

A64 Improvements

Rillington Bypass

Scheme Assessment Report



Stage 2 Report
Volume 1: Text

June 2000

WS/Atkins

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1. INTRODUCTION

BRIEF

- 1.1 WS Atkins Consultants Limited was appointed by the Highways Agency on 11 May 1999 to carry out a term commission to consider highway safety improvements in Area 18. This Design Commission No 1 includes Stages 1 and 2 work to enable the Secretary of State to decide a bypass of Rillington village. Figure 1.1 identifies the general study area.
- 1.2 The brief requires that the improvement strategy identified will produce significant safety benefits by reducing both the number and severity of accidents, whilst keeping the impact on the environment within acceptable limits.
- 1.3 The forecast first year benefits from improvement schemes, included as part of the strategy, must not be less than 25% of the total cost of the schemes. Scheme options must not exceed a works cost limit of £3 million, although there may be scope to increase the limit up to £5m in special circumstances.
- 1.4 The findings of the commission are to be presented in a Stage 2 Scheme Assessment Report. Environmental effects are also to be included in an Assessment Summary Table, in line with the requirements of the New Approach to Appraisal (NATA).

BACKGROUND

- 1.5 The A64 is a major east/west link between Leeds, York and Scarborough for commuter and business traffic. The route also carries large volumes of holiday traffic between the North Yorkshire Moors National Park and the East Coast resorts of Scarborough, Filey, Bridlington and the main conurbation's of West and South Yorkshire. The road is also used by local traffic and slow moving agricultural vehicles. Delays are frequently experienced on this section of the A64 and are at their worst during the peak holiday season. Accident rates at certain locations are above the national average.

- 1.6 Proposals to bypass Rillington were developed in the late 1980's and a public consultation process was undertaken in 1989. Three dual carriageway scheme options, all of which passed to the south of the village, were presented for public comment. This bypass scheme was subsequently replaced by the proposals to construct a new route adjacent to the railway line north of the A64 between Malton and Seamer. This new route was removed from the Road Programme in the review undertaken in 1995. The most recent A64 safety study has identified Rillington as a location where a short single carriageway bypass could produce significant road safety benefits.
- 1.7 The policy of undertaking safety schemes on the A64 has been confirmed by Ministers in the most recent trunk road review.

OBJECTIVES

Approach and Scope

- 1.8 The Stage 2 Scheme Assessment Report starts by considering the existing highway and engineering conditions. It then describes the improvement strategies which have been identified and defined as route corridor options. The traffic and economic assessment then follows this section.
- 1.9 The Report identifies the environmental effects of the proposed improvement strategies. The methodology and reporting follows the guidance offered by the Design Manual for Roads and Bridges (DMRB), Volume 11, including updates, and by the Department for the Environment, Transport and the Regions (DETR) New Approach to Appraisal. *See also the Environmental Impact Assessment Report for the A64 Rillington Bypass.*
- 1.10 The environmental effects are grouped under the following topics:
- Policies and Plans;
 - Land Use;
 - Landscape and Visual Amenity;
 - Water Quality and Drainage;
 - Ecology and Nature Conservation;
 - Archaeology and Cultural Heritage;
 - Air Quality;
 - Traffic Noise and Vibration;
 - Vehicle Traveller;
 - Disruption due to Construction;

- Pedestrians, Cyclists, Equestrians and Community Effects.
- 1.11 The arrangement of the above topics varies from that used in the DMRB, in order to present information in a logical order, without the need for repetition of background information. As far as practicable, a common approach has been adopted towards the assessment of topics: baseline conditions; constraints / opportunities / scope for mitigation; and requirements for further work.
- 1.12 Each topic is assessed in accordance with the DMRB and then, where appropriate, in accordance with the NATA requirements. For the NATA assessment work sheets for each topic are included as Appendix H in Volume 3. *appraisal*
- 1.13 The final chapter, Chapter 16, sets out the key issues, which have been identified at this stage, and includes Appraisal Summary Tables that have been derived from the NATA assessments which summarise the principal findings of the assessment.
- 1.14 Figures are included within Volume 2. Appendices are included in Volume 3 as follows:
 - Sources of Information;
 - Traffic Network Diagrams and Flows;
 - Ecological Citation Sheets;
 - Gazetteer of Known Cultural Heritage Resources;
 - Air Quality Criteria;
 - Air Quality Monitoring Data;
 - Air Quality Assessment Tables;
 - NATA Worksheets;
 - Calculation of Water Quality Impact.

2. EXISTING HIGHWAY AND ENGINEERING CONDITIONS

HIGHWAY CONDITIONS

Highway Geometry

- 2.1 The A64 is the main Trunk Road carrying traffic from the conurbation's of west Yorkshire to the east coast resorts of Scarborough, Filey and Bridlington. Consequently it is a road where traffic flows vary significantly between summer and winter.
- 2.2 The A64 generally runs from west to east. To the east of the A1 there are sections of dual carriageway around Tadcaster, York, Whitwell and Malton. To the east of Malton, the A64 is single carriageway to Scarborough.
- 2.3 In the vicinity of Rillington, the A64 is a single carriageway and generally 7.3 metres in width. To the west of Rillington lies the village of Scagglethorpe. Scagglethorpe Bypass comprises a 7.3 metre wide single carriageway with kerbing and grass verges. The bypass rejoins the existing A64 just west of Willow Farm. From this point eastward towards Rillington Village, the A64 varies in width, often reducing to less than 7.3 metres wide. It is approximately 6.0 metres wide at the traffic signal controlled junction with Low Moor Lane and the High Street in the centre of Rillington. The traffic signals were recently updated to the MOVA system that assesses vehicle flows and queues and adjusts the timings to minimise delays.
- 2.4 Through Rillington, the A64 is kerbed on both sides and pedestrian footways exist from West Field to the west of Rillington and run eastwards through the village. Traffic calming measures have been installed through Rillington approximately 2 years ago. These measures consist of "gateways" at each end which emphasise the 40mph speed limit with the use of islands and red surfacing.
- 2.5 The A64 has been widened locally at the junctions of Collinsons Lane and Pinetree Avenue to accommodate right turning lanes.

- 2.6 To the east of Rillington, the road is predominantly 7.3 metre wide, and crosses High Fish Ponds at Scampston Bridge. Scampston Bridge was widened in the past to accommodate the current A64.
- 2.7 The alignment of the A64 has been assessed using Ordnance Survey maps of the area as there is currently no local topographical survey information available. The table below shows the existing alignment details and compares them with the desirable minimum standards contained in TD 9/93 Highway Link Design, for a design speed of 100 kph single carriageway road.

Table 2.1 – Details of Existing Horizontal Alignment

Location	Existing Horizontal Radius (m)	Desirable Minimum Standard (m)	Number of Steps Below Desirable Minimum
Opposite Paddock house	100 RH	720	4
Opposite Laurel Farm	160 RH	720	4
Between Five Beeches and West Field	340 LH	720	3
Sands Lane	270 RH	720	3
Firs Plantation	480 RH	720	2
Scampston Bridge	140 LH	720	4

Note: The curve hand (LH or RH) applies to eastbound vehicles.

- 2.8 From the table, it can be seen that several sections of the A64 are sub-standard with regard to horizontal alignment. In particular, the horizontal alignment is of a particularly low standard at Laurel Farm and Scampston Bridge.
- 2.9 The vertical alignment of the A64 has been assessed using the limited amount of information available on the Ordnance Survey Maps. However, by interpreting between contours of the area it is apparent that the vertical alignment is relatively flat, with no severe departures from those desirable minimum standards contained in TD 9/93.

- 2.10 The carriageway rises from Willow Farm to the west of Rillington to a high point between Five Beeches and West Field before falling gradually to the junctions of Low Moor Lane and High Street. To the east the road then rises again slightly towards the junction with the road to Scampston Mill before falling beyond Scampston Bridge to a similar level to the A64 west of Rillington. However, from a site visit, it is apparent that the vertical alignment over Scampston bridge may be substandard. At this point, the road drops quite suddenly as it crosses the bridge towards the east.

Pavement Construction

- 2.11 Information regarding the condition of the existing pavement has been obtained. This consists of computerised outputs of residual life, texture depth, and rutting information.
- 2.12 The information provided indicates that the majority of the A64 pavement in the vicinity of Rillington has a residual life in excess of 10 years. The majority of the westbound pavement has a surface texture depth in excess of 1.0 millimetre. In comparison the eastbound carriageway is equally split, with only 50% of the pavement having a texture depth in excess of 1.0 millimetre. Approximately 90% of the A64 pavement has a rutting depth of 14 millimetres or less.
- 2.13 The lengths of single lane carriageway that fall into specified residual life bands are indicated in the table below.

Table 2.2 – Residual Life Bands v Length

Residual Life (years)	Length of Carriageway Total in metres (%)
<0	0
0-4	170 (9.7)
5-9	470 (26.9)
10-14	370 (21.1)
15-19	320 (18.3)
>19	420 (24.0)
Total Length =	1750 metres (100)

- 2.14 The information indicates that for the majority of the length of the A64 pavement, the texture depth is in excess of 1.0 millimetres. This compares with the requirement for

newly laid surfacing that the overall average surface texture depth should not be less than 1.5 millimetres.

- 2.15 The surface texture depth information together with the analysis of treatment required for the pavement indicates that surface dressing would be required for some sections of the A64 to restore the texture depth to a satisfactory level. This is especially apparent for the eastbound lane.

Highway Structures

- 2.16 Scampston Bridge, which is situated to the east of Rillington Village, is the only major structure along this length of the A64. Two circular drainage culverts are also located at the cross-roads of Low Moor Lane/High Street and the A64 and approximately 200 metres east of West Field.
- 2.17 Scampston Bridge is a three-span masonry arch structure built circa 1772. It has been widened on the southern side, although the exact date of this is not known. The original structure comprises three arches with spans varying from 4.3 metres to 5.4 metres. Water flows from the south lake to the north down a cascade feature built on the northern side of the arch barrels. The original arches on the northern face were strengthened with concrete saddling in 1990.
- 2.18 In 1996, North Yorkshire County Council inspected both the original and extended structures. The assessment showed that the structure was capable of supporting axle loads to 20 tonnes in accordance with BD 37/88. The remote wing walls on the northern elevation showed several instances of both horizontal and vertical cracking. In addition, water seepage was apparent along its length. It was not recommended that any work be carried out in the near future to rectify this, but that complete replacement should be considered in the longer term. Other items to be addressed were that of the replacement of existing iron parapet railings, and the surface treatment of deteriorating masonry.

Existing Lighting

- 2.19 Street lighting is only present within the residential areas of Rillington.

Existing Signage

- 2.20 An assessment of road signs in the vicinity of Rillington has been made.

- 2.21 Generally, along this section of the A64, there are warning signs at the major junctions. These signs are often of poor standard and poorly situated.
- 2.22 “Gateways” at each end of Rillington emphasise the 40mph speed limit with the use of signing, islands and red surfacing.
- 2.23 There are no signs warning of the sub standard horizontal alignment immediately east of the Scagglethorpe Lane junction, although reflective marker posts are provided. Chevron boards are also present at the bend but are in poor condition.
- 2.24 There are no advanced signs warning of the sub standard horizontal alignment between the properties of Willow Farm and Five Beeches and no warning of the hidden junction with West Moor Lane (Track). However, chevron boards are present at this location.
- 2.25 The villages of Thorpe Bassett, Scampston, and Wintringham are all adequately signed from the A64 on all approaches to the junctions.
- 2.26 There are no signs warning of the sub standard bend located at Scampston Bridge, but adequate chevron boarding is provided. Open Box Beam safety fencing has also been erected and painted in black and white bands to increase driver awareness.

Existing Road Markings

- 2.27 The majority of this section of the A64 has hard strips approximately 0.3 metres wide indicated by a solid white line on each side of the carriageway.
- 2.28 There are rumble strips marking the entrance to the 40mph residential area of Rillington on both approaches to the village.
- 2.29 As the A64 approaches Rillington from the west, keep left arrows are employed as a warning of the substandard horizontal alignment ahead. Overtaking is prohibited by solid double white lining along the centre of the carriageway.
- 2.30 Standard road markings form the majority of the remaining length of A64 in the Rillington area.
- 2.31 Right turning facilities are provided in the vicinity of Collinsons Lane and Pinetree Avenue, with the turning lanes delineated by contrasting coloured surfacing.

Drainage

- 2.32 The existing A64 is kerbed and positively drained by road gullies. Gullies are located either within the carriageway with surface gratings or within the verge using kerb units.
- 2.33 Outfalls from highway drainage on this section of the A64 have been identified as discharging into the following watercourses:
- The field drain running in a north westerly direction towards Rillington Beck approximately 100 metres east of West Field.
 - Rillington Beck running north westerly along the High Street and Low Moorgate.
 - The man-made ditch running parallel with the A64 between Sands Lane and Scampston Bridge.
- 2.34 Since there are numerous connections from gullies, piped systems, and highway ditches into the field ditch system and minor watercourses, it is unlikely that there are any pollution control measures in place other than silt traps within gullies and drainage chambers.
- 2.35 Watercourses and ditches are tributaries of the River Derwent. The River Derwent is classified as a grade B (good) water body.

UTILITIES

Electricity

- 2.36 The Northern Electric Records Information Centre of Northern Utility Services Limited has provided plans showing the location of their equipment in the vicinity of the A64. The locations of electricity cables are shown on drawing Number N3971/RIL/50/053. The majority of cables are High Voltage (HV) 11 kV overhead cables, supported by poles, which provide electrical supply to farmsteads, isolated residential properties, and the village of Thorpe Bassett.
- 2.37 Sections of the 11 kV HV network are located underground at the following locations:

- Along the A64 (Scarborough Road) between the junctions with High Street and Pinetree Avenue
- Along Low Moorgate heading northwards from the junction with the A64
- Along the extent of residential properties on Collinsons Lane heading south from the junction with the A64
- At isolated locations on High Street, Woodlands Road, and around the perimeter of the cemetery to the rear of Woodlands Road

2.38 11kV HV underground electricity cables cross the A64 at the following locations:

- The junction with Collinsons Lane (11 kV HV underground)
- The junction with High Street and Low Moorgate (11 kV HV underground)

2.39 A Low Voltage (LV) overhead network serves the majority of the village of Thorpe Bassett.

2.40 The National Grid Company has stated that they have no apparatus in the vicinity of the A64.

Gas

2.41 The Plant Protection Department of Transco has stated that there is no plant apparatus present in the vicinity of Rillington.

Water

2.42 The Records Services Section of Yorkshire Water has provided plans showing the location of their water supply equipment in the vicinity of the A64. The plans do not show individual service connections and private water mains. The locations of water mains are shown on drawing Number N3971/RIL/50/051.

2.43 A water main over 4 inches in diameter runs through Rillington parallel with the A64. It runs in both the northern and southern verges, crossing the A64 at the following locations:

- West Field approximately 350 metres west of the junction with Collinsons Lane (south to north)
- The junction with Collinsons Lane (north to south)
- Approximately 40 metres east of the junction with High Street (south to north)
- Approximately 100 metres west of the junction with Low Moorgate (north to south)

2.44 A water main less than 4 inches in diameter also runs parallel to the A64. It follows the southern verge through Rillington until it leaves the A64 at the Wintringham access road approximately 300 metres west of Scampston Bridge. The smaller main crosses the A64 at the following locations:

- The junction with Low Moorgate heading north beyond the railway line
- The junction with High Street following High Street and the subsequent track into the village of Thorpe Bassett
- The Junction with Collinsons Lane heading south between the A64 and Southlea, and approximately 50 metres north of Beach Tree Farm into the village of Thorpe Bassett
- The junction with Sands Lane running in a north easterly direction for approximately 150 metres
- The junction with Scampston access road, following the access road to a termination point slightly south of Scampston village

Sewers

2.45 The Records Services Section of Yorkshire Water has provided plans showing the location of their sewers in the vicinity of the A64. The plans do not show private sewers. The locations of sewers are shown on drawing Number N3971/RIL/50/052.

2.46 A network of foul sewers serve the village of Rillington. This network discharges to a sewage treatment works located north west of the village adjacent to Low Moor Lane.

2.47 Part of the foul sewer network serving Rillington follows the alignment of the A64 within the residential boundaries of the village. The sewer crosses the A64 at the following locations:

- The junction with Collinsons Lane
- The junctions with Low Moorgate and High Street
- 100 metres east/west of the junction with High Street in a north easterly direction

2.48 A network of surface water sewers serve the village of Rillington and discharge into the watercourse of Rillington Beck at locations on Low Moorgate and High Street.

