find of Middle Bronze Age Palstave north of Huit Farm (SP475970)**  
A metal detector find of a fragment of a middle bronze age palstave (axe head) was made from field close to Huit Farm. No other details of the find are known. This site is of **local** importance. While this may be an isolated find, indicative of accidental loss and therefore with no wider archaeological context, it is also possible that the find may derive from one of a number of other contexts, such as disturbed horde or funerary deposit. Additional metal detector survey in this area carried out as part of the scheme evaluation did not locate any further archaeological remains.
- 4.3.5 Site C: Cropmarks north of Bracknell Farm (SP476989)**  
Cropmarks visible on aerial photographs define a rectilinear enclosure c.38 x 52m in size, with ditches apparently up to 10m wide, together with a number of other poorly defined linear features, perhaps indicating contemporary field boundaries. These cropmarks are likely to be of **local** or **regional** significance
- 4.3.6 Site D: Cropmark of a Possible Late Neolithic Enclosure at (SP477979)**  
Two aerial photographs taken in 1995 show a roughly circular, positive cropmark comprising a single substantial ditch, with possibly four opposed entrances. The ditches appear to widen slightly at the entrance causeways and the circular feature is c.25m in external diameter. Late Neolithic enclosures of this sort often serve as a focus for funerary and ceremonial activity, both in the Neolithic and, as they form significant landscape features with continuing ritual significance, in the Bronze Age as well. Although the enclosure is not directly affected by the proposed bypass, adjacent features such as burials, votive pits, post settings and perhaps later, Bronze Age barrows, can be anticipated in the vicinity of the enclosure.
- 4.3.7 The site is of **regional** importance. If proven to be a henge monument it may be judged to be of **national** importance.
- 4.3.8 Site E: Cropmarks Around Tooley Farm (SP 475990)**  
The site comprises a series of linear cropmarks, in part marking the line of the parish boundary between Tooley and Earl Shilton and elsewhere probably following the former line of enclosure period hedgerows, now removed. These cropmarks are of **local interest** only and of low archaeological potential.

**4.3.9 Site F: Earthworks at Huit Farm (SP 475970)**

The site comprises a series of earthworks to the north east and west of Huit Farm. A field to the north of the farm buildings contains regular rectilinear earthworks reminiscent of toft plots and building platforms. A further field to the north-west of the farm contains exceptionally well-preserved earthwork ridge and furrow. Evidence for Medieval agricultural practice and settlement, including the possibility of structures, can be expected to survive. This site is of **regional importance**.

**4.3.10 Site G: Earthworks at Alexander Avenue, Earl Shilton, (SP 475975)**

The site comprises a field of earthwork ridge and furrow. This site is of **local importance**.

**4.3.11 Site H: Earthworks on Thurlaston Lane (SP 478982).**

The site comprises a field of earthwork ridge and furrow. This site is of **local importance**.

**4.4 IMPACT OF THE SCHEME**

4.4.1 The scheme will directly impact on four known archaeological sites and pass close to a further four sites, tabulated below.

4.4.2 The most severe impact will be on the Medieval manorial complex at Elmesthorpe (Site A), where construction of the scheme will destroy significant archaeological remains and severely compromise the integrity of this regionally important archaeological and historical site, which includes a Scheduled Ancient Monument.

4.4.3 The possible Neolithic enclosure identified at SP477979 (Site D) is potentially of great archaeological significance. Buried archaeological remains, not evident as cropmarks, may well extend into the road corridor here, and would be of the highest importance. Further evaluation of the site has been undertaken but the results are not in this report.

4.4.4 Elsewhere the impact of the scheme on known remains is either slight, or the remains of low archaeological potential.

4.4.5 However, given the proven high archaeological potential of the area crossed by the proposed bypass there exists a strong likelihood that further archaeological sites will emerge during highway construction. The valleys and floodplains of the three watercourses crossed by the proposed scheme are highlighted as of particular potential and archaeological remains here may exist sealed within or beneath superficial alluvial deposits and so leave little surface trace.

Site Ref	Description	Distance from proposed highway	Impact
A	Medieval manorial site including earthwork fishponds	On line	Severe
B	Middle bronze age palstave	On line	Possible
C	Linear cropmark and enclosure	Partially on line	High
D	Late Neolithic cropmark enclosure	30m to east	Possible
E	Linear cropmarks	100m to north	None
F	Earthworks at Huit Farm	100m to south	None
G	Earthworks at Alexander Ave	200m to east	None
H	Earthworks on Thurlaston Lane	20m to west	Possible

## **4.5 MITIGATION PROPOSALS**

- 4.5.1 The results of the desk-based survey and evaluation will be used to guide the design of appropriate steps to be taken to mitigate the effects of the development. Mitigation proposals will be developed in consultation with the Leicestershire County Council Archaeological Advisor, and in the case of Site A, which includes a Scheduled Ancient Monument in close proximity to the proposed bypass, in consultation with English Heritage.
- 4.5.2 In every case, in keeping with the general principles enshrined in PPG16, special attention will be paid to preserving remains either *in-situ* or by forming a record. Where individual sites or parts of sites are affected, it is intended that a full archaeological record of the remains will be created prior to highway construction and following precise delineation of the remains.
- 4.5.3 In addition to dealing with the individual threats to sites or parts of sites it is intended that an archaeological watching-brief be maintained during early groundworks associated with construction to allow for the identification of hitherto unknown archaeological remains and to cater for the salvage recording of such remains.

## **5.0 DISRUPTION DUE TO CONSTRUCTION**

### **5.1 Effect of the Scheme**

#### 5.1.1 General

5.1.1.1 It is expected that construction of the Scheme would be undertaken over a period of approximately 15 months. Inevitably, there would be some disruption and nuisance to both the travelling public and in particular to those residents living closest to the Scheme. The majority of the disruption and nuisance would be caused by noise and dust generated by earthworks, retaining wall and bridge construction operations. Some disturbance and inconvenience would be experienced at the proposed junctions with the existing road network and by heavy construction vehicles entering and leaving the site from the existing roads.

#### 5.1.2 Delay and Diversions

5.1.2.1 During the construction period, traffic flow would generally be maintained throughout the existing road network adjacent to the route corridor to minimise delays to traffic.

5.1.2.2 However, during construction some nuisance would be caused to road users on both the main routes into Earl Shilton and on some side roads, through the introduction of temporary traffic management and diversion measures, which would be required in order to provide adequate and safe working areas.

5.1.2.3 It will be necessary to arrange temporary closure of some bridleways and footpaths to expedite construction and in the interests of safety. If this became necessary, alternative signed routes would be provided.

5.1.2.4 Aggregate, bitumen and concrete would be required for the construction works. These materials would need to be transported by road. This would lead to a temporary increase in heavy goods vehicles on the existing road network.

#### 5.1.3 Dust and Mud

5.1.3.1 In periods of dry weather, blown dust may present problems during the excavation for the proposed carriageway, or when laying some types of imported road building materials.

5.1.3.2 Construction vehicles leaving the site may deposit mud on the roads.

#### 5.1.4 Noise

Some construction activities, particularly bridge construction and earthworks operations, generate noise levels which could be considered unacceptable. The earthworks for the Scheme would involve substantial lengths of cuttings and embankment construction. A bridge carrying Thurlaston Lane over the Scheme, would be provided.

### **5.2 Mitigation**

#### 5.2.1 Delay and Diversions

5.2.1.1 Heavy construction vehicles would gain access to the site via the existing strategic road network (A47 south of Earl Shilton and A47 north of Earl Shilton). Subject to agreement, restrictions would be imposed on the use of certain roads to minimise the impact on residential areas.

- 5.2.1.2 Non-vehicular access provisions would be maintained at all times. When it becomes necessary to close or divert a route, alternative signed routes would be provided.
- 5.2.1.3 Conditions would be imposed on the Contractor to ensure that two way traffic flow is maintained wherever practical on all routes throughout the construction period.
- 5.2.2 Dust and Mud
  - 5.2.2.1 Construction activities would be monitored by the County Council's site supervisory staff and if it became necessary to contain blown dust, the Contractor would be instructed to take appropriate action, such as spraying water or, in extreme cases, suspending operations.
  - 5.2.2.2 Construction vehicles using public roads would be monitored by the County Council's site supervisory staff to ensure they are relatively clean and free from mud. The Contractor would if necessary be instructed to use mechanical sweepers to remove deposits on the highway and/or be required to install tyre washing facilities at site exits.
- 5.2.3 Construction Noise
  - 5.2.3.1 During the construction period there may be some temporary nuisance due to construction noise. This would be closely monitored and controlled by imposing working restrictions on the Contractor who would undertake the construction of this scheme.
  - 5.2.3.3 Every reasonable effort would be made to minimise the impact of construction works on occupiers of properties who are likely to be affected by the construction of the road. The District Councils have powers under the Control of Pollution Act 1974 to control nuisance due to construction noise, either by agreeing the construction procedures in advance or by issuing an abatement notice if and when a problem occurs. They may specify permitted noise levels, the plant and machinery which may or may not be used and the working hours. It would be the County Council's intention to seek the approval of the Local Authorities for construction noise control procedures, which would then be included in the Contract documents and made binding on the Contractor appointed.
  - 5.2.3.4 Night-time working is unlikely to be required on the Scheme but if it should prove necessary, it would be carefully controlled with contractual working restrictions in order to limit disturbance.

### **5.3 Disposal of Surplus Material**

- 5.3.1 The Scheme has been designed so that any material excavated which is surplus to road construction would be used elsewhere on site, principally in areas allocated for landscaping, thereby minimising the quantity of material to be removed off the site. The excavated materials are considered to be inert and would therefore present no special handling or disposal problems.
- 5.3.2 Disposal off-site of any small quantities of surplus material would be the responsibility of the Contractor, who is allowed to tip at any licensed landfill site. Alternatively, he may choose to negotiate with local landowners for suitable tipping areas. However, any local tipping arrangements would require planning permission and the Local Authority would consider environmental factors before determining a planning application.
- 5.3.3 There are strict legal controls to prevent illegal dumping of surplus materials and these include a requirement for a waste disposal license to be obtained and a "duty of care" placed on the Contractor.

## **6.0 ECOLOGY AND NATURE CONSERVATION**

### **6.1 INTRODUCTION**

6.1.1 FPCR were commissioned by Waterman Burrow Crocker to carry out ecological survey work to the northeast, east, southeast and south of Earl Shilton, Leicestershire on land following and adjacent to the proposed Earl Shilton A47 bypass.

6.1.2 The objectives of the surveys and desk study were to undertake sufficient assessment to identify significant nature conservation impacts likely to arise from construction of the preferred route and to identify the location, type and importance of all areas of significant nature conservation interest that may be affected. Supplementary surveys are still required to ensure the ecology report meets stage III as specified in the Design Manual for Roads and Bridges, Volume 11.

### **6.2 METHODOLOGY**

6.2.1 The site was surveyed using extended Phase 1 methodology (NCC 1990) during May and September 2001. In addition to this, a hedgerow survey to determine important hedgerows under the Hedgerow Regulations 1997 was carried out.

6.2.2 Faunal surveys undertaken included badger, water vole and bat species. Evidence of any Biodiversity Action Plan species such as brown hare was also recorded.

6.2.3 The initial survey has identified further faunal surveys that need to be carried out during 2003. These are: winter birds, breeding birds, great crested newt, white clawed crayfish, otter and further water vole and badger surveys.

6.2.4 Consultation was undertaken with the Leicestershire Museums Service, Leicestershire and Rutland Wildlife Trust and the Leicestershire Badger Group.

6.2.5 Detailed assessment methodologies are provided in appendix 2 of the full ecology report.

### **6.3 RESULTS AND EVALUATION**

6.3.1 Arable land and improved pasture fields of low botanical diversity dominate the area. No field compartments were identified as being semi-improved. One field edge was identified as semi-improved supporting typical meadow species.

6.3.2 Twenty-seven out of one hundred and ninety six hedgerows were identified as important under the Hedgerow Regulations 1997.

6.3.3 Three small areas of woodland lie within the survey area. None of these are notable

6.3.4 Mature oak, ash, crack willow and field maple occur frequently along the hedgerows.

6.3.5 Five linear water features are present in the area. The most notable of these is the Thurlaston Brook, which reportedly supports water vole and otter. Thirteen ponds or groups of ponds are present in the area.

6.3.6 No evidence of badger or water vole was recorded during the survey, the wildlife trust has recorded evidence of water vole and otter along the Thurlaston Brook. Further protected species surveys (including great crested newt) are being carried out during 2003 within the correct survey periods.

- 6.3.7 The majority of the habitats within the site are improved and support a low diversity of species. The most valuable habitats are the hedgerows, mature trees, ponds and watercourses.
- 6.3.8 No habitats or species recorded are classed as nationally rare. Those classed as locally uncommon include saw wort, tubular water dropwort, the Thurlaston Brook and the important hedgerows.
- 6.3.9 The site as a whole is not of significant nature conservation value due to the dominance of low diversity, common and highly modified habitats.

## **6.4 IMPACTS**

- 6.4.1 Several hundred meters of hedgerow will be lost; the impact is classed as slight. The Thurlaston Brook will be crossed, two other watercourses will be directly affected along with three ponds, impacts are regarded as moderate. Several mature trees will be lost, impacts of this are considered significant.
- 6.4.2 The road will lead to habitat fragmentation and interruption of corridors of movement, together with increased road mortalities. Impacts of this can only be assessed once further protected species surveys, including great crested newt, have been carried out.
- 6.4.3 Culverts have the potential to restrict passage by water vole and kingfisher, full impacts will be assessed after further surveys.
- 6.4.4 Construction works will lead to disturbance of birds. Impacts will be assessed after further surveys.
- 6.4.5 Potential indirect impacts include pollution and changes in hydrological regime.

## **6.5 MITIGATION**

- 6.5.1 Where possible hedgerows lost will be replaced on a like for like basis. Planting will ensure further links are created across the site.
- 6.5.2 Culvert and bridge designs will allow passage by water voles and kingfisher
- 6.5.3 Scrub removal will take place outside of the bird breeding season. Trees will be retained wherever possible. Where removal is required, this will be subject to a strict method statement to ensure bats do not come to any harm. As part of the landscaping/planting proposals it is intended to provide several thousand trees that will in time more than offset the loss of mature trees.
- 6.5.4 If any protected species are recorded during the 2003 surveys, a mitigation strategy will be agreed with the relevant nature conservation bodies and licenses will be applied for where necessary.

## **6.6 RESIDUAL IMPACTS**

- 6.6.1 Identification of residual impacts will be completed after further surveys have been carried out. The majority of these will be minor due to the low nature conservation value of the majority of habitats present.

## **7.0 LANDSCAPE EFFECTS**

### **7.1 Introduction and Methodology**

An assessment for the Earl Shilton A47 bypass has been undertaken in order to identify the landscape and visual impacts of the proposed bypass on the local landscape character (for the full report refer to Volume 2). It has been prepared in accordance with Volume II Manual For Roads and Bridges.

### **7.2 Assessment of Impacts**

#### 7.2.1 Landscape

At this stage there are not thought to be any substantial landscape impacts. Since there are few intrinsic landscape features within the bypass corridor there would be no impacts upon specific landscape elements. Inevitably some existing vegetation would be lost, however a large proportion would be retained. The overall landscape impact is considered to be moderate. The route is thought to be far enough from the Water Reclamation Works to have no landscape impact as long as the road alignment does not get any nearer to it.

#### 7.2.2 Visual

Views from the centre line of the proposed road have been surveyed using different assumptions: the impact on a winters day in the year the scheme would open to traffic; and the impact in the fifteenth year after opening, taking account of all proposed planting.

7.2.2.1 Generally the majority of residential properties that have been identified as receptors of the new road will experience first floor views only. Few will experience both ground and first floor views. In some cases views of the bypass corridor are filtered or blocked completely by existing vegetation and / or field boundaries.

7.2.2.2 Additional planting has been recommended at various locations along the route to mitigate potential views as necessary, the proposed bunding will also provide effective mitigation.

7.2.2.3 The close proximity of the A47 and the M69 to the bypass corridor would reduce the significance of a number of visual impacts from identified receptors.

7.2.2.4 New lighting columns to the proposed roundabouts are not thought to have any further impacts than the existing street lighting along the A47.

7.2.2.5 Overall the visual impact of the road scheme would be slight to moderate with few substantially adverse impacts. These would become significantly less substantial in time, becoming moderate-slight towards year 15 of the road being open.

### **MITIGATION PROPOSALS**

### **7.3**

7.3.1 A number of hedgerow field boundaries will be partly or wholly destroyed to make way for the road. Mitigation would include the retention of vegetation, including field boundaries wherever possible, and new planting throughout the bypass corridor. This would form an integral part of the scheme softening the overall appearance of the road and helping it fit in with its immediate surroundings, minimising any adverse visual impacts and reducing them over time.

Wherever extensive amounts of existing vegetation would have to be removed, to allow enough width for the bypass corridor, the visual impacts should be reassessed as additional mitigation may be required.

7.3.2

### **Statement of Effects**

7.4

The bypass corridor crosses pasture and arable farmland and rarely comes into close proximity with residential areas.

7.4.1

The quality of the landscape has been assessed as predominantly good, however it has relatively little of special interest or value apart from an archaeological site that lies between the B581 and the B5364, and hedgerow field boundaries.