British Telecommunications

2.49 British Telecommunications Plc has provided plans showing the location of their telecommunications apparatus. The locations of the cables are shown on drawing Number N3971/RIL/50/054.

2.50 The majority of the cables are underground but there are sections of overhead cables, supported by poles, which supply properties at various isolated locations within the vicinity of the village. Underground British Telecom cables cross the A64 at the following locations:

- Approximately 200 metres west of West Field
- Junction of Collinsons Lane
- Approximately 20 metres west of High Street
- Approximately 100 metres west of Sands Lane

2.51 In addition, overhead cables cross the A64 at the following locations:

- Approximately 50 metres, 100 metres, and 300 metres west of Five Beeches

- 2.52 Cables are located predominantly in the northern verge to the west of Rillington. These include fibre optic cables. At a location approximately 220 metres east of the junction with West Moor Lane, cables are also located in the southern verge.
- 2.53 Cables are located in both the northern and southern footpaths at the centre of the village, until a point approximately 50 metres east of the junction with Pinetree Avenue. Thereafter they are present in the northern verge only. This continues to be the case well beyond Scampston Bridge.
- 2.54 The following telecommunication companies have indicated that they do not have any apparatus in the vicinity of the section of A64 under consideration.
- National Transcommunications Limited (ntl)
 - Energies Communications Limited
 - IPM Communications
 - Torch Communications Limited

Highway Communications/ Monitoring

- 2.55 Trafficmaster Plc has indicated that they have a site approximately 260 metres west of the junction of A64 and Collinsons Lane.

3. IMPROVEMENT STRATEGIES

INTRODUCTION

- 3.1 The assessments prior to the Value Management Workshop considered three route corridors. At the Value Management Workshop the route corridors were considered in more detail. Subsequently, four route options were identified for improving the A64 at Rillington. One route would pass to the north of Rillington and the remainder would pass to the south. Two of the southern routes also have sub-options when the road would be in cutting.
- 3.2 The four routes would all provide solutions to the problems highlighted in the earlier assessments and retaining existing links to neighbouring villages.
- 3.3 The design of all options would be in accordance with the DMRB.
- 3.4 Using information gathered from automatic traffic counters, the forecast traffic flows in the opening year for the bypass (assumed to be 2005) would be in the order of 12,000 vehicles AADT. Using the guidance in the Highways Agency standard (TA46/97), the proposed bypass could be either a 7.3m wide single carriageway road with metre strips, a 10.0m wide single carriageway road with metre strips or a dual carriageway road.
- 3.5 In deciding which standard to adopt for assessment, consideration has been given to the scheme costs, the AADT flows, the seasonal variations in traffic flows, the standard of the existing route and the potential impact on the environment. In view of the above factors, and in particular the need to keep a consistent standard of road between Malton and Seamer, the assessments have been undertaken on the basis that the road would be a standard 7.3 metre wide single carriageway with metre strips each side. The verges on each side would be 2.5 metres wide and would be grassed. Beyond the verges, any embankments or cuttings would have 1 in 2 slopes.
- 3.6 The options are shown on Figure 3.1 and are referred to as the Magenta Route (To the north of Rillington), and the Red, Green and Blue Routes (To the south of Rillington).

The description of each option commences to the west of Rillington and thereafter follow an eastbound direction.

MAGENTA OPTION

- 3.7 The Magenta Option is the only route considered to the north of Rillington.
- 3.8 The route would typically be at ground level with the horizontal and vertical alignment based on a design speed of 100kph. Using horizontal curves with a minimum radius of 720 metres.
- 3.9 The alignment begins to the west of Rillington, approximately 100 metres east of the A64 junction with Scagglethorpe Lane. Realignment of the A64 from this point would eliminate two sub-standard bends and form the eastbound approach to a proposed three-arm roundabout approximately 250 metres east.
- 3.10 The route would then travel in a north easterly direction towards the rear of the sewage works. It would pass approximately 30 metres north of the sewage works then intersect Low Moor Lane at ground level. Realignment Low Moor Lane to the north of the route would be required to accommodate a new priority junction at this point.
- 3.11 Low Moor Lane would not be connected to the south side of the by-pass. Residents living on Low Moor Lane south of the bypass would be required to travel through the village to gain access to the A64.
- 3.12 East of Low Moor Lane the route would pass within 100 metres of Moorgate Place, a property at the northern extremity of Rillington, before travelling in a south easterly direction towards Firs Plantation. It would pass within 20 metres of the south western corner of the grounds of Rillington Manor dividing a small area of dense woodland.
- 3.13 Thereafter the route would cross Sands Lane, approximately 300 metres north of its junction with the A64. Sands Lane would not be connected to the new bypass. A four-arm roundabout situated approximately 350 metres east of Sands Lane would provide connections to the A64, Rillington village and Scampston.

RED OPTION

- 3.14 The Red Option would pass to the south of Rillington just skirting the southern perimeter of the village.

- 3.15 The route would typically be at ground level with the horizontal and vertical alignment based on a design speed of 100kph. Using horizontal curves with a minimum radius of 720 metres would achieve desirable minimum standards.
- 3.16 The route would commence at a point on the existing A64 approximately 600 metres west of Collinsons Lanc. 200m east of this point and to the south of the A64, a new three-arm roundabout would be proposed providing connections to the A64 and Rillington village.
- 3.17 The route would then run in an easterly direction towards Collinsons Lanc. Collinsons Lane would be crossed at ground level at the southern outskirts of the village. A new staggered junction would connect Collinsons Lane to the bypass providing connections to both Thorpe Bassett and Rillington.
- 3.18 Travelling east the route would then pass to the rear of the Woodlands Road residential area and, at its closest point, would be approximately 100 metres away. Thereafter the route would head northwards back towards the A64. A new four-arm roundabout to the south side of the A64 and immediately west of Firs Plantation would provide connections to the A64, Rillington and Scampston.

GREEN OPTION (AT GROUND LEVEL)

- 3.19 The Green Option would pass to the south of Rillington.
- 3.20 The route would typically be at ground level with the horizontal and vertical alignment based on a design speed of 100kph. Using curves with a minimum radius of 720 metres would achieve desirable minimum standards.
- 3.21 The route would commence similar to the Red Option, at a point on the existing A64 approximately 600 metres west of Collinsons Lane. 200m east of this point and to the south of the A64, a new three-arm roundabout would be proposed providing connections to the A64 and Rillington village.
- 3.22 The route would then run in a easterly direction towards Collinsons Lane. Collinsons Lane would cross at ground level at the southern outskirts of Rillington village. A new staggered junction would connect Collinsons Lane to the bypass providing connections to both Thorpe Bassett and Rillington.

- 3.23 Beyond Collinsons Lane the route would run parallel to Sands Lane (Track) for approximately 500 metres before north eastwards towards the Firs Plantation.
- 3.24 A new four arm roundabout would be located in the north eastern corner of Firs Plantation.
- 3.25 The existing A64, the road to Scampston and the road to Wintringham would need to be realigned in the vicinity of the roundabout to provide connections from the bypass.

GREEN OPTION (IN CUTTING)

- 3.26 This option is predominantly similar to the ground level Green Option described above. However, the “middle third” of the route would be placed in a cutting to a maximum depth of about 4.0 metres.
- 3.27 With the route in a cutting, it would not be possible for Collinsons Lane to be connected to the bypass. Instead, Collinsons Lane would be realigned to allow it to cross the bypass over a newly constructed bridge.
- 3.28 The route would remain in cutting until it diverges away from Sands Lane (track) heading towards the Firs Plantation.

BLUE OPTION (AT GROUND LEVEL)

- 3.29 The Blue Option would pass to the south of Rillington similarly to the Green Option.
- 3.30 The route would typically be at ground level with the horizontal and vertical alignment based on a design speed of 100kph. Using horizontal curves with a minimum radius of 720 metres would achieve desirable minimum standards.
- 3.31 Similar to the Red and Green Options, the route would commence on the existing A64 approximately 600 metres west of Collinsons Lane. 100 metres east of this point, and south of the A64, a new three-arm roundabout would be proposed providing connections to the A64 and Rillington village. Initially, the route would follow the same alignment as the Green Option. Similarly, Collinsons Lane would be crossed at ground level at the southern outskirts of the village. At this point, it is proposed that Collinsons Lane would be connected to the proposed bypass. A new staggered junction would connect Collinsons Lane to the bypass providing connections to both Thorpe Bassett and Rillington.

- 3.32 At a point about 500 metres east of Collinsons Lane, the Blue Route would deviate from the line of the Green Option. The Blue Option would continue to generally run parallel with Sands Lane (Track) before crossing the road to Wintringham at ground level, slightly north of Scampston Mill Farm. The Wintringham road would not be connected to the bypass. Vehicles travelling to the A64 from Wintringham would have to use Sandy Lane via an alternative route to the east. Consideration could be given to providing an access for Scampston Mill Farm.
- 3.33 The route would then run in a north easterly direction encroaching slightly on Mill Plantation before crossing the Mill Stream and High Fish Pond. The bypass would cross the watercourses on a new bridge.
- 3.34 Beyond this point, the road would carry on to a new three arm roundabout located to the east of Scampston bridge and just to the south of the existing A64. The existing A64 would be locally realigned to provide connections to the bypass.

BLUE OPTION (IN CUTTING)

- 3.35 This option is predominantly similar to the Blue Option at ground level described above. However, the “middle third” of the route would be placed in a cutting to a maximum depth of about 4.0 metres.
- 3.36 With the route in a cutting, it would not be possible for Collinsons Lane to be connected to the bypass. Instead, Collinsons Lane would be realigned to allow it to cross the bypass over a newly constructed bridge.
- 3.37 The route would remain in cutting until it diverges away from Sands Lane (track) heading towards Scampston Mill Farm and the Wintringham Road.

Scheme Costs

3.38 Costs for each option have been estimated. These include construction costs, land costs, statutory undertakers diversion costs, contract preparation costs (9% of works costs) and supervision costs (5% of works costs).

3.39 The costs are summarised in the following table:

Table 3.1 – Scheme Costs

Option	Scheme Costs in Q2, year 2000
Magenta	£4.92m
Red	£3.64m
Green	£4.13m
Green (In Cutting)	£5.49m
Blue	£4.17m
Blue (In Cutting)	£5.52m

4. TRAFFIC AND ECONOMIC ASSESSMENT

INTRODUCTION

- 4.1 This section describes the traffic and economic assessments for the proposed options.

TRAFFIC SURVEYS

- 4.2 Traffic information was obtained from the Automatic Traffic Counter (ATC) located on the A64 to the west of Rillington, together with manual 12 hour counts taken within the village between 07:00 and 19:00 hrs in December 1999 at the following locations:

- Junction of A64 with Sandy Lane
- Junction of A64 with Collinsons Lane (Unclassified Road, Unc410)
- Junction of A64 with Knapton Lane (B1258)
- Junction of A64 with Wintringham Road (C357)
- Main entrance to Scampston Hall east of Rillington
- Rillington Crossroads (Traffic Signals)

- 4.3 An initial assessment of the traffic data showed that there was an imbalance of traffic on the A64 between the west and east sides of Rillington. An additional ATC was therefore installed on the eastern side of Rillington during March and April 2000 to obtain further data.

- 4.4 Figure 4.3 summarises the existing traffic flows and vehicle movements.

TRAFFIC FORECASTS

- 4.5 To forecast future traffic flows, the 12-hour counts were converted to two-way Average Annual Daily Traffic flows (AADT) using local factors calculated from the ATC data. To calculate future flows, “growth” factors were then applied to the AADT

counts using National Road Traffic Forecasts (NRTF) figures for both high and low growth.

4.6 Forecast flows were produced for the existing A64 and the proposed bypass options for the following years:

- 2003 (Proposed Start of Construction)
- 2005 (Proposed Year of Opening)
- 2020 (15th Year after Opening)

4.7 Forecast AADT flows at key network links are shown on Figures 4.4 to 4.9.

ROUTE OPTION ASSESSMENT

4.8 From an assessment of the forecast traffic flows, it can be seen that a large proportion of traffic would transfer onto a bypass of Rillington.

4.9 The Magenta Route would provide the most benefit by removing approximately 87% of traffic from Rillington. The Blue Option (in cutting) would remove the least amount of traffic from Rillington, although this would still be approximately 78% of traffic.

4.10 All the routes would have a minimal affect on the number of vehicles using the side roads. However, the southern routes that would be at ground level would reduce the traffic flows along the northern part of Collinsons Lane as traffic travelling from Thorpe Bassett would join the new bypass before reaching Rillington.

ECONOMIC ASSESSMENT

4.11 To undertake an economic assessment of the routes, the Highways Agency computer software programme known as COBA (COst Benefit Analysis) has been used. COBA is a programme that evaluates economic factors over a 30-year period and then re-values the results to a common base for direct comparison (Currently 1994). To undertake this assessment, COBA networks were constructed for the existing road arrangement and with the bypass options in place. COBA was then run to obtain a comparison between each bypass option and the existing network, the “Do-Minimum” scheme.

4.12 To undertake these evaluations, the following data was required for input into COBA:

- Scheme costs including design, construction and supervision costs. These were based on Q2, Year 2000 prices.
 - Details of the existing road network.
 - Details of the proposed routes.
 - Details of the existing and proposed junctions.
 - Dates for start of construction and the opening year for the scheme.
 - Forecast traffic data derived from the traffic counts.
- 4.13 COBA analyses the following aspects for a 30-year period and compares the results with the existing situation.
- Time Savings
 - Vehicle Operating Costs
 - Accident costs
 - Construction Costs
- 4.14 COBA does not model the disruption and delays that can occur to vehicle travellers during construction and in future maintenance. **QUADRO (Ques And Delays at ROadworks)** computer software was therefore used during the assessment process, to calculate the cost of delays incurred by road users as a result of any future maintenance of the existing A64 and the proposed schemes.
- 4.15 COBA assesses the options using low and high growth factors. The results of the COBA are then presented as three separate items that are Present Value Costs (PVC), Present Value Benefits (PVB) and Net Present Value (NPV). These results are in 1994 prices, discounted to 1994. PVC includes all scheme preparation and construction costs, PVB includes all benefits derived from accident savings, vehicle operating costs and time savings and NPV gives the overall assessment of cost benefits.
- 4.16 The results have been summarised in table 4.1.
- 4.17 The table shows that for all options, the Benefits at low growth would be negative. For high growth, only the Blue Route (In Cutting) would have a positive benefit.

After the scheme costs have been included, all options become substantially negative. However, for all options there would be a saving in the number of accidents that would occur compared to the “do-minimum” scheme. The numbers of accidents which have occurred between 1994 and 1998 are summarised in Table 4.3. The predicted savings in accidents with a bypass are shown on Table 4.4.

- 4.18 An assessment of the results has shown that a large proportion of the dis-benefits was derived from modelling roundabout junctions at each end of the bypass. Further analysis of the roundabout junctions was then undertaken using the computer software ARCADY. This showed that there were unlikely to be any significant queues at the roundabouts and all the dis-benefits could be attributed to the geometric delay associated with roundabouts.
- 4.19 As a result, COBA was run again. However, the roundabouts located at each end of the by-pass were replaced with single lane dualling junctions. These junctions would significantly reduce the delays to A64 traffic although they would increase delays to a smaller amount of side road traffic.
- 4.20 The results of the COBA assessment with single lane dualling junctions have been summarised in table 4.2
- 4.21 The table shows that for all options with single lane dualling, the Benefits would generally be positive and always better than for the options with roundabout junctions. After the scheme costs have been included, only the Magenta Route and Blue Route (In Cutting) at high growth would provide a positive overall benefit.

CONCLUSION

- 4.22 The economic assessment has shown that it would be very difficult to achieve a positive return for any route option. A large amount of benefits are generally attributable to vehicle operating costs. Unfortunately, all options are of a relatively short length, making it difficult to achieve improved time savings when comparing the proposed route with the existing A64. However, after the construction of a bypass the number of accidents that would occur would be less than along the existing A64.
- 4.23 The inclusion of roundabouts at each end of a bypass incurs significant vehicle junction delays. It has been shown that these delays can be reduced if single lane dualling junctions are used. However, there is a general perception amongst the general public that this form of junction is less safe than roundabouts. It may therefore be difficult to obtain public support for a bypass which includes single lane dualling.