7.4.2

There is limited variation in the existing topography within the bypass corridor and the embankment / cut in of the bypass design follows this wherever it can. The road will have some influence on the surrounding character and would result in a notable change to the landscape fabric of the corridor itself and its surroundings. However, this will be restricted in extent and can be effectively mitigated where necessary, therefore limiting the actual landscape impact.

7.4.3

7.4.4

The road scheme is not out of character to its surroundings being near to the M69 and connecting to the A47 and selected B roads, impacts of which are currently experienced by some of the identified receptors due to the open nature of the landscape.

## **8.0**      **LAND USE**

- 8.1      The proposed route for the Earl Shilton bypass passes mainly over agricultural land on the east side of the town.
- 8.2      Its effects on land use and agriculture have been assessed by land use and agricultural land quality surveys along the route of the road, discussions with the owners and/or tenants of land that would be affected and visual observations of likely impacts on land access.
- 8.3      The route and its associated landscaping would take around 30 ha of owner-occupied and tenanted agricultural land. More than half of this is classed as 'moderate agricultural quality' (sub-grade 3b) while the remainder is 'best and most versatile agricultural quality' on the classification of the Ministry of Agriculture, Fisheries and Food. The better quality land is predominantly used for growing crops of wheat, barley, beans and maize. Some autumn-sown arable crops are also grown on the moderate quality land, but it is mainly used for grassland supporting beef or dairy cattle.
- 8.4      Nine agricultural holdings would be significantly affected and the impact on each of these is described in the full report in terms of direct land loss, consequential loss (where severed fragments of fields could not be amalgamated with others and would be too small to farm efficiently) and loss of access. The route would affect the viability and grazing capacity of two small farms and possibly a larger dairy farm
- 8.5      The effects have been mitigated, wherever possible, in the final design so that new accesses are provided where the route would sever current access to fields. There is also the potential to remove certain species-poor hedgerows so that remaining small field sections can be amalgamated with adjacent fields.
- 8.6      The effects on other land uses include the loss of a nearly all of horse paddock on Mill Lane, the crossing of proposed housing development land west of Station Road, loss of one end of a small paddock on Elmesthorpe Lane and the loss of the northern end of land on Leicester Road allocated for a crematorium or community facility.

## **9.0 TRAFFIC NOISE AND VIBRATION**

### **9.1 Introduction**

- 9.1.1 The sources of noise from a traffic stream can be separated into two components. The first is generated by the engine, exhaust and transmission and is the dominant noise source when traffic is not free flowing. This is particularly true for heavy vehicles, which contribute a significant proportion of low frequently noise. Noise levels will vary primarily according to engine speed rather than vehicle speed. The second noise source component is generated from the interaction of tyres with the road surface and is the dominant noise source under free flow traffic conditions at moderate to high road speeds and contributes a significant proportion of high frequency noise. Noise levels will vary depending on vehicle speed, the road surface and whether the surface is wet or dry.
- 9.1.2 The noise from a stream of traffic at a reception point at any one instant is an aggregation of noise from each of many vehicles at various distances. Among factors which influence a basic traffic noise level are traffic flow, speed and composition (percentage of heavy vehicles), road gradient and road surface characteristics. The noise level at a particular reception point will also be affected by either factors among which are distance from the noise source, the nature of the intervening ground surface and the presence of obstructions.
- 9.1.3. The noise assessment is designed to give a broad indication of the magnitude and significance of noise changes resulting from the scheme. This is done initially by a simple count of the number of dwellings within given distance bands of those roads where a traffic increase or decrease greater than 25% is predicted. These bands are shown on Map 1.

### **9.2 Effect of Scheme**

- 9.2.1 The map shows that 24 properties are within 100m of the route, including Elmesthorpe Village Hall and St Marys Church; between 100 and 200m of the route there are 104 properties and an area of allotment gardens; between 200 and 300m there are 103 properties affected including the cemetery off Mill Lane and the recreation ground off Maple Way. Where the properties and plots of land within these band widths experience a change in traffic noise, this will be either an increase or decrease depending upon the effect of the mitigation measures.
- 9.2.2 In addition there are a total of 1101 properties in Barwell that will experience an increase in noise from additional traffic using the existing roads. Within the 50m band there are 154 properties including the library and church; between 50m and 100m there are 148 dwellings including 1 nursery; between 100m and 200m there are 357 dwellings including 1 school (Barwell County Infants School) and 1 nursery; between 200m and 300m there are 442 properties including 1 school (Barwell Church of England Junior School ) and 1 nursery and 1 recreation ground.
- 9.2.3 Where the scheme results in a diversion of traffic away from existing roads, noise levels will be reduced. In the urban areas of Earl Shilton and Barwell, 5011 properties will be affected where roads are predicted to experience a 25% reduction in traffic upon opening of the scheme.
- 9.2.4 2079 properties including 2 schools (Newlands CP School and Weavers Close Church of England Primary School), 1 nursery and 2 residential homes lie within the 50m band width. Between 50 and 100m there are 1287 properties including 3 schools (Townlands Church of England Primary School, Heathfield High School and William Bradford Community College), 1 nursery and 1 residential home. Between 100 and 200m, there are 1031

properties including 1 nursery, as well as 1 allotment garden, 1 cemetery, 1 bowling green, 2 sports ground, 1 recreation ground and 1 play area. Between 200 and 300m there are 614 properties and 1 recreation ground.

9.2.5 Considering the whole area, there will be on balance many more properties experiencing a reduction in noise (5011) than those experiencing an increase in noise (1332).

**9.3 Mitigation**

9.3.1 The relative level of noise change is an important factor when considering noise impact and indicative ambient and predicted noise levels have been either measured or calculated along the route of the Bypass

9.3.2 The calculations take account of the noise mitigation measures that are included within the scheme proposals. Extensive earth mounding (between 2 and 3m high) will be provided both sides of the route through areas of sensitivity and quiet road surfacing material will be used throughout the scheme.

**9.4 Assessment of Noise Levels**

9.4.1 In order to assess the noise impact of the scheme, 15 properties have been selected along the route and noise levels have been calculated for 2006 (the opening year of the Bypass) and 2021 (allowing for 15 years growth) for the 'do-nothing' and 'with-scheme' scenarios. The results are shown in Table 1.

**Table 1  
 Typical Calculated Noise Levels**

Receptor Point	2006 No Bypass	2006 With Bypass	2021 No Bypass	2021 With Bypass
White Oaks , Leicester Road(A47S)	72.0	68.0	73.1	69.1
Inglenook Farm, Leicester Road (A47S)	68.4	63.4	69.5	64.5
37 The Crescent	52.6	53.7	53.7	54.9
44 Elmsthorpe Lane	61.2	60.0	62.4	61.2
99 Elmesthorpe Lane	65.0	56.6	66.1	57.8
14 Wilkinson Lane	60.1	53.4	61.2	54.6
223 Station road	55.2	58.5	56.3	59.7
Breach Farm, Breach Lane	54.2	51.9	54.2	53.0
Breach Lane Farm, Breach Lane	47.0	51.2	47.0	52.3
Mirfield Farm, Mill Lane	51.8	44.4	51.8	45.5
123 Mill Lane	46.4	42.1	46.4	43.2
The Elms, Thurlaston Lane	61.8	58.4	62.9	59.6
Oakfield, Thurlaston Lane	57.9	54.6	59.0	55.8
Bracknell Farm, Leicester Road (A47N)	52.2	49.6	53.3	50.7
1 The Spinneys, Leicester Road (A47N)	72.4	67.3	73.5	68.4

9.4.2. The figures indicate that upon opening of the Bypass in 2006 and also up to 15 years after opening, most of the selected properties will experience either a reduction or no perceptible increase in noise level. The property on Station Road adjacent to the Bypass will experience an increase of 3.3dBA by 2006 and 3.4dBA by 2021 which could be considered as just perceptible.

9.4.3. The property on Breach Lane will be subjected to a noise increase albeit from a very low existing noise level. The predicted noise level with the Bypass in place is still no higher than 51.2 dBA in 2006 and 52.3 dBA in 2021.

9.4.4. The above assessment demonstrates that properties that will potentially be subject to the highest noise levels as a result of the Bypass will be successfully protected by the proposed mitigation measures.

9.4.5 In addition to the impact on properties, there are several rights of way that are directly crossed by the scheme and will experience an increase in noise level. Of these approximately 1420m lie between 300m and 200m of the Bypass; 1370m lie between 200m and 100m of the Bypass and 1130m lie within 100m of the Bypass.

## **9.5 Vibration**

9.5.1 Traffic induced vibration is a low frequency disturbance producing physical movement in buildings and their occupants. Vibration can be transmitted through the air or through the ground. The frequency of air-borne vibration from traffic is typically below 200 Hertz (Hz) and can be produced by the engines or exhausts of road vehicles with dominant frequencies in the 50Hz - 100Hz range. Ground-borne vibration is more often in the 8Hz - 20Hz range and is produced by the movement of rolling wheels on the road surface and can be perceptible in nearby buildings if heavy vehicles pass over irregularities in the road.

9.5.2 Ground-borne vibrations are unlikely to be important when considering disturbance from new or improved roads because of the absence of surface irregularities on a new road.

9.5.3 Extensive research carried out by TRL concluded that the majority of traffic induced vibration in dwellings is caused by low frequency air-borne vibration rather than ground-borne vibration. It follows therefore that, as the road traffic noise levels increase or decrease, the vibration levels can be expected to increase or decrease accordingly.

## **9.6 Conclusions**

The conclusion of the noise assessment is that:-

1. On balance many more properties will experience a reduction in noise than an increase, ie 5011 compared to 1332.
2. Many properties on the A47 through the centre of Earl Shilton will experience a reduction in noise levels.
3. The scheme will result in significant noise benefits for the area as a whole.
4. Calculation of noise levels for properties selected as typical along the route indicate that:-
  - Most properties along the route will experience either a reduction or an imperceptible increase in noise level upon opening of the Bypass.
  - Properties on Breach Lane and Mill Lane near to the Bypass will experience a significant increase in noise albeit from very low existing levels.
  - The property on Breach Lane near to the Bypass will experience an increase in noise albeit from a very low existing level.

## **10.0 PEDESTRIANS, CYCLISTS, EQUESTRIANS AND COMMUNITY EFFECTS**

### **10.1 Introduction**

10.1.1 Community Severance is defined as the separation of residents from facilities and services within their community caused either by new and improved roads or changes in traffic flows.

10.1.2 Community Severance is described by using a three point scale: slight, moderate and severe. These guidelines apply specifically to pedestrians. Cyclists and equestrians are less susceptible to severance because they can travel more quickly than people on foot, although they may still be deterred from making a journey which may require them to negotiate additional roads or crossing points.

### **10.2 Rights of Way**

10.2.1 The impacts of the Scheme on the Rights of Way shown on Figures 11.1 and 11.2, i.e. footpaths, bridleways and public highways, are described in the following section.

10.2.2 B581 Elmesthorpe Lane

10.2.3 Elmesthorpe Lane spurs off the A47, Carrs Hill, adjacent to Shilton Road, and runs south-east towards Elmesthorpe skirting to the west of the Coronation estate. It is a narrow country lane with substandard vertical and horizontal alignment. There is a narrow footway along one side, minimum width 1.0 metres which combined with limited visibility due to the poor alignment make it a danger to pedestrians.

10.2.4 Elmesthorpe Lane would be stopped up to the north of the bypass and connected to the south using a traffic signal controlled three arm junction including a pedestrian phase and a central refuge. A turning head would be provided to the north section of Elmesthorpe Lane. To the south of the bypass Elmesthorpe Lane would be reconstructed with an improved alignment and a footway of minimum 1.8 metres width.

10.2.5 B6407 Station Road / Wilkinson Lane

10.2.6 Station Road runs south west from the A47 in the village centre adjacent to the library and intersects Elmesthorpe Lane south of the proposed bypass.

10.2.7 Wilkinson Lane would be stopped up to the south of the bypass and Station Road would be connected to the bypass from the north using a traffic signal controlled three arm junction including a pedestrian phase and a central refuge. A turning head would be provided at the end of Wilkinson Lane.

10.2.8 Bridleway U20

10.2.9 Bridleway U20 commences at the southern end of the track that runs south from Breach Lane, to the east of and approximately parallel to B6407 Station Road. It then runs south east towards Elmesthorpe and terminates at B581 Station Road.

10.2.10 Bridleway U20 would be stopped up with pedestrians able to cross the bypass at grade using the diverted footpath. The diversion would increase the journey distance by approximately 20m and there would be an increase of journey time because the proposed scheme has to be crossed.

- 10.2.11 Breach Lane
- 10.2.12 Breach lane runs east from Station Road and terminates at Huit Farm.
- 10.2.13 Breach Lane would be stopped up to the north of the proposed scheme and connected to the south using a three arm junction via a small diversion.
- 10.2.14 A new bridleway will be provided to the north of the proposed scheme to allow equestrians using Breach Lane to the north of the Scheme to access bridleway U16 at the proposed underpass.
- 10.2.15 Equestrians using Breach Lane to the south of the proposed scheme will be able to use the new bridleway to the south of the Scheme to gain access to Wilkinson Lane, thereby maintaining bridleway network.
- 10.2.16 Footpath T89
- 10.2.17 Footpath T89 runs south from Montgomery Road, Earl Shilton and intersects Breach Lane south of the proposed bypass.
- 10.2.18 Footpath T89 would be stopped up to the north at the edge of the proposed bypass, and to the south, at the point that it crosses Breach Lane. The footpath would be realigned along the combined footway/cycleway on the north side of the proposed scheme to the new junction with Breach Lane, cross the proposed carriageway and continue along the realigned section of Breach Lane.
- 10.2.19 Footpath U17 & Bridleway U16
- 10.2.20 Footpath U17 runs from Montgomery Road, Earl Shilton to the sewage treatment works. It then runs south, intersecting bridleway U16, terminating at Huit Farm. Bridleway U16 commences just beyond the last houses on Mill Lane leaving Earl Shilton. It runs south towards footpath U17 and terminates at Huit Farm.
- 10.2.21 Footpath U17 would be diverted along the southern edge of the sewage treatment works. At the south east corner of the sewage works it would join bridleway U16. The combined footway/bridleway would then continue to head east along the edge of the stream. An underpass would be provided to allow the stream and footway/bridleway to pass beneath the proposed scheme. Once east of the bypass the footway/bridleway would run south along the base of the embankment to rejoin its existing route. Footpath U17 would become separate from Bridleway U16 at the original point of intersection.
- 10.2.22 Mill Lane
- 10.2.23 Mill Lane commences adjacent to St Simon & St Judes church at the A47 , Earl Shilton and runs south easterly out of the village past Mirfield Farm.
- 10.2.24 Mill Lane would be stopped up to the north of the proposed Scheme and realigned to the south and a priority junction provided. Pedestrians and cyclists would cross the proposed Scheme at grade on a slightly realigned route. Equestrians would be diverted along Bridleway U16, under the proposed scheme via the underpass and returning to Mill Lane using the proposed Bridleway which runs parallel to the Scheme.

**10.3 New Severance**

10.3.1 Table 11.1 provides an assessment of the severance at each right of way

**Table 11.1  
 New Severance**

<b>Right Of Way</b>	<b>Degree of Severance</b>
Elmesthorpe Lane	Moderate
Station Road	Moderate
Bridleway U20	Moderate
Breach Lane	Moderate
Footpath T89	Moderate
Footpath U17	Slight
Bridleway U16	Slight
Mill Lane (Cyclists & Pedestrians)	Moderate
Mill Lane (Equestrians)	Severe

The severance impact would be moderate for the majority of the rights of way which cross the scheme and the following mitigation measures would be provided:-

10.3.2 Elmesthorpe Lane and Station Road

The degree of severance for pedestrians would be mitigated by the provision of a pedestrian phase in the traffic signal sequence.

10.3.3 Bridleway U20

The degree of severance for equestrians is mitigated by the provision of new bridleways to maintain the bridleway network. Pedestrians would cross the Scheme at grade and appropriate hardstandings would be provided.

10.3.4 Breach Lane

Where Breach Lane crosses the Scheme a footpath diversion would be provided with pedestrians crossing the Scheme at grade. The degree of severance for equestrians is mitigated by the provision of new bridleways to maintain the bridleway network.

10.3.5 Footpath T89

Where Footpath T89 crosses the Scheme a footpath diversion would be provided with pedestrians crossing the Scheme at grade.

10.3.6 Mill Lane

The degree of severance for equestrians is mitigated by the provision of new bridleways to maintain the bridleway network. Pedestrians would cross the Scheme at grade and appropriate hardstandings would be provided. The degree of severance for equestrians is classed as severe because of the length of the diverted route. However because the route is used primarily for leisure purposes the impact of the Scheme should not deter users from continuing to use bridleways in the area.

## **10.4 Existing Community Facilities**

The impact of the Scheme on existing community facilities is as follows:

### **10.4.1 Saint Mary's Church**

The entrance to Saint Mary's Church is on Elmesthorpe Lane on the south side of the proposed scheme. Non-vehicular users travelling from the south side of the bypass would not be adversely affected by the scheme. From the north side pedestrians would have to cross the bypass at either the Elmesthorpe Lane or Station Road junctions. Provision will be made for a pedestrian phase within the proposed traffic signal installations at these junctions. This will keep any increased journey time to a minimum and provide a safe crossing point.

### **10.4.2 Social Centre**

This serves the local communities and access is gained from Wilkinson Lane. Its location with respect to the proposed scheme is the same as Saint Mary's Church so the same comments apply.