Table 4.1 - COBA Summary for Do-something Options with Roundabout (All costs in 1994 prices discounted to 1994)

	Route Option									
	Magenta		Red		Green at Grade		Green in Cut		Blue at Grade	
	L	H	L	H	L	H	L	H	L	H
PVC (£M)	2.697	2.697	1.979	1.979	2.304	2.304	3.038	3.038	2.335	3.068
PVB (£M)	-2.011	-2.141	-2.856	-3.731	-3.890	-4.389	-2.901	-3.095	-1.627	-0.575
NPV = PVB – PVC (£M)	-4.708	-4.838	-4.835	-5.710	-6.194	-6.693	-5.939	-6.133	-3.962	-3.643
Weighted NPV = 60% Low + 40%High		-4.760		-5.185		-6.394		-6.017		-3.806
										-3.369

Table 4.2 - COBA Summary for Do-something Options with Single Lane Dualing (All costs in 1994 prices discounted to 1994)

	Route Option									
	Magenta		Red		Green at Grade		Green in Cut		Blue in Cut	
	L	H	L	H	L	H	L	H	L	H
PVC (£M)	2.697	2.697	1.979	1.979	2.304	2.304	3.038	3.038	3.068	2.339
PVB (£M)	1.592	2.732	0.912	1.390	-0.111	0.732	0.726	1.674	3.027	2.061
NPV = PVB – PVC (£M)	-1.105	0.035	-1.067	-0.589	-2.514	-1.572	-2.312	-1.364	-0.041	-0.278
Weighted NPV = 60% Low + 40%High		-0.649		-0.876		-2.078		-1.933		0.687
										-1.404
										0.395

PVC includes all scheme preparation and construction costs, PVB includes all benefits derived from accident savings, vehicle operating costs and time savings and NPV gives the overall assessment of cost benefits.

Table 4.3 - Summary of Personal Injury Accidents over a five year period.

Year	Number of Personal Injury Accidents (NOT casualties)			
	Slight	Serious	Fatal	Total
1994	6	2	0	8
1995	2	3	0	5
1996	4	6	0	10
1997	7	4	0	11
1998	1	3	0	4
Total	20	18	0	38

Table 4.4 - Predicted Number of Accidents saved in a 30 year period.

	No of Accidents saved over 30 years		Forecast No. of Casualties					
			Slight		Serious		Fatafs	
	Low	High	Low	High	Low	High	Low	High
Magenta	65	83	69	88	11	15	0.13	0.42
Red	40	49	34	42	4	6	-0.4	-0.3
Green	80	106	83	112	12	18	0.2	0.78
Green (In Cutting)	107	134	121	152	22	29	0.3	2.08
Blue	119	155	132	173	33	45	4.1	5.4
Blue (In Cutting)	143	183	168	211	43	54	5.1	6.4

5. POLICIES AND PLANS

PLANNING POLICY BACKGROUND

- 5.1 This section of the report provides a review of the policy background to the scheme. It considers the prevailing planning policies at national, regional and local level.

NATIONAL POLICIES

Integrated Transport White Paper

- 5.2 In 1998, the government published its White Paper on the future of transport, entitled “A New Deal for Transport: Better for Everyone”. The document sets out a different approach to transport policy, with emphasis on integration, considering transport options in the context of land use planning and other policy initiatives, and the promotion of alternative and more sustainable forms of transport than private road transport. The declared aim of the White Paper is *“to increase personal choice by improving the alternatives and to secure mobility that is sustainable in the long term”*.
- 5.3 The White Paper gives top priority to improving the maintenance and management of existing roads before building new ones and states that all decisions on road investment will be taken in the context of the integrate transport policy.
- 5.4 The overall investment strategy for trunk roads is to :
- Improve road maintenance;
 - Make the best use of existing roads by investing in network control and traffic management measures and minor improvements;
 - Promote carefully targeted capacity improvements to address existing congestion where they support the integrated transport policy.

5.5 Decisions on when and where to invest will be based on five criteria:

- Integration;
- Safety – to improve safety for all road users;
- Economy – supporting sustainable economic activity in appropriate locations and getting good value for money;
- Environmental impact – protecting the built and natural environment;
- Accessibility – improving access to everyday facilities for those without a car and reducing community severance.

5.6 The White Paper highlights the importance of planning at the regional level and the relationship between Regional Planning Guidance and trunk road planning. It notes that :

- To develop an effective integrated transport policy at the regional level, decisions about trunk road planning should be set in the context of the transport network as a whole;
- The definition of long term regional priorities for transport improvement and management must flow from an appraisal of the realistic options available and from an understanding of the role of transport in sustainable regional development;
- Conferences of local authorities and regional partners should consider the objectives and, in broad terms, the priorities for managing and improving trunk roads which are key to delivering the regional strategy;
- The investment strategy for trunk roads will be consistent with the priorities set out in Regional Planning Guidance.

5.7 The White Paper also proposes a new approach to the appraisal of projects, based on the five criteria referred to in 5.5 (above).

5.8 Annex E to the White Paper identifies the A64 as part of the core network of nationally important routes in England.

- 5.9 The approach outlined above was reflected in the government's review of the road programme "A New Deal for Trunk Roads in England".

Environmental Policy

- 5.10 The Environment White Paper "This Common Inheritance" published in 1990, forms the basis for the UK policy on the environment. It seeks to integrate economic and environmental objectives.

- 5.11 The government is committed to the principles of sustainable development set out in "Sustainable Development: the UK Strategy". This proposes that development should take place in a sustainable planning framework which should :

- Provide for the nation's needs for commercial and industrial development, food production, minerals extraction, new homes and other buildings while respecting environmental objectives;
- Use already developed areas in the most efficient way, while making them more attractive places to live and work;
- Conserve both the cultural heritage and natural resources (including wildlife, landscape, water, soil and air quality) taking particular care to safeguard designations of national and international importance; and
- Shape new development patterns in a way which minimises the need to travel.

Rural White Paper

- 5.12 In the Rural White Paper "Rural England: A Nation Committed to a Living Countryside" the message of sustainable development is reinforced – it recognises that efforts to widen economic and social opportunities for those in rural areas should not be at the expense of wildlife and rural landscapes. As far as transport is concerned, it suggests that efforts are made to reduce the need for travel by focussing new development on existing centres which are readily accessible by means other than the car, and by encouraging more recreational activities close to where people live.

Planning Policy Guidance

- 5.13 The government's national guidance on planning policy is contained in a set of Planning Policy Guidance Notes. PPG1 "General Policy and Principles" and PPG13 "Transport" set out how the planning system can be used to minimise the need for travel, integrate land use and transport more effectively, and promote sustainable development.
- 5.14 PPG1 sets out the government's key policy objectives. It stresses the significance of sustainable development as the basis for planning policy and the need to integrate transport and land use in order to:
- Reduce the growth in the length and number of motorised journeys;
 - Encourage alternative means of travel which have less environmental impact, and
 - Reduce reliance on the private car.
- 5.15 PPG7 covers the government's approach to planning in rural areas. This views sustainable development in terms of:
- Meeting the economic and social needs of people who live and work in rural areas by promoting efficiency and competitiveness in rural economies;
 - Maintaining or enhancing the character of the countryside and its natural resources, including the landscape, wildlife, heritage features and agricultural land;
 - Improving the viability of existing villages and market towns and reducing the need for car commuting to urban centres;
 - Recognising the interdependence of urban and rural policies.
- 5.16 PPG13 sets out the government's policy on planning issues related to transport and is based on the approach of reducing the demand for surface travel, through careful location of development, and in particular on reducing reliance on the private car. It stresses the strategic role of trunk roads and the need to take great care to minimise

the impact of new transport infrastructure, or improvements to existing infrastructure, on both the natural and built environment.

REGIONAL POLICIES

Regional Planning Guidance

- 5.17 Regional Planning Guidance for Yorkshire and Humberside was published in 1995. It contains a section on the Rural North and Coast which covers the area through which the A64 runs. It proposes that highway authorities should consider implementing “appropriate traffic management policies” to deal with problems of congestion on the A64 and also on the A1 and A65. It recognises that an efficient road system is needed to promote economic development and the competitiveness of the rural economy and that the aim should be to tackle problems of congestion before it reaches a level where it imposes unacceptable environmental and economic costs. One of its stated priorities is to *“maintain and where necessary improve key road links, in particular by removing key bottlenecks through a programme of by-pass schemes”*.
- 5.18 Draft Regional Planning Guidance (RPG), incorporating the draft Regional Transport Strategy (RTS), was published by the Regional Assembly for Yorkshire and Humberside in October 1999. The primary objectives of the RTS are to integrate transport and land use planning, in particular:
- To support regeneration and economic growth;
 - To support sustainable development;
 - To reduce the impact of traffic and travel on the environment;
 - To improve access to opportunities in a manner that is equitable and socially inclusive.
- 5.19 And within the transport system itself:
- To integrate the operation of different transport modes;
 - To make efficient use of transport resources;
 - To promote safety;

- To maximise the use of more energy efficient modes of travel including cycling and walking;
 - To be affordable and achievable in practical terms.
- 5.20 Policy T4 covers transport developments in rural areas. It notes that the emphasis of road investment will be on traffic calming. It also states, inter alia, that “by-passes safety and development related highway improvements will be on the basis of no net increase in corridor capacity.”
- 5.21 Policy T7 relates to the development of strategic links and reinforces the view expressed in T4 by identifying one focus for investment in the strategic network as localised environmental and safety-related highway improvements on the A64 and A66 (on the basis of relieving local communities of through traffic rather than increasing corridor capacity).
- 5.22 It is likely that the Regional Planning Guidance will be subjected to an Examination in summer 2000 with eventual adoption in 2001.

North Yorkshire County Structure Plan

- 5.23 The adopted County Structure Plan, and the strategy which underpins it, dates from the 1970s. Following initial approval in 1980, it has been updated by a series of alterations, the last of which was approved in 1995. A comprehensive review is currently being carried out. It is likely that this will strongly emphasise integration of transport and land use policies in line with the government approach, with the objectives of facilitating economic and social development, influencing travel patterns and demands and protecting and improving the environment.
- 5.24 The current adopted version of the Structure Plan contains a number of policies relating to transport. Policy T7a states that the County Council’s primary road network will include the Department of Transport (as it then was) Trunk Road schemes on the A64 (York to Malton and Malton to Seamer). Policy T1 identifies all Class A roads in the county as forming part of the primary road network for the purposes of resource allocation and traffic regulation.
- 5.25 The Structure Plan identifies the town of Malton/Norton to the west of Rillington as a Main Town, which will be a focus for new development, and as one of a number of

Touring Bases where the majority of tourist accommodation and related facilities are to be located.

- 5.26 Policies F4, E5 and E6 seek to protect important features of nature conservation or heritage interest, whilst Policy E7 states that development which would give rise to substantially increased levels of noise, water or air pollution or would be hazardous and significantly increase the risks to members of the public, will not normally be permitted.
- 5.27 Policy A1, A2 and A3 are aimed at protecting good quality agricultural land from development and minimising loss of agricultural land overall.

North Yorkshire Provisional Local Transport Plan

- 5.28 The Local Transport Plan sets out North Yorkshire's transport policy and a bid to government for funding a range of measures to secure a more sustainable and inclusive transport network across the county. The transport strategy comprises five interrelated measures :
- Improved public transport provision;
 - Improved facilities for pedestrians and cyclists;
 - Improved facilities for people with impaired mobility;
 - Implementation of demand management measures;
 - Highway network management and maintenance, including the implementation of traffic management measures, improvements to the road network to facilitate environmental improvements, safety schemes, improved accessibility and encouraging movement of goods by alternative means to road transport.
- 5.29 The Local Transport Plan divides the County into eight areas, one of which is the A64 Corridor. It states that within this corridor the objectives are to:
- Manage the overall demand for travel into and through the area;

- Increase the use of more environmentally friendly modes of transport including walking, cycling and public transport;
- Identify key areas for improvement where pedestrians and essential servicing traffic will be given priority;
- Improve air quality by reducing the level of pollutants from vehicles, particularly in central areas;
- Improve road safety and reduce the annual number of road injury accidents;
- Raise awareness of traffic and transport issues and to change travel behaviour.

5.30 The Plan notes that one of the main problems in the area is congestion on the main tourism routes, including A64, during the spring and summer months. These lead to concern by residents about the speed of traffic on the approaches to villages and the high level of injury accidents. It notes that *"the County Council continues to request central government to upgrade the section of the A64 between the eastern end of York Bypass and western end of Malton bypass to dual carriageway. The section east of Malton Bypass could remain single carriageway but with bypasses of Rillington and Sherburn."* The County Council's Interim Road Traffic Reduction Report, contained within the Local Transport Plan concludes that because the A64 carries a lot of traffic originating outside North Yorkshire, local policies are unlikely to result in a significant reduction in traffic.

LOCAL POLICIES

Ryedale Local Plan

- 5.31 The proposed scheme lies within Ryedale District. The Deposit Draft of the Ryedale Local Plan was published in November 1997 and will be used to guide decision making in the district. Once adopted, this Plan will supersede a number of old style Local Plans. As these are now substantially out of date, less weight is being given to them now that a Deposit Draft of the district-wide plan is available. The Deposit Draft was considered at a public inquiry held in November 1999.
- 5.32 The District Council has set out its vision for *"a strong and prosperous community enjoying and maintaining a high quality environment"* and has identified a number of objectives to help it achieve this vision. They include :

- To maintain and develop a clean, pleasant and safe environment and ensure that the natural resources and heritage in Ryedale are protected and enhanced;
 - To establish and maintain the necessary conditions and infrastructure to provide an environment in which a strong, diverse and expanding local economy can flourish;
 - To endeavour to secure the establishment of an effective transport network that will improve mobility, safety and accessibility."
- 5.33 The Local Plan sets out a number of objectives for transport, which are in line with the government's aims of reducing the need to travel and use of private motor vehicles. Of particular relevance to the proposed scheme is Objective 3 which states that the Council will *"only support proposals for new road construction or the improvement to existing roads where they can be justified and where they are designed to have the minimum adverse effect upon the amenities of local residents, the environment and pedestrians and cyclists."*
- 5.34 In paragraph 12.3.1.2 of the Local Plan, the safety record and environmental problems associated with the A64 are recognised, as is the need to provide new or improved sections of road.
- 5.35 Policy T1 extends to proposals for new roads and road improvements outside the Howardian Hills, AONB and states that the District Council will only support such proposals if they improve highway safety and/or bring about a net environmental and economic benefit. Support is also conditional on a number of environmental criteria being met.
- 5.36 Policies T9 and T10 seek to improve the safety, convenience and attractiveness of facilities for cyclists and pedestrians respectively. This is to be achieved in part by ensuring that new schemes include an appropriate level of facilities and also by ensuring that existing footpaths and bridleways are not adversely affected.
- 5.37 The Proposals Map for the Local Plan identifies the Scampston Park estate as an Historic Park and Garden which is protected by Policy C14. This states that *"the District Council will not normally grant planning permission or listed building consent for any development which would adversely affect either the character or setting of an Historic Park and Garden."* The designated area covers parkland on both sides of A64.

- 5.38 Policy ENV4 resists development which would have a material detrimental impact on the natural features of river or stream corridors and the Plan contains other policies to protect important habitats and species. This policy would apply to any crossing of the watercourses in the Scampston Park estate and of Rillington Beck. Policy ENV18 would also apply to the waterbodies in the Scampston Park estate which are specifically identified in the Local Plan as being of ecological, historical or landscape importance. The policy states that development which would materially detract from the value of the pond will only be permitted if it can be demonstrated that the benefits of the proposal outweigh the importance of the pond. Where such development is permitted, the policy proposes the use of various mitigation measures.
- 5.39 The Plan also contains a number of policies (ENV21-24) which restrict developments which have the potential to pollute.
- 5.40 Highway improvement schemes in rural areas inevitably involve the loss of agricultural land. Policy AG1 seeks to protect the best and most versatile land and will only permit the development of Grades 1,2 and 3A land where there is an overriding need for the development and sufficient land of lower grades are either unavailable or are protected by an environmental designation which outweighs the agricultural considerations.
- 5.41 The Proposals Map which forms part of the Plan contains Village Insets which identify those policies and proposals applying in individual settlements. The Inset shows that the development limits for the village are tightly drawn about the existing built up area. Only one site is allocated for residential development, at Westgate Farm on the south side of A64 within the built up area.
- 5.42 The Inset also identifies the extent of a scheduled ancient monument on the eastern edge of the village. This is protected by Policy C13 which applies a presumption in favour of the physical preservation of archaeological remains and their settings.
- 5.43 Land to the south of A64 Malton Road and Collinson's Lane is designated as an Area of High Landscape Value. Policy ENV3 applies to such areas and aims to resist development which would materially detract from the special scenic quality of the landscape. In particular, large scale development would only be permitted if it can be demonstrated that the proposal would have significant economic or social benefits, is incapable of being located outside the Area of High Landscape Value and is designed to do as little damage to the environment as possible.