### **10.4.3 Allotment Gardens near Breach Lane**

Access from Earl Shilton to these gardens will not be affected by the proposed scheme. From the south the scheme would have a moderate impact on access via footpath U20.

## **11.0 VEHICLE TRAVELLERS**

### **11.1 Introduction**

11.1.1 This assessment of the impacts of the Scheme in relation to vehicle travellers has been undertaken in accordance with guidance laid down in the Design Manual for Roads and Bridges, Volume 11, Section 3, Part 9.

### **11.2 View from the Road**

11.2.1 The Scheme comprises the introduction of a new highway around the southern and eastern sides of Earl Shilton, mainly through open undulating landscape adjacent to the edge of the conurbation.

11.2.2 The Scheme would reassign some traffic currently using existing routes within the Earl Shilton area. These routes are generally urban streets with much adjacent development, vehicular access and frequent junctions. In contrast, the Scheme would be a highway designed to current geometric standards with limited junctions, located in a more visually attractive context.

11.2.3 The view from the road has been assessed on the following three sections of the Scheme:

- A47 Leicester Road (south) – Station Road and
- Station Road – Mill Lane
- Mill Lane - A47 Leicester Road (north)

#### **11.2.4 A47 Leicester Road (south) – Station Road**

11.2.4.1 From the proposed roundabout junction at A47 Leicester Road (south) the Scheme would be in either natural cutting or artificial cutting formed with earth bunding to shield adjacent properties.

11.2.4.2 Through this section there would be no view from the road except at the junctions where breaks in the bunding would allow intermittent short distance views.

#### **11.2.5 Station Road - Mill Lane**

11.2.5.1 Artificial cuttings would be provided where the Scheme passes through the urban fringe of Earl Shilton in the vicinity of Station Road. From here to its junction with Mill Lane the Scheme would be formed either in shallow cutting or on embankment up to 6m above existing ground level. Through the section of cutting and shallow embankment the views would be intermittent, however the section of embankment over the watercourse adjacent to the water treatment works would afford open views of the countryside to the east of Earl Shilton.

#### **11.2.6 Mill Lane - A47 Leicester Road (north)**

11.2.6.1 This section would contain a cutting up to 8.5m deep from Mill Lane to the valley of the Thurlaston Brook where the scheme would be on shallow embankment to its junction with A47 Leicester Road (north). There would be no view through the cutting area with open views of the surrounding countryside where the Scheme would cross the Thurlaston Brook.

## **11.3 Driver Stress**

### **11.3.1 Frustration**

11.3.1.1 Frustration is caused by a driver's inability to drive at a speed consistent with his or her own wishes in relation to the general standard of the road. It increases as speed falls in relation to expectations and may be due to high flow levels, intersections, roadworks, or to difficulties in overtaking slower moving traffic. Congestion can lead to frustration by creating a situation in which the driver does not feel in control, especially when he or she wishes to arrive at a destination by a particular time, but is held up by traffic congestion whose duration cannot be determined.

11.3.1.2 The design of the proposed Earl Shilton bypass is able to cope with up to 13000 vehicles average annual daily flow, well above the 2021 traffic figures with the exception of the Carrs Hill – Elmsthorpe Lane link which is predicted to have flows close to 13000. This is not seen as a problem due to the short distance covered. The junction design is such that they will be able to cope with peak hour high growth 2021 traffic figures. This would mean that journey times would be a known quantity for the foreseeable future and would therefore not lead to frustration.

### **11.3.2 Fear of Potential Accidents**

11.3.2.1 The main factors leading to fear are the presence of other vehicles, inadequate sight distances and the likelihood of pedestrians, particularly children, stepping into the road. Other factors include inadequate lighting, narrow roads, roadworks and poorly maintained road surfaces. Fear is highest when speeds, flows and the proportion of heavy goods vehicles are all high. All these factors become more important in adverse weather conditions. A road scheme may increase driver fear to some extent because it will increase traffic speeds and , by diverting traffic from a number of existing roads, may also increase flows. However, this increased perception of danger is likely to be more than offset in most cases by the superior design standards to which a new scheme is built (for example, longer sight distances, footbridges for pedestrians, good lighting, and a new road surface).

11.3.2.2 There is evidence that drivers make a compensatory reduction in their speed where conditions increase the risk of an accident (and, equally, that drivers may sub-consciously drive less safely where external factors reduce accident risk). There is no consensus on the degree of 'risk compensation'.

11.3.2.3 The proposed Earl Shilton bypass would be a single carriageway road, with good forward visibility and lighting at all of the major junctions. The speed limit would be 40mph from Carrs Hill to Station Road and 60mph thereafter. As the bypass is a new build project modern standards apply therefore the surface condition and ride quality would be excellent, likewise the road would drain efficiently.

11.3.2.4 The proposed alignment has been designed to meet modern standards without providing excessive forward visibility, thus giving an accurate perception of speed. There would be two traffic light controlled pedestrian crossing points but unassisted at grade crossing would be possible. It is proposed that Thurlaston Lane would cross the bypass via an over bridge.

### **11.3.3 Uncertainty of Route**

11.3.3.1 Route uncertainty is caused primarily by signing that is inadequate for the individual's purposes. It will not normally be possible to assess the size of this factor unless a consensus has already appeared on the adequacy of existing signing practice at a

specific site.

- 11.3.3.2 As the Earl Shilton Bypass is a relatively short route with only two junctions, and uncertainty of route would not be expected to be a common problem. Initially, there will be a small amount of confusion concerning the Elmsthorpe Lane and Station Road junction arrangement but, as mainly local traffic will use these roads, this will be short lived. Well designed signing will be provided, thus eliminating this cause of stress from the new road.
- 11.3.3.3 The implementation of the Scheme would noticeably reduce the volumes of traffic and the associated high levels of driver stress on much of the existing road network within Earl Shilton. There would be particular relief to Hinckley Road, Wood Street, The Hollow, High Street, Hill Top, and Leicester Road.
- 11.3.3.4 In order to mitigate the effects of potential driver stress, comprehensive route signage and other driver information would be provided on all three sections of the Scheme.
- 11.3.3.5 In overall terms, it is considered that the Scheme would provide a major benefit to all the road users in the Earl Shilton area.

## **12.0 WATER QUALITY AND DRAINAGE**

### **12.1 INTRODUCTION**

12.1.1 As part of the Environmental Statement for the proposed A47 Earl Shilton Bypass, it is necessary to undertake an assessment of the environmental implications of the Scheme on water quality and drainage, in accordance with the guidance contained in the Design Manual for Roads and Bridges Volume 11. Stage 1 and Stage 2 assessments of have not been previously undertaken for the Scheme. The purpose of this report is to evaluate the environmental impact of the Scheme on water quality and drainage.

12.1.2 Consultations have been undertaken during the preparation of this report with the following authorities:

- Environment Agency
- Severn Trent Water Ltd as Sewerage Authority
- Leicestershire County Council
- Hinckley & Bosworth Borough Council as Land Drainage Authority
- Blaby District Council as Land Drainage Authority

### **12.2 EXISTING CONDITIONS**

#### **12.2.1 Watercourses and Water Quality**

Figure 13.1 shows the main watercourses in the vicinity of the Scheme, and their associated drainage catchment areas. Normanton Brook flows south from Newbold Verdon and passes to the east of Earl Shilton. Thurlaston Brook is joined by Normanton Brook and Earl Shilton Brook adjacent to the M69, and then continues in a south east direction to join the River Soar at Croft.

Normanton Brook crosses the Scheme just south of the northern junction with the A47 and has a mainly rural catchment area of approximately 27 sq. kms which extends to the north of Newbold Verdon. The northern outskirts of the urbanised areas of Earl Shilton and Barwell also lie within the catchment.

The urbanised areas of Earl Shilton and Barwell form the upstream catchments of Thurlaston Brook, Earl Shilton Brook and other un-named watercourses crossing the Scheme south of the town.

12.2.1.1 Records held by the Environment Agency for the classification of river water quality, assessed in accordance with the General Quality Assessment (GQA), indicate the following information. The General Quality Assessment grading covers the parameters listed in Table 1 below.

- Normanton Brook GQA (1998) grade B  
(Stretch - Newbold Verdon STW to Normanton Park)
- Normanton Brook GQA (1998) grade B  
(Stretch - Normanton Park to Thurlaston Brook)
- Earl Shilton Brook GQA (1998) grade C  
(Stretch – Earl Shilton STW to Thurlaston Brook)
- Thurlaston Brook GQA (1998) grade B  
(Stretch – Normanton Brook to River Soar)

GENERAL QUALITY ASSESSMENT				
Water Quality	Grade	Chemical Parameters		
		Dissolved Oxygen	Biochemical Oxygen Demand	Ammonia
		% Sat 10 %ile	Mg/l 90 %ile	MgN/l 90 %ile
Very Good	A	80	2.5	0.25
Good	B	70	4	0.60
Fairly Good	C	60	6	1.30
Fair	D	50	8	2.50
Poor	E	20	15	9.0
Bad	F	<20	>15	>9.0

Table 1 General Quality Assessment chemical grading for rivers and canals.

12.2.1.2 Water Quality Objectives (WQO) used for planning future improvements in water quality are important in considering the acceptability of any proposed discharge. In accordance with the Surface Water (Rivers Ecosystem Classification) Regulations 1994, Environment Agency records confirm the following RE classifications for the local watercourses. The RE classification covers the parameters listed in Table 2 below.

- Normanton Brook WQO – RE4.  
(Stretch - Newbold Verdon STW to Normanton Park)
- Normanton Brook WQO – RE2.  
(Stretch - Normanton Park to Thurlaston Brook)
- Earl Shilton Brook WQO – RE4.  
(Stretch – Earl Shilton STW to Thurlaston Brook)
- Thurlaston Brook WQO – RE3.  
(Stretch – Normanton Brook to River Soar)

Class	Dissolved Oxygen	BOD	Total Ammonia	Un-ionised Ammonia	pH	Hardness	Dissolved Copper	Total Zinc
	%sat 10%ile	Mg/l 90%ile	MgN/l 90%ile	MgN/l 95%ile	5%ile- 95%ile	Mg/l CaCO <sub>3</sub>	95%ile	95%ile
RE1	80	2.5	0.25	0.021	6.0-9.0	<10 >10 and <50 >50 and <100 >100	5 22 40 112	30 200 300 500
RE2	70	4.0	0.6	0.021	6.0-9.0	<10 >10 and <50 >50 and <100 >100	5 22 40 112	30 200 300 500
RE3	60	6.0	1.3	0.021	6.0-9.0	<10 >10 and <50 >50 and <100 >100	5 22 40 112	300 700 1000 2000
RE4	50	8.0	2.5	-	6.0-9.0	<10 >10 and <50 >50 and <100 >100	5 22 40 112	300 700 1000 2000

Table 2 River Ecosystem (RE) Classifications.

## 12.2.2 Existing Drainage Systems.

12.2.2.1 Public foul and surface water sewers within the vicinity of the Scheme, as taken from Severn Trent Water Ltd's records, are shown on Figures 13.2, 13.3, and 13.4. Outfalls from the public surface water systems that feed local watercourses are also shown.

The effects on the existing public sewerage system would be:

- The foul water pumping station would be affected by the Scheme as it crosses Station Road.
- The foul water rising main heading north along the A47 Carrs Hill would be affected over a length of approximately 400 metres, by the proposed junction at the southern extent of the Scheme.

The effluent outfall from the Earl Shilton Sewage Treatment Works is shown on Figure , and would not be affected by the Scheme.

12.2.2.2 Existing highway drainage systems at the A47 Carrs Hill, Elmesthorpe Lane, Station Road, Breach Lane, Mill Lane, Thurlaston Lane, and the A47 Leicester Road would be truncated by the Scheme.

## 12.2.3 Land Drainage

12.2.3.2 Natural drainage paths from agricultural land to the north of the Scheme between the A47 Carrs Hill and Elmesthorpe Lane would be severed.

12.2.3.3 The Station Road junction effectively blocks the natural drainage paths in the valley at this location. The existing watercourse flowing in an easterly direction from Station Road follows the route of the Scheme for approximately 300 metres. The watercourse would require re-alignment as an open channel adjacent to the Scheme.

12.2.3.4 Natural drainage paths from agricultural land to the north of the Scheme between Station Road and Breach Lane would be severed. Natural drainage paths from agricultural land to the south of the Scheme for approximately 300 metres east of Station Road would also be severed.

12.2.3.4 Natural drainage paths from agricultural land to the north of the Scheme for approximately 300 metres north of Breach Lane would be severed. As the Scheme crosses the valley between Breach Lane and Mill Lane natural drainage paths from agricultural land to the north and south would be severed.

12.2.3.5 Natural drainage paths from agricultural land to the east and west of the Scheme between Mill Lane and Thurlaston Lane would be severed.

12.2.3.6 Natural drainage paths from agricultural land to both sides of the Scheme between Thurlaston Lane and Leicester Road would be severed.

## 12.2.4 Flooding.

12.2.4.1 Environment Agency Indicative Flood Maps indicate flooding of Normanton Brook from the confluence with Thurlaston Brook to a point south of Kirkby Mallory. A local farmer confirms flooding occurs in the vicinity where the Scheme would cross Normanton Brook.

12.2.4.2 Environment Agency records contain no information regarding flood levels to watercourses in the vicinity of the Scheme.

## 12.2.5 Groundwaters and Licensed Abstractions

12.2.5.1 Groundwater provides a proportion of base flow for many rivers, and the protection of the water quality of aquifers is outlined by The Groundwater Directive (80/68/EEC). This requires that measures are taken to control the discharge of dangerous substances to groundwaters, classified as List I or II. List I includes hydrocarbons and List II includes copper and zinc, which are constituent substances in highway run-off.

12.2.5.2 Under the Environment Agency's Policy and Practice for Protection of Groundwater the site is designated as non-aquifer. These formations are generally regarded as containing insignificant quantities of groundwater, but flow through such rocks although imperceptible needs to be considered in assessing the risk associated with persistent pollutants.

12.2.5.3 Environment Agency records confirm there are no authorised/ licensed groundwater abstractions within 1 km of the site, and that the site is not located within any current Source Protection Zones.

## 12.3 PROPOSED SCHEME.

12.3.1 The proposed A47 Earl Shilton Bypass involves the construction of approximately 4.5 km of new roads to the south and east of the urbanised area of Earl Shilton. It would be constructed as a 7.3 metre wide single carriageway with 1.0 metre hardstrips throughout.

12.3.2 Highway drainage proposals would be designed and constructed in accordance with Leicestershire County Council's standard requirements, incorporating appropriate pollution prevention measures.

12.3.3 The preferred highway vertical alignment shows low points at the A47 Carrs Hill, approximately 200 metres west of Elmesthorpe Lane, approximately 250 metres east of Station Road, Earl Shilton STW, and Normanton Brook. Highway drainage runs would fall to these locations, before outfalling to balancing facilities that would limit discharges to the receiving watercourses.

12.3.4 Existing watercourses crossing the route of the Scheme at the A47 Carrs Hill, Station Road, adjacent to Earl Shilton Sewage Treatment Works, and south of the A47 Leicester Road would be culverted beneath the Scheme to convey existing flows.

## 12.4 IMPACT ASSESSMENT.

13.4.1 The Scheme has the following impacts on existing site conditions.

- Increased storm water run-off and reduced response time.
- Increased risk of accidental pollution to watercourses and groundwaters.
- Increased risk of flooding in receiving watercourses.
- Change in the local water regime.
- Affects on existing drainage systems.

## 12.5 MITIGATION MEASURES.

12.5.1 Increased storm water run-off and reduced response time.

12.5.1.1 The adverse effects of increased volume and rate of run-off from the developed site on water quality will be mitigated by the introduction of balancing ponds. These will store run-off during storm periods and limit discharges to local watercourses to those of pre-

development or 1 in 1 year greenfield rates. The good design and management of balancing ponds provides first stage settlement and filtration treatment of surface water run-off.

- 12.5.1.2 The Environment Agency recommend that the principles of Sustainable Urban Drainage Systems (SUDS) are considered in the Scheme drainage design. Incorporation of such systems, as advocated by Planning Policy Guidance (PPG25) Development and Flood Risk will prevent an increased risk of flooding within the catchment.
- 12.5.1.3 Given the provision of the proposed mitigation measures there should be no increased flood risk due to the Scheme.
- 12.5.2 Increased risk of accidental pollution
- 12.5.2.1 Development introduces the risk to water quality of possible pollution by accidental spillages. The use of trapped gullies and the introduction of interceptors to the site drainage systems in high risk areas would provide a means of protection against spillages by separating oil from run-off for later removal. Similarly the installation of penstock shut-off facilities to balancing ponds would assist the containment of pollutants for removal.
- 12.5.2.2 An assessment of the risks of accidental spillage for the sections of the By-Pass draining to separate outfall locations has been undertaken in accordance with the method contained in the Department of Transport Design Manual for Roads and Bridges Volume 11. This assessment indicates an average risk of accidental spillage of 1 in 1490 years, with a worst case of 1 in 1333 years for the section of the By-Pass draining to the watercourse flowing eastwards from Station Road.
- 12.5.2.3 The risk of a serious pollution incident is normally accepted as 1 in 100 years for discharges to aquifers and sensitive watercourses, and 1 in 50 years to all receiving watercourses. In exceptional cases, the Environment Agency can depart from these figures and stipulate mitigation measures due to local circumstances. The above assessment indicates the risk of serious pollution has a greater return period than 1 in 100 years and that no measures for protection against spillage need be incorporated.
- 12.5.2.4 A preliminary assessment of the water quality of discharges to local watercourses in accordance with the method contained in the Department of Transport Design Manual for Roads and Bridges Volume 11, has not been undertaken due to a lack of existing water quality information. An assessment would be necessary to determine if concentrations of dissolved copper and total zinc present in discharges meet Environmental Quality Standards or if a further detailed water quality assessment should be undertaken.
- 12.5.2.5 Guidelines would be followed in the design of the site drainage systems to mitigate the risks of pollutants entering groundwaters, either directly or via the local watercourses. The lining of balancing ponds to prevent infiltration would also form protection to groundwaters should highly permeable material be encountered locally.
- 12.5.2.6 Given the provision of the proposed mitigation measures and subject to a satisfactory assessment of the water quality of discharges, there should be no significant effect on the water quality of groundwaters underlying the site or on local watercourses.
- 12.5.2.7 Appropriate pollution prevention measures to be implemented during the construction phase would be agreed with the Environment Agency prior to construction. Particular attention would be paid to the prevention of accidental spillages and also to the provision of surface water settling ponds to prevent excess silt entering the land drainage system.