- 5.44 The playing field off High Street is protected from development by Policy L2 of the Local Plan.

EFFECTS ON POLICIES AND PLANS

- 5.45 The A64 is identified as part of the core trunk road network and improvements targeted at overcoming specific problems would help the A64 to fulfil its key function of distributing interurban traffic as well as local trips and thus to make better use of the existing road. Planned improvements would therefore be in accordance with national policy even though they would not assist with meeting wider sustainability objectives.
- 5.46 At a regional level, the proposed road scheme would comply with priorities identified in Regional Planning Guidance and would meet County Council aspirations for the improvement of A64. It would also meet objectives relating to improving road safety. The scheme offers significant scope for improving conditions for cyclists and pedestrians in the village by relieving the village of through traffic. The road currently bisects the village and separates residential areas from shops and community facilities.
- 5.47 The Green, Red, and Blue Routes would all pass through the area designated as being of High Landscape Value and the impact of the scheme on the open landscape on the fringe of the Wolds would be difficult to mitigate. This would apply particularly to the Green and Blue Route sub-options where the cutting would introduce an alien element into the landscape. The Red Route would also have a potentially adverse impact on the scheduled ancient monument as it bisects the site. The Blue Route would pass through Scampston Park and could have a potentially significant impact on the landscape of the parkland and its watercourses which would be contrary to several Local Plan policies.
- 5.48 The Magenta Route would not have any adverse impacts on Local Plan policies.

6. LAND USE

INTRODUCTION

- 6.1 This Stage 2 scheme assessment provides an outline, in broad terms, of the likely impact of the route options on land use, including agricultural land quality and the economic performance of affected farms. The assessment has been informed by site visits and a desk study of available information. The planning register at Ryedale District Council was also consulted. In the light of this information, recommendations are made for further investigations at Stage 2.
- 6.2 The agricultural assessment normally covers the impact on any Environmentally Sensitive Areas, but information provided by the District Council indicates that none exist within the study area.
- 6.3 ~~It should be noted that the New Approach To Appraisal (NATA) has not been adapted to agricultural studies and so this agricultural assessment follows the DMRB guidelines.~~ The assessment is based on a review of available published information on soils and land quality and a footpath survey to identify the land use of every field within the route corridor. Ownership plans were not available at the time of survey (December 1999) and farmers were not interviewed. Consequently, it has not been possible to assess the impact of the route options on individual farm holdings.

EXISTING CONDITIONS

Land Use

- 6.4 Land use within the study area is predominantly agricultural, with the wooded estate of Scampston Park on the east side of the village. This incorporates both ornamental planting and plantation woodland (to the south of A64). There are also small blocks of woodland in the north east quadrant of the village around Rillington Manor.
- 6.5 There is very little vacant land in the study area, a small parcel being found to the south of the Cemetery.

- 6.6 The residential part of the village is located mainly to the south of the A64. New residential development has taken place in the area off Woodlands Road in recent years and a limited amount of infill development has also taken place to the north of Low Moorgate.
- 6.7 The village boasts a range of shops including a general store, butchers and fish and chip shop, as well as two public houses and a café. These are located along the A64. Community facilities include a school, church and playing fields.
- 6.8 The Ryedale Local Plan (Deposit Draft) draws the development limits tightly around the settlements and only one new development site off Westgate is identified.
- 6.9 There are no significant unimplemented planning permissions, or outstanding planning applications, within the study area (at 1/2/00).

Quality of Agricultural Land in Relation to Possible Landtake

- 6.10 The Deposit Draft of the Ryedale Local Plan (November 1997) includes the objective of protecting the best and most versatile agricultural land. Around 90% of the Local Plan area is in some form of agricultural use, of which only 4% is in the lower Grades 4 and 5. Government policy, as set out in PPG7, is designed to protect the best and most versatile land, normally Grades 1,2 and 3a. The relative proportions of Grades 3a and 3b in Ryedale are not known, as the published 1:250,000 MAFF Agricultural Land Classification (ALC) maps do not subdivide Grade 3.
- 6.11 The published ALC maps provide only a broad indication of land quality and should not be used on specific sites smaller than 80 ha in size. In such cases, where good quality agricultural land is believed to exist, a detailed survey of land quality is needed, following the Revised Guidelines and Criteria for Grading the Quality of Agricultural Land (MAFF 1988).
- 6.12 The published ALC map (Figure 6.1) shows that the quality of the land improves westwards, with Grade 3 to the east of Rillington and Grade 2 to the west.
- 6.13 The only published soil map of the district is the 1:250,000 Soil Map of England and Wales (Northern Region) and the soils are described in the accompanying book, *Soils and their Use in Northern England*. This, very generalised map shows that the soils are in glaciofluvial and terrace deposits, grading from sands of the Newport association in the east, to light loams of the Landbeach association in the north west (Figure 6.2).

- 6.14 The Newport association is described as consisting of mainly freely draining, sandy soils formed in glaciofluvial sands. The Landbeach association consists mainly of permeable, calcareous and non-calcareous sandy loam soils overlying chalky glaciofluvial and river terrace drift.
- 6.15 The east-west gradation of soil types from sands to loams is reflected in the Grade 2 – Grade 3 boundary on the ALC map. In the absence of a detailed soil survey of the route corridor, it is necessary to use the representative soil profile descriptions in *Soils and their Use in Northern England* to assess the ALC grade according to the 1988 Revised Guidelines. In particular, it is necessary to subdivide Grade 3 into 3a and 3b, as this is the cut-off for best and most versatile land.
- 6.16 The Meteorological Office's Climatological Data for Agricultural Land Classification (1989) indicates that Rillington, at 25 m above sea level, with 578 mm of rainfall and an accumulated temperature from January to June of 2323 degrees, has an equable climate. This, together with the gentle terrain, good natural drainage and the predominance of deep, relatively stoneless soils means that the only limitation capable of removing this land from the best and most versatile category (i.e. making it poorer than 3a) is droughtiness.
- 6.17 The representative Landbeach soil profile has the following characteristics:
- | | |
|-----------|---|
| 0-25 cm | Brown, slightly stony sandy loam. |
| 25-50 cm | Dark yellowish brown, slightly stony sandy loam; weak medium subangular blocky structure. |
| 50-70 cm | Brown, mottled, moderately stony sandy loam; weak fine subangular blocky structure. |
| 70-120 cm | Greyish brown, mottled, very stony sandy loam; massive structure. |
- 6.18 The ALC system assesses drought risk using the two reference crops of winter wheat and potatoes. It takes two parameters, namely:
- Crop-adjusted available water capacity of the soil profile (ΔP)
 - Moisture deficit under the two reference crops
- 6.19 The moisture balance of the Landbeach series at Rillington is as follows:

Winter wheat

AP	100 mm
MD	105
Moisture balance	-5

Potatoes

AP	90 mm
MD	96
Moisture balance	-6

6.20 This slightly negative moisture balance places Landbeach soils in **Grade 3a**.

6.21 The representative Newport soil profile has the following characteristics:

0-25 cm Dark brown, slightly stony sandy loam or loamy sand.

25-55 cm Brown, slightly stony loamy sand or sand; weak fine subangular blocky structure.

55-120 cm Brownish yellow, slightly stony sand; single grain structure.

6.22 The moisture balance of the Newport series at Rillington is as follows:

Winter wheat

AP	95 mm
MD	105
Moisture balance	-10

Potatoes

AP	70 mm
MD	96
Moisture balance	-26

6.23 This soil profile is also within **Grade 3a**, but a negative moisture balance of -26 mm for potatoes is close to the lower limit for that grade. Since relatively minor variations in the degree of sandiness of these soils would alter the AP by 10 mm or more, this land must be considered marginal to **Grades 3a and 3b**. A detailed soil survey may be needed at Stage 3 to determine the ALC of the Newport soils, if land quality is considered to be a material issue.

Type of Husbandry

- 6.24 Current land use of each field was identified by a footpath survey at the end of November 1999 and the results are presented in Figure 6.3.
- 6.25 A large area of the route corridor was under uncultivated wheat stubble, some of which has been treated with herbicide. The remainder contained weeds and volunteer cereals. This uncultivated land could either be in set-aside or awaiting a spring-sown crop.
- 6.26 A large area has been sown with winter wheat, which is the main crop of arable farms in the Rillington district.
- 6.27 Two ploughed fields containing wheat stubble are probably awaiting a spring crop, such as potatoes, sugar beet or spring barley.
- 6.28 Sugar beet occupies two adjacent fields to the south west of Rillington, and there is one field of forage rape at the extreme west of the route corridor
- 6.29 There is a large area of pasture around Rillington Manor and Low Moor Lane. Much of this is ancient grassland originating from the former park of Rillington Manor, and containing scattered trees and coverts and some ridge and furrow. Around Rillington Manor the pasture is grazed by horses, while at Park 43 Farm on Low Moor Lane there is a pedigree flock of Rillington Texel sheep.
- 6.30 Scampston Mill Farm has two fields of commercial turf production, and an outdoor pig unit.
- 6.31 Uncultivated rough ground surrounds the playing field at the top of Rillington High Street.

ASSESSMENT OF THE ROUTE OPTIONS

- 6.32 This section identifies the potential impact of the scheme options on land use and land quality.
- 6.33 On the basis of available information concerning farming and land quality at Rillington, the six route options are assessed according to the following criteria:
- Land-take

- Impact on farm enterprises
- Severance

6.34 Without knowing the boundaries of individual holdings and not having interviewed farmers, it is not possible to make meaningful comments concerning accommodation works for access, water supply and drainage.

Land-take

6.35 In terms of the implications of land quality on the choice of route, only the Magenta Option will pass through land (Landbeach soils) which is definitely Grade 3a. The other route options pass through Newport soils which are marginal to Grade 3a/3b. Therefore, as regards the potential for loss of best and most versatile land, the Magenta Option is, on the basis of published information, the least desirable.

6.36 The Magenta and Blue Options, being the longest routes, would result on the loss of most agricultural land.

6.37 The Red and Green Options are the most advantageous, as regards agricultural land-take, in that they are entirely within the area of Newport soils which are assessed as marginal to Grade 3a/3b.

Impact on Farm Enterprises

6.38 An assessment can be made of the standard gross margins (SGM) per hectare of the main land use types found at Rillington. However, as the boundaries of individual farm holdings are not known and farmers were not interviewed, it is not possible to assess the economic impact of the route options on individual farm enterprises.

6.39 SGM figures are taken from the 1999 Farm Management Pocket Book.

Table 6.1 – Standard Gross Margins

Land use	SGM/ha (£)
Winter wheat	540
Sugar beet	1040
Sheep (high performance)	545
Turf (rent per ha)	700

6.40 The SGM of the pasture used for grazing horses around Rillington Manor cannot be calculated, as it not known whether they are kept for livery, breeding or recreation.

Nor is it possible to determine the SGM of forage rape and the outdoor pig unit without more data on production systems. For commercial turf production the figure given is the average rent paid by a turf producing company, as the production system and end use of the turf at Rillington is not known.

- 6.41 With the exception of the large amount of pasture, which is probably there for historical reasons, all the land use is typical of the rotations of light land in this district. Thus, wheat, turf, sugar beet, forage rape and pigs could form part of the rotations on both Newport and Landbeach soils, and so, from available information, no route option can be said to have any particular advantage or disadvantage in terms of land use, *per se*.
- 6.42 A detailed farm survey should be carried out in Stage 3 to assess the economic impact of the preferred route option on the affected holdings.

Severance

- 6.43 Severance is not a major issue in the choice of route, as all the current options are for a single carriageway that would allow farm vehicles to cross the by-pass. Moreover, there are no dairy herds in the route corridor that might be forced to cross the new by-pass twice daily for milking.
- 6.44 The fields at Rillington are mostly large and more or less rectangular, and therefore suitable for modern machinery. All four route options will divide fields, but generally the segmented portions will be large enough to be farmed individually. The exception will be where the bypass leaves and rejoins the old A64. Here, small, triangular shaped portions of half a hectare or less would be unfarmable. The Green Option would create the fewest unfarmable segments, as the eastern junction with the old A64 is in woodland.

Other land uses

- 6.45 All four routes would affect principally agricultural land though they would also impact on plantation woodland. The Red Option would pass close to a residential property (Highfields) off High Street and would cross vacant land in the vicinity of this property.
- 6.46 The Magenta Option would pass close to Moorgate Place, a residential property, and would affect small blocks of woodland in the vicinity of Rillington Manor.

- 6.47 No buildings or proposed development sites should be directly affected by the scheme.

CONCLUSIONS AND RECOMMENDATIONS

- 6.48 On the basis of available information, the Red and Green Options are the most favourable in terms of their impact on farming, in that they are the shortest routes and pass entirely through land which is marginal to Grade 3b. The Green Option is slightly more advantageous in that the eastern junction is in woodland and so will create fewer unfarmable field segments than the Red Option.
- 6.49 The Magenta Option is the most detrimental to farming as it is the longest and passes through the best land in the district. The second most detrimental is the Blue Option which is also long, but passes through poorer quality land than the Magenta.
- 6.50 At Stage 3 a detailed soil survey and land classification may have to be made of the preferred route option, if agricultural land quality is considered to be a material issue. The aim would be to assess whether the Newport soils are sufficiently sandy and droughty to be placed in Grade 3b.
- 6.51 Also, at Stage 3, it will be necessary to make detailed surveys of individual holdings affected by the preferred route to assess the impact on the farm enterprise and identify necessary accommodation works.

7. LANDSCAPE AND VISUAL AMENITY

METHODOLOGY

7.1 The methodology used follows the guidelines in Section 3 Part 5 of the DMRB Volume 11 relating to landscape effects. This outlines five areas of study:

- data collection;
- description of the baseline landscape;
- landscape classification;
- identification of impacts;
- assessment of the significance of impacts.

7.2 These areas of study are accomplished as far as possible by investigation on site, backed up by desk study to identify relevant planning, conservation and heritage designations within the study area and to identify any other proposals in the study area of landscape significance.

7.3 Landscape classification entails the identification of broadly homogeneous areas of similar landscape character and the assessment of the quality of the landscape. A five point scale is generally used in assessment of landscape quality:

- highest quality;
- very attractive;
- good landscape;
- ordinary landscape;
- poor landscape.

Designed or parkland landscapes are noted separately. The demarcation of areas of particular quality need not coincide with character areas.

7.4 The objective at Stage 2 assessment is to undertake sufficient assessment to identify the landscape and visual constraints associated with particular route options. For each potential route option, the visual impact of the proposals is considered in broad terms of the number of properties that are likely to experience changes in the view. The potential magnitude of the change is described 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 barely perceptible deterioration (or improvement) in the existing view;

7.5 The findings of the Stage 2 Assessment are taken into account in the development and refining of route options and thence the selection of a preferred route.

THE EXISTING LANDSCAPE

Landscape Context

7.6 Figure 1.1 shows the location of the study area. The study area is located on the southern fringe of the Vale of Pickering, a low-lying plain that extends as far as the east coast. The uplands of the Yorkshire Wolds lie immediately to the south. To the north of the Vale of Pickering is the higher ground of the North York Moors. Rillington itself lies on the A64 trunk road from York to Scarborough, approximately 14 km east of the towns of Malton and Norton on Derwent.

7.7 Generally, the landscape character of an area is influenced by many factors, including physical influences such as geology, landform, hydrology and ecology, and human influences of occupation and land-use. The main influences on the study area are described below.

Physical Influences

7.8 The Yorkshire Wolds rise in a prominent escarpment from the Vale of Pickering. The Wolds form the northern-most extremity of a continuous band of chalk, which extends across England from Devon, through the Chilterns, to terminate at the North Sea at Flamborough Head. The dip-slope of the Wolds falls to the east in a gently

rolling plateau cut by numerous dry valleys. These valleys, created at the end of the last Ice Age, are often deep and steep-sided. Typically of chalk landscapes, streams frequently run underground, seasonally appearing at the surface. These streams are locally known as "races", such as the Gypsy Race which drains the Great Wold Valley towards the sea.