- 12.5.3 Increased risk of flooding in receiving watercourses.
  - 12.5.3.1 Appropriate discussions would be held with the Environment Agency to agree the maximum flood level for the purposes of designing culverts or any other bridged crossings and the amount of any compensatory flood storage volume. The appropriate consents under the Land Drainage Act 1991 would be sought from the Environment Agency for works affecting watercourses.
  - 12.5.3.2 Construction of the road embankment in areas known to be subject to flooding by Normanton Brook could occupy areas that were previously available for flood storage. Compensatory storage would be provided with the removal of material in areas as close as possible to the road crossing. The provision of compensatory storage would ensure the storage capacity of the flood plain is maintained with negligible effect on flood water levels.
  - 12.5.3.3 Given the provision of the proposed mitigation measures there should be no increased risk of flooding in receiving watercourses due to the Scheme.
- 12.5.4 Water regime
  - 12.5.4.1 Construction of the Scheme would form a barrier across existing local drainage routes causing potential blockage and alteration to local catchment areas and boundaries.
  - 12.5.4.2 The installation of culverts crossing beneath the Scheme would provide new routes to convey existing drainage. Culverts would be suitably sized to provide sufficient flow capacity.
  - 12.5.4.3 Culverting of watercourses would be minimised to reduce the loss of habitat.
  - 12.5.4.4 Surface run-off from adjacent land intercepted by the Scheme would be collected by ditches or drains and returned direct to existing watercourses or incorporated in the Scheme drainage system.
  - 12.5.4.5 Given the provision of the proposed mitigation measures, there should be no significant effect on the land drainage in the vicinity of the Scheme.
- 12.5.5 Affects on existing drainage systems.
  - 12.5.5.1 Preliminary discussions has been undertaken with Severn Trent Water Ltd (STW) regarding proposals to abandon and relocate Station Road foul water pumping station and re-align the A47 foul water rising main. Proposals to be agreed with STW would ensure there were no detrimental affects on the existing public foul water sewer system.
  - 12.5.5.2 Arrangements to be agreed with Leicestershire County Council would ensure the continuity of existing highway drainage systems truncated by the Scheme or their incorporation into the proposed Scheme drainage system.
  - 12.5.5.3 Given the provision of the proposed mitigation measures, there should be no significant effect on existing drainage systems.

## **13.0 GEOLOGY AND SOILS**

### **13.1 Introduction**

13.1.1 Geology is the scientific study of the Earth as a whole, its origin, structure, composition and history and the nature of the processes which have given rise to its present state.

13.1.2 Soils are the accumulation of loose material, which covers much of the land surface of the Earth to depths varying from a few millimeters to many metres. Soil classification information has been taken from the "Soil Survey of England and Wales", 1983.

13.1.3 Geological and geomorphological features, which are considered to be of national importance, are designated as Sites of Special Scientific Interest (SSSI). Other sites of geological importance may be designated as Regionally Important Geological Sites (RIGS).

13.1.5 The information presented in this section is based on the following data:-

- 1) Maps and memoirs  
Produced by the British Geological Survey.
- 2) Hydrogeological and hydrological information produced by the Environment Agency.
- 3) The Geotechnical Preliminary Sources Report dated April 2001 produced by Engineering Services Laboratory, Northampton.
- 4) Information obtained from a ground investigation that was carried out along the bypass route in August 2001.

The 1:50000 scale geological maps of the area (Sheet 155: Coalville and Sheet 169: Coventry) that have been produced by the British Geological Survey and Section 3 of the Geotechnical Preliminary Sources Report show that drift materials comprising Alluvium of Recent age and Glacial Till, Glacial Sand and Gravels and Glacial Lake Clay of Pleistocene age overlie Mercia Mudstone of Triassic age along the line of the proposed bypass.

### **13.2 Existing Conditions**

13.2.1 The exploratory holes that were carried out during the investigation encountered the following strata in a general downwards sequence:

Made Ground/ pottery and plastic or Topsoil	-Soft and firm sandy clay
overlying Head	-Gravelly fine sand
or Alluvium	-Soft and firm sandy clay
or Glacial Sand and Gravel	-Gravelly sand and sandy gravel intermixed with clay and silt
or Glacial Till	-Stiff gravelly clay with lenses of gravel and sand
or Glacial Lake Clay	-Soft and firm clay with occasional gravel
overlying Mercia Mudstone	-Stiff and very stiff red brown clay becoming mudstone with increasing depth.

A geotechnical plan that shows the strata present along the line of the proposed route is shown on Figure No. 14.1 in Part 2. The boundaries of the strata shown on the plan have been obtained from the 1/50,000 scale geological maps.

### **13.2.2 Made Ground**

Although not shown on the geological maps an isolated deposit of Made Ground was found immediately to the south of Breach Lane Farm. The Made Ground comprised ash, clinker, sand and glass and was found to be of very limited extent and depth. This deposit does not present any significant impediment to the proposed route.

### **13.2.3 Alluvium**

Alluvium was encountered in the base of the valley associated with Thurlaston Brook. The Alluvium comprised soft and firm normally consolidated clay intermixed with sand and occasional gravel. The low strength and high compressibility of the Alluvium will require careful consideration to be given to the design of earthworks and structure foundations that are needed in this area.

### **13.2.4 Head**

Minor deposits of Head materials were found on the lower parts of sloping ground. These deposits generally comprised gravelly fine sand and are formed by the movement of material, usually under periglacial conditions, from higher up the slope. Although the Head deposits are of limited extent, both laterally and vertically, careful consideration will need to be given to earthworks and structure foundations that bear onto the deposits.

### **13.2.5 Glacial Till, Glacial Sand and Gravel and Glacial Lake Clay**

Glacial deposits comprising Glacial Till, Glacial Sand and Gravel and Glacial Lake Clay were found over a substantial proportion of the proposed route from Leicester Road (Inglenook Farm) to Thurlaston Lane. In many cases it is difficult to distinguish between the three different types of glacial deposit but in general the Glacial Till comprises stiff clay with varying amounts of gravel and occasional lenses of sand and gravel. In contrast the Glacial Sand and Gravel tended to comprise sand and gravel interstratified and intermixed with gravelly clay and silt. The depth of the Glacial Deposits along the line of the bypass route was found to vary between less than 1m to in excess of 16m on the higher ground to the north-east of Elmsthorpe Lane.

The Glacial Lake Clay was not found to be as extensive as shown on the geological maps and it appears to be confined to an area between Station Road and Breach Lane. The Glacial Lake Clay consisted of soft and firm clay with occasional gravel.

### **13.2.6 Mercia Mudstone**

Mercia Mudstone underlies the drift deposits in the southern part of the route and the ground investigation has shown that the Mercia Mudstone crops out in the northern part of the route between Thurlaston Lane and Leicester Road. The Mercia Mudstone comprises red brown mudstone with subordinate beds of siltstone and sandstone. The upper horizon of the stratum weathers to produce a silty clay with little evidence of mudstone in the highly weathered zones. With increasing depth and a consequent decrease in weathering the amount of mudstone increases and the proportion of clay decreases. The clay of the weathered Mercia Mudstone tends to be of low plasticity resulting in a rapid loss of strength for a relatively small increase in moisture content.

### **13.2.7 Hydrogeology**

The National Rivers Authority document "Policy and Practise for the Protection of Groundwater" lists and classifies the strata with and adjacent to the area of interest as follows:-

<b>13.2.8</b>	<b>Geological formation</b>	<b>NRA Classification (Severn Trent)</b>
	Alluvium	Non Aquifer
	Glacial sands & gravels	Minor Aquifer
	Boulder Clay	Non Aquifer
	Triassic Mercia Mudstone	Non Aquifer.