- 7.9 In contrast to the hard-wearing rocks of the Yorkshire Wolds, the Vale of Pickering is characterised by more easily eroded marls, shales and clays. The Vale is flat and low-lying, creating a distinct contrast with the higher ground. Where the chalk of the Wolds meets the clays of the Vale of Pickering, underground chalk streams emerge at the surface as springs.
- 7.10 During the last glacial period, ice sheets formed dams across the Vale of Pickering, impeding the natural drainage. The water level of the Lake Pickering that was subsequently formed rose, to spill over to the south west, cutting through the rock and forming the deeply-incised Kirkham Gorge. The course of the River Derwent was thus permanently diverted to flow south to the Ouse basin. After Lake Pickering drained away, a complex of marshes and carrs remained. However, these have since been drained by a network of canalised water courses, which drain to the rivers Rye and Derwent and their tributaries. The river Rye joins the Derwent just north of Malton.
- 7.11 The chalk soils of the Yorkshire Wolds are permeable, well-structured and suitable for arable farming. However, these soils can also be thin and impoverished, especially in the north-east part of the Wolds. The heavier clay soils of the Vale of Pickering support a mixed agricultural system, with a high proportion of arable land. There are also large stretches of floodplain pasture alongside the rivers.

Human Influences

- 7.12 The earliest signs of occupation in the study area date from Neolithic times. The low-lying parts of the Vale of Pickering were then covered in fen and swamp, and the drier Wolds were preferable for settlement. The Yorkshire Wolds are especially rich in prehistoric earthworks, and include possibly the largest Neolithic monument in Britain: a round barrow located in the Great Wold Valley, six miles south-east of Malton.
- 7.13 The Romans established a fort at Malton, a strategic site next to the River Derwent. The site of the fort, Derventio, is still visible today, in the form of a rectangular grassed plateau. The Romans forded the river, and established a civilian settlement

on the southern bank, at Norton. Malton's initial importance was as a centre of communications.

- 7.14 The area was later settled by both Anglo-Saxons and Scandinavians. During the medieval period, settlements were established, notably around the fringes of the Yorkshire Wolds, along the spring lines and around valley ponds. A medieval village existed at Scampston until it was removed by the building of Scampston Park. The Byland Abbey Rectory in Rillington is also known to date from medieval times.
- 7.15 Malton became established as a market town from an early age. It is known that the present inns, shops and houses which overlook the market square stand on plots originally marked out in the 12th century. Malton also has a long tradition of catering for travellers. In the 18th century, "travellers of fashion" on their way to take the waters in Scarborough, broke their journeys in Malton. One of Rillington's main industries at this time was that of brewing, the product probably supplying Malton's many inns and public houses.
- 7.16 The Parliamentary enclosure period greatly influenced the present appearance of the landscape, by creating a regular pattern of straight-sided rectangular fields. Straight, wide drove roads were built with wide grass verges, and farmsteads were located centrally to their landholdings. In the Wolds, such exposed farmsteads were often surrounded by planted shelterbelts.
- 7.17 Between the 16th and 19th centuries, country houses, with accompanying large estates, were established by the aristocracy. The dominant estate in the study area is that of Scampston Hall, set within a landscape park of some historical importance. The present house dates from the early 18th century, when the estate was acquired by Sir William St. Quintin of Harpham. Plans for creating a formal garden were drawn up by Charles Bridgeman in about 1730, and in 1736 the main York to Scarborough road was diverted to the south to allow the landscaping plans to be carried out. At this time it is likely that the present three connected lakes were created. In 1770, Capability Brown was asked to advise on improvements to the estate. Brown's improvements included the Palladian Bridge near the hall, the cascade, and the Gothic deer lodge, or teahouse, located on the far side of the A64 to act as a focal point in views from the house.
- 7.18 Alongside the development of such country houses and estates were also built estate villages to house the estate employees. The existing village at Scampston is one such estate village.

- 7.19 Many of the smaller estates have declined throughout the 20th century, leading to the absorption of parklands into the modern agricultural system. Modern farming methods have also resulted in the enlargement of fields and the loss of hedgerows, creating a more open landscape in the process.
- 7.20 Infrastructure developments have also influenced the landscape. In 1845, the York to Scarborough railway line was completed, and in 1853 further lines were added to create a network of lines radiating from Malton. Malton's station is actually located in the adjacent town of Norton on Derwent, and growth of this town was thereby stimulated.
- 7.21 Other notable recent infrastructure developments include the development of the A64 as a trunk road, now identified as part of the core network of nationally important routes in England. A number of improvement schemes to the A64, such as the Malton Bypass, have been carried out in recent times.
- 7.22 Overhead electricity power lines form a prominent feature in the flat landscape of the Vale of Pickering. Two parallel power lines run close to the York to Scarborough railway line from Malton, past Rillington and Sherburn to the east.
- 7.23 Other more localised infrastructure developments include infill housing in villages such as Rillington, and industrial estate development on the outskirts of Malton.

Landscape Character Areas

- 7.24 The Countryside Commission's Character Map of England has defined broad-scale landscape character areas, i.e. broad tracts of countryside exhibiting a cohesive character. The character of these areas is largely determined by their landform and physical characteristics. The Countryside Commission's defined character areas which are relevant to the study area are:
- Yorkshire Wolds
 - Vale of Pickering
- 7.25 These broad-scale landscape character areas are shown in Figure 7.1 and described below:

Yorkshire Wolds

- 7.26 The character of the Yorkshire Wolds derives from the underlying chalk. The chalk has created a dry landscape, and thus the population is relatively sparse. Villages are generally located in valleys or along the springline on the fringes of the Wolds. The chalk escarpment facing the Vales of York and Pickering is broad and sinuous and in places cut by steep-sided dry valleys. Land-use generally comprises arable farming, and the fields are large, delineated by low hedgerows. There is little tree cover and the landscape is large-scale and open in character. However, the steep slopes of the escarpment and of dry valleys are frequently wooded, providing some variety in the landscape. The landscape is attractive for walking, and two long distance footpaths, the Wolds Way and the Centenary Way, cross the Wolds, passing through Wintringham.

Vale of Pickering

- 7.27 The Vale of Pickering is a generally flat, low-lying plain, lying between the uplands of the Yorkshire Wolds to the south and the North York Moors to the north. The landuse pattern is dominated by arable farming, although there are also large stretches of floodplain pasture along the rivers. Fields are generally medium to large, rectangular, and enclosed by low hedgerows. The landscape is generally open, with some dispersed areas of woodland. Villages are concentrated along the springlines on the fringes of the vale, although smaller isolated settlements are spread across the vale.

Landscape Types

- 7.28 Although the above landscape character areas set the context for the study area, their broad scale inevitably conceals diversity in local landscape character. These smaller-scale differences in landform, landuse and the degree of degradation in landscape elements need to be recognised for the purposes of distinguishing between route corridors in the local landscape.
- 7.29 The most critical factors influencing local landscape character tend to be: landform, the intensity and scale of land-use, the degree of enclosure or variety provided by woodland or hedgerow cover, and the degree of degradation arising from poor land management or from urban or industrial activity. Local landscape of a similar character can thus be sub-divided into constituent landscape types. Each type is described below, together with an assessment of its quality, based on a five-point scale.

- 7.30 Figure 7.2 shows landscape types within a study area, taken as 1km either side of the line of the existing A64.

Escarpment Farmland

- 7.31 This landscape type is characterised by the steeply sloping, generally north-facing escarpment slope of the Yorkshire Wolds. Fields of mixed farmland are large and rectilinear, enclosed by hedgerows or substantial tree belts. The top of the scarp slope is frequently wooded, especially the portion above Scagglethorpe. This landscape type falls within the Wolds Area of High Landscape Value and the landscape quality is assessed as 2-3.

Vale Farmland

- 7.32 The majority of the study area consists of flat or gently sloping farmland. Landuse is generally arable and fields are large and open in character, delineated by low clipped hedgerows with few trees. However, the presence of small plantations provide some degree of enclosure. Overhead power lines detract from middle-distance views to the north. The landscape quality is assessed as 3-4.

Parkland/ Estate Farmland

- 7.33 This landscape type includes the areas of parkland associated with Scampston Hall, Knapton Hall and Rillington Manor. Parkland near to the house frequently comprises a historic designed landscape of lawns, trees, lakes, water features and follies. The outer estate farmland is characterised by a high proportion of tree cover within land used for grazing. However, there is little topographic interest. Fields are enclosed by iron railings or by post and rail fences, and the landscape has a prosperous character. The landscape quality is assessed as 2-3.

Woodland/ Plantations

- 7.34 Within the study area, there are several large areas of woodland and plantations that lie adjacent to Scampston Park. Although the woodland is mixed, the plantations are generally coniferous, and appear incongruous in the landscape. The landscape quality is assessed as 3-4.

Settlements

- 7.35 Settlement within the study area is mainly concentrated within the small villages of Rillington, Scampston and Scagglethorpe. Properties range from attractive stone cottages with pantile roofs at the villages cores to modern brick houses on the outskirts. Some linear development has also taken place along the A64, such as the group of properties at Rillington Fields. The landscape quality is assessed as 3-4.

Existing Visibility

- 7.36 The A64 passes through the centre of the village of Rillington, and thus the main views to the existing line of the road are from properties within the village. To the east and west of the village centre, distant views of the A64 from viewpoints within the flat Vale of Pickering are generally limited by the screening effect of overlapping hedgerows, woodland and plantations. However, views from the elevated Wolds escarpment are frequently panoramic, encompassing the broad sweep of the vale landscape with the North York Moors as a backdrop. Figure 7.3 illustrates the locations of the main views from properties, local roads and other public rights of way.
- 7.37 Scagglethorpe is located at the foot of the escarpment, and the sinuous landform restricts the direction of views from the village. Views towards the north-east are effectively screened by the landform.
- 7.38 To the north of the existing A64, the isolated farms at Scagglethorpe Grange and Moor Farm obtain open views across the vale landscape towards the south-east. From these viewpoints, the Wolds form the visual horizon. Areas of woodland and plantations appear prominent in the flat landscape, and help to screen views of the existing road. Similar views are also gained from the local roads and public rights of way to the north-west of Rillington.
- 7.39 Properties at Rillington Fields face onto the existing A64. Further back from the road, Bassett House is situated in an elevated position, part way up the scarp slope, and enjoys widespread views to the north, although these are partly screened by its well-treed grounds.
- 7.40 Other farms and properties situated on the Wolds escarpment, such as Spring Farm, Peacock Farm and Rowgate, have wide-ranging, albeit distant, views towards Thorpe Bassett and Rillington.

- 7.41 Properties within Thorpe Bassett, such as Walnut Tree Farm, obtain views towards the south side of Rillington, although these are partly screened by garden vegetation and also by some substantial hedgerows.
- 7.42 Properties on the southern edge of Rillington generally have partial or open views towards the south and south-east. Views, especially from single-storey properties, may be restricted by hedgerows and the area of woodland to the east of Collinsons Lane.
- 7.43 To the east, Scampston Mill Farm, the Linton Mill and adjacent properties have views across the former Deer Park towards the A64, and Scampston Hall beyond. Capability Brown's Gothic "deer lodge" has open views to the north-west from a slightly elevated position.
- 7.44 Further to the south and east, the village of Wintringham is located in a small valley and views are channelled towards the north-west, and largely screened by the plantation alongside Wintringham Beck.
- 7.45 On the north side of the A64, east of Rillington, views from Rillington Manor and properties within Scampston village are generally well-screened by plantations and woodland associated with Scampston Park. Views from Scampston Hall itself are directed across the Middle Fish Pond to Scampston Bridge, and to the Gothic lodge within the former deer park.
- 7.46 Woodland and plantations restrict views from West Knapton, Knapton Hall and East Knapton.

ASSESSMENT OF ROUTE OPTIONS

Magenta Route Option

- 7.47 The Magenta Route crosses the flat vale landscape to the north of the existing A64. For the majority of its length, the route passes through vale farmland, of landscape quality 4. The route cuts across the field pattern and thus does not fit with the local landscape structure. The eastern end of the route passes through parkland associated with Rillington Manor, of quality 3.
- 7.48 Considering the route from west to east, the proposed junction with the existing A64 Malton Road would cause increased visual impact for properties in Rillington Fields.

Approximately three properties would be substantially affected and 10 moderately affected.

- 7.49 Properties facing onto Malton Road, to the west of the junction with Collinsons Lane, would obtain open views to the route across farmland. However, there would be some scope for mitigating these views by the use of planting, to link with existing areas of woodland and plantations. These properties would also benefit from the decrease in traffic using the existing A64 through Rillington. Approximately 18 properties would be subject to moderate visual impact.
- 7.50 Similar views would be obtained from properties in Westgate and Sledgate roads, although these views are from the backs of properties and are likely to be partially screened by garden vegetation and fences. Of these properties, approximately 10 would be subject to moderate visual impact.
- 7.51 The Sewage Works would be substantially affected by the route. The route would also sever two public footpaths and a road used as a public path between the western limit of the scheme and Low Woodgate.
- 7.52 Properties in Low Moorgate and Low Moor Lane would experience increased visual impact, especially for those properties at the northern end of Low Moorgate. Approximately three properties would be substantially affected and six moderately affected.
- 7.53 To the east of the central crossroads in Rillington, there would be views to the Magenta Route from the backs of properties on the A64 Scarborough Road and in Sands Lane. Rillington Manor would obtain oblique views from the front of the house, partially screened by trees in the intervening parkland. Three public footpaths in this area would be severed by the proposed route. Approximately 14 properties would be subject to moderate visual impact.
- 7.54 Properties facing onto the A64 Scarborough Road, in East Field, would be subject to visual impact from the proposed route, although views would be partly screened by the vegetation of Sands Plantation. Approximately four properties would be substantially affected and 11 moderately affected. However, there would be scope for mitigating planting to link with Sands Plantation.

Southern Options (General)

- 7.55 The Red, Green and Blue Route Options are all proposed to pass to the south of Rillington. Between the western end of the scheme and Collinsons Lane, all three options cross part of the Wolds Area of High Landscape Value. This area forms part of the vale farmland landscape character area of quality 3. The Green Route and the eastern end of the Red Route cut through Firs Plantation, of quality 4. Between the eastern end of the scheme and the minor road which leads from the A64 to Scampston Mill Farm, the Green Route and the eastern end of the Red Route cross part of the Scampston Park Historic Park and Garden. This parkland character area is of quality 2.

Red Route Option

- 7.56 Considering the Red Route from west to east, the proposed junction with the existing A64 Malton Road would cause increased visual impact for properties at the eastern end of Rillington Fields, where approximately two properties would be moderately affected. The route would then pass close to the backs of the properties that face onto Malton Road. There would also be near-distance views from properties on Collinsons Lane and in Southlea. Approximately 30 properties would be substantially affected and 12 moderately affected by the proposed route. The route would also sever a public footpath which leads from Malton Road towards Bassett House. Bassett House would itself be subject to moderate visual impact.
- 7.57 The proposed route would cause high visual impact for users of the community facilities on the southern edge of Rillington. These comprise a playing field, cemetery, and allotment gardens. The route would also cut through Outgang Plantation causing some vegetation to be lost. However, there would be potential for replacement and additional planting, which would mitigate views and integrate with the existing plantation. Two public rights of way would be severed by the route. One property on the edge of Thorpe Bassett would incur moderate visual impact.
- 7.58 Two properties situated south of the allotment gardens would be subject to substantial visual impact. Properties in Woodlands Road would obtain views to the proposed route, seen across the allotment gardens and arable farmland. Those properties at the eastern end of Woodlands Road would be the most highly affected. Approximately 18 properties would be subject to substantial visual impact and 26 would be moderately affected.

- 7.59 There would be views to the route from the backs of houses which face onto the A64 Scarborough Road at East Field. Approximately 12 properties would be subject to moderate visual impact. Eastfield Farm would be subject to substantial visual impact.
- 7.60 At the eastern end of the scheme, the proposed junction with the existing A64 would be partly located within plantation woodland. This would help to mitigate the visual impact of the junction and could be supplemented with additional planting. Scampston Lodge would be subject to moderate visual impact and two public footpaths would be severed by the route in this area.

Blue Route Option (at ground level)

- 7.61 Considering the Blue Route from west to east, the proposed junction with the existing A64 Malton Road would cause some increased visual impact for properties at the eastern end of Rillington Fields, where approximately two properties would be moderately affected. The route would then pass close to the backs of the properties that face onto Malton Road. There would also be near-distance views from properties on Collinsons Lane and in Southlea. From the western end of the scheme to Collinsons Lane, the visual impact of the Blue Route would be similar to that of the Red Route. Approximately 30 properties would be subject to substantial visual impact and 13 would be moderately affected. The route would also sever one public footpath.
- 7.62 The proposed route would cause high visual impact for users of the playing field. However, for users of the cemetery and allotment gardens, the route alignment would provide greater scope than the Red Route for planting, to mitigate views and integrate with Outgang Plantation. Two public rights of way would be severed by the route. One property on the edge of Thorpe Bassett would be subject to substantial and one to moderate visual impact.
- 7.63 Two properties situated south of the allotment gardens would be subject to substantial visual impact. Properties in Woodlands Road would obtain views to the proposed route, seen across the allotment gardens and arable farmland. The Blue Route is aligned further away from these properties than the Red Route and the degree of visual impact would thus be less. Approximately 20 properties would be moderately affected.
- 7.64 The houses which face onto the A64 Scarborough Road at East Field would be little affected by the Blue Route.

- 7.65 The Blue Route would pass close to Scampston Mill Farm, causing a substantial degree of visual impact. One public footpath would also be severed by the route. The route would then cut through Mill Plantation, bridging Mill Stream to the south of the High Fish Pond. The impact on the setting of Scampston Bridge would depend on the extent of woodland removed in this area.
- 7.66 At the eastern end of the scheme, the junction of the proposed route with the existing A64 would be partially visible from Scampston Hall and from the “Gothic deer lodge” on the opposite side of the existing A64. These views, especially from Scampston Hall, would be partially screened by woodland and parkland trees within Scampston Park. The degree of visual impact and the effect on the historic park would depend on the extent of woodland which would be removed.

Blue Route Sub-Option

- 7.67 The Blue Route sub-option would follow the same alignment as the Blue Route, but the middle “third” of the route would be in cutting up to 4m in depth. The effect of lowering the central section of the route would be to decrease the visual impact from the south-eastern edge of Rillington as the majority of vehicles apart from high-sided lorries would be screened from view.
- 7.68 There would be little benefit in visual impact terms at the western end of the route. Approximately 2 properties would be moderately affected at Rillington Fields, while between the junction and Collinsons Lane approximately 27 properties would be substantially affected and 16 moderately affected.
- 7.69 Although properties on the northern edge of Thorpe Bassett would benefit from the route being in cutting, this benefit would partly be offset by the visual impact of the proposed Collinsons Lane overbridge, up to 3.5m above ground level. One property would be subject to substantial visual impact and one to moderate visual impact. Views from other properties in Thorpe Bassett are partially screened by intervening vegetation. On the northern side of the route, the two properties situated south of the allotment gardens would be moderately affected.
- 7.70 The effect of the cutting would be to limit the visual impact experienced by the majority of properties in Woodlands Road to the “slight” category. There would also be potential for planting to mitigate visual impact. Approximately eight properties at the eastern end of Woodlands Road would be moderately affected, as their views would also encompass the at-grade part of the route.

- 7.71 The landscape and visual effects of the eastern end of the Blue Route sub-option would be identical to that of the Blue Route (at ground level).

Green Route Option (at ground level)

- 7.72 The Green Route follows the same alignment as the Blue Route for the western half of the route. The visual impact incurred by Green Route option would thus be identical to those described above for the Blue Route for this part of the route.
- 7.73 Where the Green Route departs from the Blue Route alignment, the visual impact of the route would be slight for properties in Woodlands Road and on the A64 Scarborough Road at East Field. Scampston Mill Farm would also be subject to slight visual impact.
- 7.74 At the eastern end of the scheme, the Green Route would cut through Firs Plantation to join with the existing A64. The new junction would be accommodated within Firs Plantation, which would help to limit the impact of the road lighting. Scampston Lodge would be subject to moderate visual impact, and the proposals would have a limited adverse effect on the setting of this listed building. One public footpath would be severed by the route within Firs Plantation.

Green Route Sub-Option

- 7.75 The Green Route sub-option follows the same alignment as the Blue Route sub-option for the western half of the route. The visual impact incurred by Green Route sub-option would thus be identical to those described above for the Blue Route sub-option for this part of the route.
- 7.76 The landscape and visual effects of the eastern end of the Green Route sub-option would be identical to that of the Green Route.

CONCLUSIONS

Landscape Impact

- 7.77 Of all of the route options considered, the Magenta Route is likely to have the least impact on the landscape. For the majority of its length, this route passes through vale farmland of landscape quality 4, and there is minimal impact on the historic Scampston Park. However, the route cuts across the existing field pattern and does not fit well with the landscape structure.

- 7.78 The Red, Blue and Green Route options all pass through valuable farmland of landscape quality 3 for the most part. However, the Blue Route would have the greatest impact on the landscape of Scampston Park (quality 2), by cutting across the park, through Mill Plantation and crossing Mill Stream. The junction of the Blue Route and the existing A64 would also have an adverse effect on the setting of the Scampston Bridge. The effect of the Green Route on the landscape of Scampston Park would depend on the extent of vegetation to be removed. The junction of the Green Route and the existing A64 would also have an adverse effect on the setting of Scampston Lodge.
- 7.79 Thus of all the route options considered, the Blue Route is likely to have the greatest impact on the landscape.

Visual Impact

- 7.80 At this stage of assessment the visual impact has only been assessed for the opening year, and thus does not include the mitigating effect of any planting.
- 7.81 A summary of the visual impact incurred by residential properties and places of work is given in Table 7.1 below. At this stage these figures are approximate and should only be considered for comparative purposes.

Table 7.1 - Approximate Visual Impact (Opening Year)

Route Option	Substantial	Moderate	Slight
Magenta	10 residential; 1 place of work	69 residential; 2 places of work	34 residential
Red	51 residential; 1 place of work	54 residential	42 residential
Green	33 residential; 1 place of work	37 residential	70 residential
Green Sub-option	28 residential; 1 place of work	30 residential	77 residential
Blue	34 residential; 1 place of work	36 residential	71 residential
Blue Sub-option	29 residential; 1 place of work	29 residential	78 residential

- 7.82 From table 7.1, it can be seen that the Red Route would incur the greatest level of visual impact, affecting the highest number of properties in the substantial category. The Green and Blue Route options would incur very similar levels of visual impact. The Green and Blue Sub-Options, with the route partially in cutting, would also incur

very similar levels of visual impact, with fewer numbers in both the substantial and moderate categories than with the Green and Blue Route options.

- 7.83 The Magenta Route would affect the fewest number of properties in the substantial category, although the greatest number in the moderate category.
- 7.84 The potential for planting to mitigate visual impact should also be considered. On the north-west side of Rillington, there is little vegetation with which to integrate any new planting, and the use of linear planting belts adjacent to the Magenta Route would appear incongruous in the flat, open landscape. There would be more scope for an appropriate and effective planting scheme to mitigate route options which pass to the south of Rillington. Similarly the use of false cuttings as an integral part of the scheme would be more suited to a southern route option.

SUMMARY

- 7.85 On the basis of the landscape and visual assessment, the Magenta Route would have the least affect. The next best option would be the Green Route (In Cutting). Although the Blue Route (In Cutting) would have similar impacts to the Green Route, it would have an additional impact on Scampston Park.

8. WATER QUALITY AND DRAINAGE

INTRODUCTION

- 8.1 A Stage 2 Assessment was undertaken to assess the impact on ground water quality, surface water quality, land drainage and flood defence from the existing and proposed routes. This part of the Stage 2 Report summarises the results of the assessment and identifies the likely impacts on the water quality and fisheries.

EXISTING WATER ENVIRONMENT

- 8.2 This section describes the existing conditions with respect to surface water and groundwater courses. All surface water bodies, points of surface water abstraction and discharge are listed in Table 8.1 and shown on Figure 8.1.

Hydrology

- 8.3 The nearest body of surface water to the study area that is graded by the Environment Agency is Scampston Beck, which consists of Blakey Beck and Wintringham Beck. The Environment Agency grades rivers and canals in terms of their General Quality Assessment, which ranges from A (good) to F (bad). The general quality of Scampston Beck has been classified as grade B. Scampston Beck is identified as supporting a number of fish species including brown trout and bullheads.
- 8.4 Other surface water features identified in the study area include Rillington Beck, Scampston Lakes and four springs. There are also scattered ponds and numerous drainage ditches. Although ungraded individually, these features form potential pathways to the River Derwent, which is located to the north west of the study area. The Derwent is classified as a main river with grade B in water quality. The Environment Agency has stated that Scampston Lakes and the River Derwent support various species of fish, including trout.
- 8.5 No fisheries or biological information was available from the Environment Agency regarding Rillington Beck, as it is not subject to General Quality Assessment. It is

understood that none of the surface water features in the area are subject to a European Economic Community Fishery Designation. Surface water generally drains towards the north and west.

- 8.6 Three current surface water abstraction licenses have been identified, but only one of these is in the vicinity of the proposed routes. This abstraction is at Scampston Bridge and is used for spray irrigation. The remaining surface water abstraction points lie about 1.5km to the southeast of the study area.
- 8.7 Six discharge consents have been identified to the north of Rillington. Three are directly related to the sewage works. The remainder are private consents to discharge sewage effluent.
- 8.8 Two pollution incidents have been identified. One of the incidents was detailed as significant, involving a spill of oils or diesel into a freshwater stream/river (probably Rillington Beck) in 1989. The other incident was classified by the Environment Agency as minor.

Hydrogeology

- 8.9 The permeability of the soil is required to assess the rate of groundwater movement within the soil strata. The Environment Agency defines three geological classes of strata which are; major aquifer (highly permeable); minor aquifer (variably permeable) and non-aquifer (negligibly permeable). The major and minor aquifers are then divided into soil classes depending on the strata's ability to transmit/diffuse pollutants. The soil classes are high potential (most able to transmit pollutants), medium potential and low potential (least able).
- 8.10 Geological information shows that Rillington village and its immediate vicinity is underlain by Post Glacial Sand and Gravel with pockets of Kimmeridge Clay to the extreme south of the study area.
- 8.11 The Post Glacial Sand and Gravel is classified as a minor aquifer of high leaching potential and the Kimmeridge Clay is classified as a non-aquifer of low leaching potential.
- 8.12 Groundwater levels are likely to be in the order of about 0.5 to 0.75 metres below the surface near the railway to the north west of Rillington. The depth to groundwater generally deepens to the south and is rarely encountered in foundation excavations (up

to say 1.0m deep) in Rillington itself. The groundwater is estimated to be in the region of 1.2 to 1.5m deep to the south of Rillington.

- 8.13 In the vicinity of Scampston Lakes the groundwater is likely to be about 0.3m below ground level and about 5m below ground level in the vicinity of Rillington Beck. The presence of drainage ditches across the study area, along with springs, indicates a generally high water table.
- 8.14 The nearest groundwater abstraction borehole identified in the area lies about 1.2km north of Rillington and is used for spray irrigation. No groundwater discharge consents have been identified in the study area.
- 8.15 No groundwater protection zones or pollution incidents have been identified in relation to groundwater.
- 8.16 The baseline chemical quality of the groundwater in the area has been assessed using 'Water Supply (Water Quality) Regulations, 1989'.
- 8.17 The following sources were consulted to determine the presence of contaminated land in the study area;
- Local Authority
 - Environment Agency
 - BGS Recorded Landfills
 - Registered Animal Burial Sites
 - Authorised Waste Disposal Sites
- 8.18 No areas of contaminated land were identified.

ASSESSMENT OF IMPACTS ON WATER QUALITY

Methods of Assessment

- 8.19 Two methods have been used to assess impacts on water quality.

NATA Assessment

- 8.20 The DETR Guidance on the New Approach to Appraisal (NATA July 1998) uses a subjective approach for assessment.
- 8.21 Potential negative impacts of a proposal on watercourses are identified by assessing the sensitivity of the water environment and the potential of a proposal to cause harm to the water environment. Design and mitigation measures to manage the risks identified and reduce the impact of the proposal on the water environment are then considered.
- 8.22 In the assessment, water criteria is divided into Water Quality (surface water and groundwater) and Land Drainage for which nine indicators are considered. Each indicator is then assigned a sensitivity weighting of 'high', 'medium', or 'low'.

DMRB Assessment

- 8.23 The Design Manual for Roads and Bridges (DMRB Volume 11, Section 3, Part 10) is used to predict the levels of dissolved copper and zinc concentrates.
- 8.24 Initial estimates are made of the concentration of pollutants in a watercourse. An estimate is then made of the risk of an accident causing a serious spillage of pollutants to flow into a water body.

Assessment of Existing Conditions

- 8.25 The impact of the existing A64 on the water environment has been assessed so that it can be used as a baseline condition to allow comparisons to be made between existing and proposed conditions.

Quality and Abstraction.

- 8.26 The existing A64 runs through the centre of Rillington Village, crossing Scampston Lakes to the east of the village. Scampston has a good water quality (grade B).

Water is abstracted from Scampston Lakes for agricultural purposes, implying its indicator as 'medium' sensitivity in terms of quality and abstraction.

Boreholes and Fisheries.

- 8.27 The limited availability of information regarding borehole location and designated fisheries mean that these two indicators have been given a 'low' sensitivity score.

Groundwater Vulnerability

- 8.28 Geology reports indicate that the soil strata underlying the existing A64 is a minor aquifer and therefore the groundwater vulnerability indicator scores a 'medium' sensitivity. As a result, water quality has been given an overall sensitivity score of 'medium'.

Flood Risk

- 8.29 The A64 crosses a watercourse and there is a minor increase in risk of flooding. The 'Watercourses' and 'Flood Risk' indicators therefore score 'medium' sensitivity. Owing to the limited available information in respect to conservation value of the watercourses and location of flood plains, the overall sensitivity of land drainage and flood defence scores 'medium'.

Potential to Cause Harm

- 8.30 In the case of water quality the potential for the route to cause harm is assessed by considering the AADT flows, for which the existing A64 scores a 'low'. The area of the existing A64 is used to assess the potential for the existing route to cause harm on land drainage and flood defence, again the A64 scores 'low'.

Overall Result

- 8.31 Overall results indicate that the existing A64 has a 'Slight Negative' impact on the water environment.
- 8.32 The tables used in this assessment are contained in Volume 3.

Pollution

- 8.33 The risk of an accident on the existing A64 causing a serious spillage of pollutants that would flow into a watercourse, has been assessed as low. It is therefore predicted that the levels of copper and zinc in existing watercourses will not be exceeded for 95% of the time.
- 8.34 The worksheets for this assessment are contained in Volume 3.

Assessment of Proposals

- 8.35 To assess the impact of proposals on the water environment, a combined assessment of the routes has been undertaken. This is due to the fact that the assessment is general and qualitative and there are considerable similarities between each route.

Water Environment

- 8.36 To the north, the Magenta Route crosses five watercourses in total including Rillington Beck. To the south, the Red and Green Routes cross three watercourses including Rillington Beck. The Blue Route crosses four watercourses including Rillington Beck and Mill Stream as well as passing close to Scampston Lakes.
- 8.37 The Magenta and Blue Routes are longer than the Green and Red Routes and therefore have a greater landtake. Overall, the assessments show that the proposed routes would have similar impacts giving rise to a moderate negative impact on the water environment.

Potential to Cause Harm

- 8.38 The individual and overall scores for sensitivity of watercourses and the potential of the proposals to cause harm on water quality and land drainage/flood are the same for all the proposed routes.
- 8.39 The incorporation of balancing ponds in the highway drainage systems of the proposals would ensure that the discharge rates from the highway did not exceed agricultural run-off rates. This would minimise the risks of any potential flooding.

Pollution

- 8.40 In the short term there is likely to be an increase in pollutant run-off and risk from serious accident spillage due to the presence of construction traffic and earthwork operations. Effective mitigation measures would be installed in the new road and these measures should reduce levels of runoff pollutants in the long term. The risk of a serious spillage would also decrease, as the improved alignments of all the bypass options would improve safety and reduce the occurrences of accidents.
- 8.41 The proposed options would produce a net reduction of pollutant loading and spillage accident risk to surface and ground water, when compared to the existing route.
- 8.42 From the desk study, there are a number of potentially contaminative industries in the area. These are generally located within conurbations and are remote from the proposed routes. The exceptions are the sewage works, which is within 50m of the northern route and a garage/car repair area within 90m of the southern routes.
- 8.43 None of the proposed route options would have an impact on areas of potentially contaminated land.