The Environmental Agency's website indicates that there are no groundwater protection zones in the Earl Shilton area.

Groundwater levels have been monitored in standpipes that were installed along the line of the route during the ground investigation. Water levels recorded in the standpipes have ranged between ground level and 9.5m below ground level but most readings have been between 1m and 5m below ground level.

### **13.2.9 Hydrology**

The area of the site is to the west of the River Soar with drainage of the area being generally eastwards through a series of valleys.

Thurlaston Brook is the only significant watercourse in the area of the proposed route. This watercourse flows eastwards to join the River Soar approximately 5km to the east of Earl Shilton.

## **13.3 Effect of the Scheme**

- 13.3.1 No significant groundwater seepages were encountered in the areas of the proposed cuttings during the ground investigations. Although the strata in the cutting areas is relatively permeable and free draining, the amount by which the groundwater level would be lowered due to drainage towards the cutting is likely to be insignificant.
- 13.3.2 Some areas of embankment would be needed for the Scheme but the construction of the embankments would not have an adverse effect on either the groundwater or surface water regimes within the area.

## **14.0 IMPACT OF THE SCHEME ON POLICIES AND PLANS**

### **14.1 Policies and Plans**

- 14.1.1 The route corridor for the Earl Shilton Bypass was the subject of a public consultation exercise during the mid-80's and the Preferred Route was endorsed by the Highways and Transportation Committee on 22nd January 1987, for inclusion in the Blaby South West and Hinckley Area Local Plans.
- 14.1.2 The Bypass in the form of a preliminary outline was adopted in the Hinckley Area Local Plan in 1991 following a Public Inquiry in 1989. The scheme in general terms was further endorsed at the 1997 Public Inquiry into the Hinckley and Bosworth Local Plan, subsequently adopted in 2001. The scheme was also adopted in the Blaby District Local Plan in September 1999 following an earlier Public Inquiry in 1996.
- 14.1.3 The existing Structure Plan adopted in 1994 for the period up to 2006 includes the Earl Shilton Bypass. The Bypass has also been carried forward into the Deposit Draft of the Leicestershire, Leicester and Rutland Structure Plan for the period up to 2011.
- 14.1.4 On 4th July 2002, Cabinet approved the Leicestershire Local Transport Plan 2001 – 2006, including a bid for the Earl Shilton Bypass.
- 14.1.5 On 2nd May 2002, the Planning and Environment Scrutiny Committee considered two petitions together with further comments from the residents of the Elmesthorpe Land Settlement Area. It was resolved that the report of the Acting Director of Planning and Transportation to this Committee, be referred to Cabinet for further consideration when proposals relating to the Earl Shilton Bypass are submitted. This report is attached as Appendix 1 together with an indicative plan of the route corridor.

### **14.2 Leicestershire Structure Plan 1991 – 2006 (Published January 1994)**

- 14.2.1 The scheme is identified as a proposal forming part of Transport Policy 3 (strategic road improvements). The scheme will help achieve the objectives of Transport Policy 2 (justifications for road improvements and management of traffic) in terms of safety, enhancing the environment, reducing congestion and minimising the impact of traffic in shopping areas. The scheme makes provision for cyclist and pedestrian crossing facilities where appropriate and provides convenient links to the existing cycle route network in accordance with Transport policy 9. The scheme will provide an alternative route for heavy lorries away from the town centre in line with the objectives of Transport Policy 10.

### **14.3 Leicestershire, Leicester and Rutland Structure Plan Deposit Draft 1996 – 2016 (Published May 2000)**

- 14.3.1 The A47 Earl Shilton Bypass scheme is identified in the explanatory notes of Accessibility and Transport Policy 10: Road Improvements and the Management of Traffic.

### **14.4 Leicestershire, Leicester and Rutland Structure Plan 1996 – 2016, Proposed Modifications (Published June 2002)**

- 14.4.1 The proposed modifications recommend the A47 Earl Shilton Bypass scheme be specifically identified as part of the Accessibility and Transport Policy 10: Road Improvements and the Management of Traffic.

**14.5 Leicestershire Local Transport Plan 2001 – 2006**

**(Published 2000)**

The Earl Shilton Bypass is identified as a proposal under the Economic, Development, Environmental, and Integration Objectives (Chapter 5(b)) within the Hinckley/Earl Shilton area.

**14.6 Hinckley and Bosworth Local Plan  
(Adopted February 2001)**

- 14.6.1 The Earl Shilton Bypass is identified as a proposal for development and under policy T2 the Plan seeks to protect the line of the route from other development that 'would prejudice the construction of the Earl Shilton Bypass. The Earl Shilton Bypass is also mentioned under Policy RES1 (j) in connection with land reserved for residential development to the south of Breach Lane, Earl Shilton.

**14.7 Blaby District Local Plan  
(Adopted September 1999)**

- 14.7.1 The Earl Shilton Bypass is identified as a proposal under Transport and Accessibility policy T17 (ii). The Plan states that planning permission will not be granted for any permanent development which would prejudice the implementation of the A47 Earl Shilton Bypass.

**14.8 Regional Planning Guidance for the East Midlands**

- 14.8.1 The scheme contributes to the Regional Planning Objectives of maintaining good transportation links and ensuring that transport is safe and efficient. It is also in accordance with the guidance that new road schemes should be provided where considerable environmental improvements would result.

## **15.0 CONCLUSIONS**

- 15.1 The environmental assessment of the A47 Earl Shilton Bypass has shown that the scheme would result in a range of environmental impacts in the vicinity of the route. These can be summarised as follows:-
- 15.2 Air Quality: Overall the Scheme would have a neutral effect on the air quality in its immediate vicinity with a general benefit on the existing network where traffic flows are reduced.
- 15.3 Cultural Heritage: The results of the desk-based survey and evaluation will be used to guide the design of appropriate steps to be taken to mitigate the effects of the development. In addition to dealing with the individual threats to sites or parts of sites it is intended that an archaeological watching-brief be maintained during early groundworks associated with construction to allow for the identification of hitherto unknown archaeological remains and to cater for the salvage recording of such remains.
- 15.4 Disruption due to Construction: A number of properties close to the route will be affected but contract conditions will be used to mitigate the impacts as far as possible. Traffic using the local network would experience a degree of delay and disruption when works are undertaken within and adjacent to the highway.
- 15.5 Ecology and Nature Conservation: The scheme would result in the loss of several mature trees which is a significant impact. This will be mitigated by the several thousand new trees intended to be provided as part of the landscaping/planting proposals. In view of the low nature conservation value of the majority of habitats present the impact is considered to be minor. Further surveys will assess the impact of the Scheme on the disturbance of birds and water habitats.
- 15.6 Landscape Effects: The potential impacts of the Scheme would be mitigated by earth bunding and substantial new planting in sensitive areas.
- 15.7 Land Use: The route for the A47 Earl Shilton Bypass would affect a number of land uses and approximately 27 hectares of agricultural land would be lost to the scheme. New accesses would be provided where the route would sever current access to fields and removal of certain species-poor hedgerows would enable the amalgamation of severed field sections.
- 15.8 Traffic Noise and Vibration: On balance many more properties will experience a reduction in noise than an increase, and many properties on the A47 through the centre of Earl Shilton will experience a reduction in noise levels. The scheme will result in significant noise benefits for the area as a whole.
- 15.9 Pedestrians, Cyclists, Equestrians and Community Effects: Severance caused by the Scheme will be mitigated at the Elmesthorpe Lane and Station Road junctions by the provision of a pedestrian phase within the traffic signals. New bridleways would be provided to maintain recreational routes in the area including use of the underpass to provide a grade separated crossing
- 15.10 Vehicle Travellers: Driver stress will be alleviated as a result of traffic diverting from current substandard and congested roads, onto the new route with its higher standard design.

- 15.11 Water Quality and Drainage: There is no significant impact on water quality. Measures will be taken to ensure adjacent water courses are unaffected by the scheme.
- 15.12 Geology and Soils: There is no significant impact on geological/geomorphological conservation or contaminated land.
- 15.13 Impact of the Scheme on Policies and Plans: The scheme is in accordance with district, county and regional planning policies.
- 15.14 The assessment shows that there will be significant environmental benefits through the reduction in predicted traffic flows through the centre of Earl Shilton. Mitigation measures would be incorporated into the Scheme to minimise the environmental impact along the corridor of the proposed Scheme.

**PART 2**  
**SUPPORTING DRAWINGS**

**VOLUME 1**

**PART 2**

**LIST OF FIGURE NUMBERS**

<b>Fig No.</b>	<b>Title</b>
9.1	Noise Bands
11.1	Rights of Way
11.2	Rights of Way
13.1	Main Watercourses
13.2	Sewerage Information
13.3	Sewerage Information
13.4	Sewerage Information
14.1	Geological Strata