CONCLUSION

- 8.44 Assessments have shown that all of the bypass routes would have a potential to cause harm to local watercourses owing to a new line of impact. However, this impact can be minimised by the inclusion of mitigation measures..
- 8.45 In the long term there is likely to be less of an impact from a proposed option when compared to the existing road. This would be achieved through the use of mitigation measures, such as petrol/oil interceptors and balancing ponds.
- 8.46 The proposed routes are unlikely to have a significant net impact on the water environment. The need for special mitigation measures for water quality has therefore not been investigated.

**Table 8.1 - Reference List of Identified Features Relating to the Water Environment
Shown on Figure 8.1**

Description	Coordinate	Source of Information
Scagglethorpe Bogs	SE(837741)	Shown on OS plans of 1983, 1975, 1958, 1953
Rosekell Spring	SE (839729)	Outside historical search area but is shown on current OS map
Pond	SE (841742)	Shown on OS plans of 1958, 1938 and 1913
Planning Application for Workshop	SE (842755)	Envirocheck Report
Discharge Consent	SE (845755)	Envirocheck Report
Pond	SE (846735)	Shown on OS plans of 1854
Garage	SE (847739)	Envirocheck Report
Car Servicing and Repair	SE (847739)	Envirocheck Report
Sewage Works	SE (847747)	Shown on OS plan of 1975
Pond	SE (848733)	Shown on OS plans of 1975, 1958, 1952, 1912, 1891 and 1854
Discharge Consent	SE (848747)	Envirocheck Report
Discharge Consents (x3)	SE (849747)	Envirocheck Report
Pond	SE (848750)	Shown on OS plans of 1975, 1958, 1953, 1913, 1892 and 1854
Saw Mill	SE (850742)	Envirocheck Report
Coal Merchants	SE (851744)	Envirocheck Report
Pond	SE (850747)	Shown on OS plans of 1975, 1958, 1953, 1913, 1892 and 1854
Discharge Consent	SE (850750)	Envirocheck Report
Pond	SE (850751)	Shown on OS plans of 1958, 1953, 1913, 1892 and 1854
Pond	SE (851747)	Shown on OS plans of 1958, 1953, 1913, 1892 and 1854
Car Servicing and Repair	SE (852745)	Envirocheck Report
Pond	SE (853734)	Shown on OS plans of 1958, 1952, 1912, 1891 and 1854
Pump	SE (853744)	Shown on OS plan of 1854
Pollution Incident	SE (853744)	Envirocheck Report
Pollution Incident	SE (853745)	Envirocheck Report
Planning Application for Car Show Room	SE (854744)	Envirocheck Report
Plastic Mould and Tool Manufacture	SE (856741)	Envirocheck Report
Groundwater Abstraction	SE (856761)	Environment Agency
Electronic Engineering	SE (856744)	Envirocheck Report
Discharge Consent	SE (860750)	Envirocheck Report
Pond	SE (862736)	Shown on OS plans of 1975, 1958, 1952, 1912, 1891 and 1854
Pond	SE (862739)	Shown on OS plans of 1975, 1958, 1952 and 1912
Springs	SE (862741)	Shown on OS plans of 1958, 1952, 1912, 1891 and 1854
Ponds	SE (864739)	Shown on OS plan of 1975
Pond	SE (867742)	Shown on OS plan of 1854
Surface Water Abstraction	SE (867748)	Environment Agency
Spring	SE (868729)	Outside historical search area but is shown on current OS map
Brick and Tile Yard	SE (843734)	Shown on OS plans of 1854
Spring	SE (868732)	Outside historical search area but is shown on current OS map
Discharge Consent	SE (872741)	Envirocheck Report
Surface Water Abstraction	SE (873732)	Environment Agency
Surface Water Abstraction	SE (875734)	Environment Agency
Sand Pit	SE (871748)	Shown on OS plans of 1958, 1953 and 1913
Sand Pit	SE (873749)	Shown on OS plans of 1958, 1953, 1913 and 1892
Pit	SE (876740)	Shown on OS plans of 1975, 1958, 1952, 1912 and 1854
Old Sand Pit	SE (863743)	Shown on OS plans of 1958, 1953, 1913 and 1892
Sand Pit	SE (867742)	Shown on OS plan of 1854

9. ECOLOGY AND NATURE CONSERVATION

METHODOLOGY

- 9.1 A consultation review covering the area of all the proposed route options (approximately 2km either side of the area), was undertaken in October and November 1999, by telephone and letter. To supplement, update and verify existing data, a walkover survey was undertaken in January 2000.
- 9.2 The methodology for the walkover survey was performed in accordance with the JNCC publication Handbook for Phase 1 Habitat Surveys, 1990 (ref. 1). This survey was constrained by the time of year and there being no direct access to land, therefore observations were taken from existing roads and footpaths. Notes were made on the habitat types, significant species and areas of nature conservation value. Owing to the seasonal restrictions, the assessment was largely derived from existing sources of survey data.
- 9.3 Fragmentation to habitats and obstruction to wildlife corridors can be one of the most damaging effects of road improvements. With this in mind, river or stream corridors and hedgerows have been noted and assessed on their importance as a link between habitats.
- 9.4 In order to evaluate the potential ecological consequences of the proposed bypass options, an objective assessment has been undertaken by using the methodology set out in the New Approach To Appraisal (NATA, DETR 1998). This assesses the level of impact based on two main factors: the type and severity of the impact and the scale of the importance of the nature conservation feature by initially assigning a comparative ecological value to the habitats along the route. This has been expressed mainly in terms of its level of importance relating to the species diversity and presence of any uncommon species, but has also taken account of factors such as its size, rarity, naturalness, biodiversity, contiguity with other sites, history and uniqueness (Ratcliffe criteria 1977, ref. 2).
- 9.5 The assessment score takes account of the nature conservation evaluation Category that the site falls under and the type (adverse, beneficial; indirect, direct; short-term,

long-term; individual, cumulative) and severity of the ecological impact. The intermediate scale of impact has not been used for this Stage 2 assessment and the level of information available is not sufficient to assess whether the integrity of each site has been affected.

- 9.6 A series of NATA tables have been prepared for each of the main nature conservation features that occur in the swathe of land that could potentially be affected by the proposed Stage 2 improvements. As this is a Stage 2 DMRB appraisal, the NATA is inconclusive in its findings as there is insufficient information to accurately assess all the potential impacts. Seasonal constraints and limited access to the site has also influenced the degree to which new survey data has been recorded during the walkover survey. However, sufficient information has been collated and reviewed in order to meet the DMRB Stage 2 objectives.
- 9.7 Scientific names of floral and faunal species have been given when first mentioned in the text, but not thereafter.
- 9.8 Details of the consultation are given in the following section, with a summary of the walkover survey given in the section entitled “Assessment of route corridors”. NATA tables can be found in Appendix H.

EXISTING CONDITIONS

- 9.9 Rillington is a large village situated at the foot of the northern slopes of The Yorkshire Wolds Area of High Landscape Value. The surrounding area is rural comprising agricultural land with small isolated pockets of coniferous woodland.
- 9.10 The proposed improvement area covers the length of road between Five Beeches Farm and West Knapton.
- 9.11 The size of the current road corridor including the verges is between 25 and 30 metres wide. It is assumed that proposed routes would require similar land-take.
- 9.12 As part of the assessment, consultation with local authorities, statutory bodies and other interested parties was undertaken.

Consultations

- 9.13 The following organisations were contacted by telephone or letter to obtain ecological and nature conservation information for the area:

English Nature: Steven Morley – Conservation Officer

- 9.14 Mr Morley provided copies of phase 1 habitat maps and citation sheets for SSSIs (Sites of Special Scientific Interest) in the nearby area. In addition, information regarding badger setts and bat roosts was supplied. Information for invertebrates was not available.

Environment Agency: Carol Barrett – Customer Contact

- 9.15 Ms Barrett provided biological and fisheries information for Mill Beck, Mill Pond, High Fish Pond, and Wintringham/Scampston Beck and biological field data sheets for Rillington Beck.

North Yorkshire County Council: Paul Jackson

- 9.16 An update of non-statutory site descriptions is being undertaken, but it is not available for consultation use at present.

Ryedale District Council: John Clayton – Tree Officer

- 9.17 Confirmed that there are no Tree Protection Orders (TPOs) in the area.

Ryedale District Council: Martin Hammond – Countryside Officer

- 9.18 A local plan was provided which gave details of all SSSIs and SINC (Sites of Importance for Nature Conservation) within the district. Mr Hammond also provided information on known habitats for bats and indicated the presence of badgers and barn owls. Floristic information for interesting road verges in the area was also provided. In addition to the above, we have been advised that there are little or no records of any ecologically interesting invertebrates in the affected area and information regarding ponds and hedgerows is negligible. Parish boundary maps and a copy of the local Biodiversity Audit have been obtained. Mr Hammond also advised that all watercourses and ditches in the area have the potential to support water vole.

Yorkshire Wildlife Trust: Robert Masheder

- 9.19 The Trust could not provide any biological data for the area.

Ryedale Badger Group: Jean Thorp

- 9.20 A verbal response has been received confirming that badgers are active along this stretch of A64. Following the walkover survey, further consultation was undertaken revealing that there are badger setts bordering the area indicated by recorded road traffic accidents over the past years.

North Yorkshire Bat Group: John Drewett

- 9.21 No additional information was gained

Local recorder for otters: Laura Winter

- 9.22 Mrs Winter confirmed that there is otter activity on all the tributaries of the Derwent and that Scampston Lake may be of interest.

The Pickering Hawk and Owl Trust: Ted Darlington

- 9.23 The Trust had no registered barn owl nesting sites within the route options corridor and no reported sightings. However, they indicated that the area is prime habitat for these birds and could therefore not rule out the possibility of their presence.

Yorkshire Naturalists Union – Freshwater Biology Section: Leslie Magee

- 9.24 Unable to provide any information at present.

Yorkshire Naturalists Union – Conchological Section: Mr A Norris

- 9.25 Mr Norris advised that he was not aware of any species of note within the consultation area.

Yorkshire Naturalists Union – Botanical Section: Mr P Cook

- 9.26 Vascular plant information is available for review. Mr Cook is the VC61 recorder for the BSBI.

Aerial Photography

- 9.27 Aerial photographs taken in December 1999 were provided by Steve Allen Photography. No other information or assessment reports were available for review.

Statutory and Non Statutory Designations

- 9.28 Statutory designations placed on sites of nature conservation interest include National Nature Reserves (NNRs), Sites of Special Scientific Interest (SSSIs) and Local Nature Reserves (LNRs).
- 9.29 NNRs are designated under section 35 of the Wildlife and Countryside Act 1981 (as amended) and the National Parks and Access to the Countryside Act 1949. This designation represents the most ecologically valuable sites in the UK, each being irreplaceable and unique in the region. In addition, many NNRs are of international importance. There are no NNRs in the corridor of any route options.
- 9.30 Sites of national importance and international importance, relating to fauna, flora, geological or physiological features, are afforded some protection from potentially damaging operations by designation as Sites of Special Scientific Interest. The statutory body for the designation of such sites of national importance in England is English Nature (EN). All NNRs are also SSSIs.
- 9.31 LNRs are designated by local authorities in consultation with English Nature under section 21 of the National Parks and Access to the Countryside Act 1949.
- 9.32 Non-statutory sites are those which are afforded no statutory protection but are designated by local authorities due to their local value. They may be given a title such as Site of Importance for Nature Conservation (SINC) or Site of Biological Interest (SBI), or left graded according to habitat survey information. Policies for protection of such designated sites is usually contained in development plans. They may also be protected from felling by TPOs.
- 9.33 Ancient Woodland Sites are not offered statutory protection but are collated by English Nature in the Ancient Woodland Inventory. These woodlands are known to have had continuous woodland cover since at least 1600AD and have only been cleared of underwood for timber production. They are of particular importance since many form the only surviving fragments of primeval climax woodland communities. Their importance may also be protected by being designated as a SSSI, NNR or other recognised non-statutory site.
- 9.34 Hedgerows are by definition, a barrier of small trees and shrubs preventing the movement of stock or acting as a boundary between landowners or parishes. Mature trees within hedgerows are considered to be part of that hedgerow. The Hedgerows Act 1997, now offers some protection to established tracts of hedgerows. Therefore,

improvement works that may involve the grubbing-out or destruction of hedgerows will require prior notification to the relevant local planning authority. Depending on the status of a hedgerow, i.e. whether it is a historical boundary or is particularly rich in species, the local authority may issue a notice requiring that a particular hedgerow be maintained.

Site Description

- 9.35 The surrounding area of Rillington is dominated by agricultural and pastoral land-use. The intensive farming has resulted in a decline in populations of lapwing and skylark in the area, while oystercatchers have become regular breeders on the sugar beet fields (ref. 3).
- 9.36 There is very little unimproved grassland although roadside verges contain remnant populations of interesting grassland communities. However, there are some large tracts of set-aside land in the area, which are attractive to seed eating birds such as goldfinch and linnet. These, as well as unsprayed field margins may also support uncommon arable plants such as corn marigold (*Chrysanthemum segetum*) and greater hemp nettle (*Galeopsis sp.*) (ref. 3).
- 9.37 The Rillington area is sparsely wooded comprising isolated pockets of coniferous or mixed plantation. None of the woods are designated as important for nature conservation although they may provide suitable habitats for badgers, a species protected by the Protection of Badgers Act 1992. They may also support associated flora such as common wintergreen (*Pyrola minor*) and other limc-avoiding species.
- 9.38 Bats are found in the area and it is understood that there may also be barn owls. Both species are protected under the Wildlife & Countryside Act 1981 (as amended 1985).
- 9.39 Owing to the intensive farming in the area and the lack of natural woodland, there are few designated sites in the Rillington area. Only two exist within our consultation area, these are Wintringham Marsh SSSI, which lies approximately 1.5km south of the existing A64; and West Knapton Road Verge SINC, which immediately abuts the road.

Designated Sites

Statutory Sites

(i) Wintringham Marsh - SSSI

- 9.40 This area has declined owing to pressure from agricultural reclamation, but it still retains fragments of the original communities. A transition from marsh communities to damp grassland and dry base-rich grassland can be observed. The marsh is species-rich with many scarce or local plants recorded. Damp grassland dominated by purple moor-grass (*Molinia caerulea*) grades into a blunt-flowered rush (*Juncus subnodulosus*) community. The dry grassland comprises a varied herb flora dominated by Fescue species. The marsh flora is rich and supports many scarce or local species, including long-stalked yellow sedge (*Carex lepidocarpa*), bottle sedge (*C. rostrata*), tawny sedge (*C. hostiana*), glaucous sedge (*C. panicea*) and black bog-rush (*Schoenus nigricans*). The citation sheet for this site is reproduced in Appendix C.

Non-Statutory Sites

(i) West Knapton Road Verge - SINC

- 9.41 This area covers approximately 0.75 hectares (ha) of 'Breckland flora' established on a sandy substrate and comprises acidic dry grassland with dwarf herb vegetation closely grazed by rabbits. This habitat is of local importance and it has a very restricted distribution within the region. Bare patches provide areas for small annuals to establish including bugloss (*Anchusa arvensis*), thyme-leaved sandwort (*Arenaria serpyllifolia*), sticky mouse-ear (*Cerastium glomeratum*), field mouse-ear (*Cerastium arvense*), birdfoot (*Ornithopus perpusillus*), whitlow grass (*Erophilla verna*), slender trefoil (*Trifolium micranthum*) and knotted clover (*Trifolium striatum*).

Other Sites of Nature Conservation Value

Features

Hedgerows

- 9.42 Although most are highly maintained and of poor species diversity, many of the hedgerows within the survey area act as valuable biological corridors linking fragments of woodland and other habitats.

Two fields enclosed by Sands Wood

- 9.43 These are of exceptional conservation value supporting uncommon 'Breckland' flora (NVC Community U1c). These fallow fields are rabbit-grazed and support notable species including the regionally rare knotted clover, cornfield knotgrass (*Polygonum rurivagum*) and nationally scarce dense silky-bent (*Apera interrupta*).

Woodland

- a) Adjacent to Rillington Manor. Grid reference SE 855 748.
Coniferous plantation
- b) Edge Plantation. Grid reference SE 856 753.
Coniferous plantation
- c) Sands Plantation. Grid reference SE 858 748
Coniferous plantation with a poor ground flora but interest for rooks (*Corvus frugilegus*) and crows (*C. corone corone*).
- d) Lodge Plantation. Grid reference SE 860 748
Coniferous plantation with notable bird interest, i.e. coal tits (*Parus ater*), blue tits (*Parus caeruleus*) and great tits (*Parus major*). This plantation exhibits a reasonably diverse understorey, however Oregon-grape (*Mahonia aquifolium*) is colonising the margins and becoming dominant.
- e) Outgang Plantation. Grid reference SE 857 738
Mixed plantation of young Scots pine and sycamore.
- f) Firs Plantation. Grid reference SE 864 747.
Coniferous plantation with bramble dominating the understorey.
- g) Scampston Park. Grid reference SE 865 749
Coniferous plantation
- h) Mill Plantation. Grid reference SE 867 745.
Mixed plantation of pine (*Pinus* sp.), poplar (*Populus* sp), and sycamore (*Acer pseudoplatanus*) with an understorey of elder (*Sambucus nigra*) and hawthorn (*Crataegus monogyna*)
- i) Park Plantation. Grid reference SE 873 748.
Coniferous plantation

- j) Sands Wood. Grid reference SE 876 749.

Coniferous plantation with known badger activity.

Streams, Becks and Ditches

- a) Rillington Beck

This flows from The Yorkshire Wolds, through the village and into the River Derwent to the north. A sewage treatment works is situated to the north of the village and this has outfalls into the stream. There is no water quality information available.

- b) Wintringham/Scampston Beck

Supports brown trout, grayling and BAP (Biodiversity Action Plan) species such as bullhead and lamprey. The biological water quality of Scampston Beck at Scampston is class B1B (good)

- c) Blakey Beck

There is no water quality information available for this beck, although it links Scampston and Wintringham Beck. It is likely therefore, that the water quality is similar.

- d) Mill Race

Brown trout spawning and nursery stream which also contains BAP species (Bullhead and Lamprey). The biological water quality of Mill Beck downstream of Howl Beck is class B1B (good)

- e) Many drainage ditches exist in the Vale of Pickering, with varying habitat potential to wildlife. Those that are extensively managed through dredging and receive agricultural run-off, offer little of wildlife interest, while less eutrophic ditches can provide a valuable habitat to aquatic invertebrates and amphibians as well as interesting plant assemblages (ref. 3). There are a number of drainage ditches serving the fields to the south-east of the village, some of which are overgrown with vegetation while others have been cleared. All have the potential to support populations of water vole. One field ditch is of particular note due to the number of badger sett entrances observed on its left bank.

Ponds and Lakes

9.44 A survey of the Helmsley to Ebberston and Malton to Pickering road corridors (1996) showed that 33.2% of ponds on recent maps had either disappeared or only contained water during the wetter seasons. 21.6% were suitable habitats for great crested newts although only 5 out of the 47 water-bodies surveyed supported them (ref. 4).

a) Adjacent to Rectory Farm House. Grid reference SE 850 747

This is a large pond with no aquatic vegetation and no apparent associated fauna.

b) Near Low Moor Lane. Grid reference SE 849 751

c) South of Sands Lane. Grid reference SE 865 739

d) Middle Fish Pond. Grid reference SE 867 750

Contains some trout and eel and is likely to be stocked with coarse fish in the future. It is also notable for its importance to breeding populations of gadwall (ref. 3)

e) High Fish Pond. Grid reference SE 868 748

Surrounded by reed sweet grass (*Glyceria maxima*) and scattered willow (*Salix sp.*), with frequent great willowherb (*Epilobium hirsutum*) and occasional yellow flag iris (*Iris pseudacorus*).

f) Mill Pond. Grid reference SE 868 743

Entirely surrounded by reed sweet grass and supports several species of damselflies and visiting birds.

Protected Species

Otters (Lutra lutra)

9.45 It is accepted that these animals require large territories and therefore may use areas some distance away from the Rivers Derwent and Rye where they are known to exist. They are not restricted to main rivers and will use minor becks and ditches as foraging corridors. Consultation with a local recorder for otters suggested that Scampston Lake might be a suitable habitat for otters.

9.46 This species is protected under schedule 5 and 6 of the Wildlife and Countryside Act 1981, which protects any otter from disturbance whilst in its holt or damage, destruction or obstruction of access to its holt. The otter is also offered protection

under the Conservation (Natural Habitats etc) Regulations 1994, which transposes the EC Habitat Directive 92/43/EEC into national law. A re-introduction programme was initiated in 1990 with a total of nineteen otters being introduced into the River Derwent catchment over a period of three years.

Badgers (Meles meles)

- 9.47 A number of badger setts are located in the affected area. These are in Sands Wood and Scampston Park area. Further setts have been observed in the West field area. Further consultation with the Ryedale Badger Group has revealed that recent observations and badger kills on the A64 indicate that there may be additional setts located in the Bassett House area and the small triangular wood at grid reference SE 838 742.
- 9.48 Badgers and their setts are protected under the Protection of Badgers Act 1992. This act consolidates all previous legislation and makes it illegal to deliberately kill, injure or take a badger; dig, ring or mark a badger; disturb one whilst in its sett, or damage, destroy or obstruct its sett. The current legislation does not directly protect habitats such as foraging areas that are used by badgers.

Dormouse (Muscardius avellanarius)

- 9.49 It is understood that the dormouse is probably now extinct in Ryedale, although it was a former stronghold (ref. 3). Their preferred habitat is a diverse woodland supporting fruiting trees and a good understorey, with hazel (*Corylus avellana*) being a particularly important food source during the winter months. As this habitat is scarce in the area, it is unlikely that a re-introduction programme within the route options corridor will occur in the near future.
- 9.50 The Dormouse is listed on Appendix 3 of the Bonn Convention and Annex IV of the EC Habitats Directive. It is protected under schedule 2 of the Conservation (Natural Habitats etc) Regulations 1994 and Schedule 5 of the Wildlife and Countryside Act 1981.

Bats

- 9.51 According to the information provided by Ryedale District Council, there is a long established Natterer's bat roost at Rillington Church. Other potential roost sites would be found in rot holes, splits and gaps in the bark of dead and living trees along the route. Bats use hedgerows and woodland edge habitats as flight paths and favour such natural lines to navigate between roosts and feeding areas, hence removal of

such features could cause indirect harm to a nearby roost. Habitats for Daubenton's bat also exist in the area, particularly in the Scampston area, where bridges over water would be ideal nursery grounds.

- 9.52 Bats are protected under schedules 5 & 6 of the Wildlife & Countryside Act 1981 and under the Habitats Regulations 1994.

Red Squirrel (Scurus vulgaris)

- 9.53 Red squirrel only survive in discrete populations in England owing to competition by grey squirrel. We understand from the local authority that no red squirrel are present in the area, however, owing to the number of coniferous plantations in this District, a re-introduction programme could be considered at some stage in the future.

Water Voles (Arvicola terrestris)

- 9.54 No water vole information has been received from the Environment Agency at the time of writing this report. However potential habitats can be found in the ditches that drain the arable areas and selected stretches of Rillington Beck. Martin Hammond, Ryedale District Councils' Conservation Officer, stated that it is quite common for water voles to inhabit potentially polluted drainage ditches.
- 9.55 This species has suffered through loss and fragmentation of habitat, therefore, since April 1998, it has been protected under schedule 5 of the Wildlife & Countryside Act 1981 in respect of section 9(4) only. It is also on the BAP priority species list.

Barn Owls (Tyto alba)

- 9.56 According to the Pickering Hawk and Owl Trust, Barn Owls may inhabit the survey area, although no nesting sites have been confirmed. Suitable nesting sites can be located in cavities in both ash and oak, as well as both new and old farm buildings. Where the removal of vegetation, particularly, linear hedgerows and groups of trees is required, mitigation measure will be necessary. This species is in decline in the UK, hence it is protected under schedule 1 of the Wildlife & Countryside Act 1981.

Birds (general)

- 9.57 There are numerous habitats along the A64 for woodland, grassland and riparian birds. Although conifer afforestation has resulted in the loss of some valuable habitats, it has however, enabled species such as the common crossbill (*Loxia curvirostra*), goshawk (*Accipiter gentilis*) and nightjar (*Caprimulgus europaeus*) to

establish. Oyster catchers (*Haematopus ostralegus*), curlew (*Numenius arquata*) and Redshank (*Tringa totanus*) are found in the Scampston area as well as greylag goose (*Anser anser*) and Gadwall (*Anas strepera*) on Scampston Lake. Further species include snipe (*Gallinago gallinago*), turtle dove (*Streptopelia turtur*) and the short-eared owl (*Asio flammeus*) (ref. 4)

- 9.58 All birds are protected under Section 1 of the Wildlife & Countryside Act 1981. This makes it an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy the nest (whilst being built or in use) or the eggs.

Brown Hare (Lepus europaeus)

- 9.59 Brown Hares maintain a healthy population on The Yorkshire Wolds and it is therefore likely that there may be populations exploiting the long-term set aside in the Rillington area (ref. 4).
- 9.60 Brown Hares are noted in the UK Biodiversity Action Plan as a species in considerable decline owing to loss of habitat and changes in agricultural practices. Hence, the objectives of the plan are to maintain and expand existing populations.

Great Crested Newt (Triturus cristatus)

- 9.61 It is not yet known if great crested newts are present within the survey area. A thorough investigation into the many small ponds would reveal likely habitats.
- 9.62 This species has declined owing to loss and degradation of suitable breeding ponds and hence are protected under schedule 5 of the Wildlife & Countryside Act 1981 and under the EC Habitat Directive 92/43/EEC.

White Clawed Crayfish (Austropotamobius pallipes)

- 9.63 Recent surveys (1996) of this species show populations in both the Rivers Derwent and Rye and it is suggested that they may occur locally in neighbouring becks and streams. They were once widespread in the Ryedale area although pollution and competition from introduced species has led to their decline (ref. 4). Martin Hammond, Ryedale District Councils Conservation Officer, advised that there are anecdotal reports that the fish farm at Mill Farm used to contain the non-native signal crayfish, which have since escaped.

- 9.64 White clawed crayfish are listed in Appendix III of the Bern Convention and Annexes II and V of the EC Habitats Directive 92/43/EEC. They are also listed in Schedule 5 of the Wildlife & Countryside Act 1981.

Freshwater Invertebrates (general)

- 9.65 No freshwater invertebrate data has been received from the Environment Agency at the time of writing this report and this should be included in any further assessment.

ASSESSMENT OF ROUTE CORRIDORS

Walkover Survey

- 9.66 The following descriptions cover the areas covered by the route options to the north and the south of the village. The main description is followed by an assessment of the impacts of each option. Generic mitigation measures are identified for each option. These impacts are broad and generic in nature, in accordance with DMRB objectives and can be grouped as given below:
- segregation, isolation or fragmentation of habitats, communities and wildlife corridors;
 - direct removal of existing habitats and small communities;
 - changes in hydrology: increase in road run-off that is contaminated, increase in erosion etc;
 - increase in general disturbance levels such as lighting and noise;
 - vehicle exhaust emissions affecting habitats previously not exposed;
 - indirect effects during construction: soil storage and dumping, trampling, contaminated run-off from fuel and oil change areas etc;
 - increased access potentially leading to roadside developments which could result in future impacts to sites of ecological value in the area.

North Rillington

General Description

- 9.67 Commencing at the Five Beeches Farm, the land-use is predominately arable with many fields freshly ploughed at the time of survey. Track and field margins where present, comprised ruderal communities including cleavers (*Galium aparine*), white dead nettle (*Lamium album*), snowdrops (*Galanthus nivalis*), ivy (*Hedera helix*), wild carrot (*Daucus carota*) and occasional stands of rosebay willowherb (*Chamaenerion angustifolium*).
- 9.68 To the north of Five Beeches Farm is Scagglethorpe Bogs. This is an area of mixed woodland which is believed to contain an active badger sett.
- 9.69 The majority of the hedgerows bordering the fields were intensively maintained species-poor and no longer stock-proof. Species include hawthorn and elder, with little or no ground flora present. In many places large tracts have been grubbed out leaving isolated remnants (refer to plate 1). Some mature trees line the fields, including Scots pine (*Pinus sylvestris*), ash (*Fraxinus excelsior*), beech (*Fagus sylvatica*), horse-chestnut (*Aesculus hippocastanum*) and sycamore.
- 9.70 There are a number of ditches in the West Field area. The ditch parallel to Five Beeches Farm was overgrown with rank grasses and ruderals although it was still free flowing. Another ditch in the centre of the West Fields area (refer to plate 2) had recently been cleared of vegetation revealing a relatively fast flowing channel. The channel measured approximately 0.5m wide with a gravel bed and the top banks were approximately 5m high. A large badger sett(s) comprising eight entrances was located in the left bank of the ditch although the level of activity was difficult to determine owing to the time of year. Consultation with the local badger group revealed that the sett was likely to be an outlier and had since been abandoned.
- 9.71 Further drainage ditches are located either side of Rillington Beck and adjacent to the sewage treatment works.
- 9.72 The steep banks of the drainage ditches also provide possible habitat for water voles, although no evidence was found on this survey. Nonetheless, these ditches provide valuable links between habitats allowing animals to move freely between different feeding zones. The surrounding pasture and arable land enclosed by hedgerows would provide a moderate food source.

- 9.73 The semi-improved grassland west of Rectory Farm House was grazed by sheep and exhibited ancient ridge and furrow markings (refer to plate 3). The pond within this field offered little of ecological interest. Both submerged aquatic flora and marginal vegetation were absent and it is therefore unlikely to be a suitable habitat for great crested newts. It may however, be stocked with fish.
- 9.74 From the sewage treatment works, the land use changes to that of pasture with many of the fields containing ancient ridge and furrow markings. These semi-improved grasslands are mostly grazed by sheep or used as paddocks for horses. Some mature chestnuts (*Aesculus hippocastanum*) were identified as standards as well as in the hedgerows (refer to plate 4).
- 9.75 Rillington Beck flows out of a culvert at this point into a moderately fast flowing channel with the substrate comprising clean gravel with a small amount of leaf litter. A number of outfalls enter the beck in the proximity of the sewage treatment works, but downstream the water remains clear with high, steep (almost vertical) banks, which could provide a suitable habitat for kingfisher, sandmartin and water vole.
- 9.76 Conifer plantations surrounding Rillington Manor comprised almost exclusively mature stands of Scots pine with one small area of younger specimens. This area was grazed by goats. The ground flora of much of the coniferous plantations comprised poor grassland with an absence of herbaceous species. However, they did offer some ecological interest for nesting birds.
- 9.77 Sands Plantation was similar in composition to those adjacent to Rillington Manor, comprising poor ground flora and only limited ecological interest in the form of nesting areas for birds including rooks and crows. Sands Lane, however, contained many mature chestnut and sycamore (refer to plate 5).
- 9.78 Unlike the coniferous plantations adjacent to Rillington Manor, Lodge Plantation was more diverse, dominated by Scots pine with occasional sycamore and some mature chestnut. There was some standing deadwood found in the plantation, offering habitats for both bats and woodpeckers alike. Numerous seed-eating birds were observed including coal tits, blue tits and great tits. Owing to occasional gaps in the canopy, the ground flora was more diverse in this plantation, including rosebay willowherb, lesser burdock (*Arctium minus*) and bramble (*Rubus fruticosus*) (refer to plate 6). It is also likely that this may include common wintergreen, a species often associated with acidic conditions. However, areas of Oregon-grape exist and these can be invasive and out-compete native flora.

Route Assessments

- 9.79 The Magenta Option would involve the removal of 7.9 ha arable land, 0.07ha hedgerows, 1.1 ha semi-improved grassland and 0.36 ha plantation.
- 9.80 This would result in adverse impacts to small animals, birds and invertebrates that currently use these habitats. Barn owls could also be affected as they generally fly over the tops of vegetation and are attracted to car headlights.
- 9.81 The route would cross five watercourses including Rillington Beck. One of the watercourses would have a large badger sett approximately 10 metres from the proposed route. However, it is not known whether the sett is active. Although the exact status of water vole has not been determined, there is a high probability that they could be affected.
- 9.82 Where the route would cross Rillington Beck, there could be a potential impact on existing ecology.
- 9.83 The losses to semi improved grassland could have an impact on the ancient pasture which exhibits ridge and furrow markings. This may be of importance from an historical point of view.

South Rillington

General Description

- 9.84 Starting from Five Beeches Farm, the land use to the south of the village is almost exclusively arable. Many of the fields were ploughed or planted with a spring crop at the time of survey and few in the immediate line of the proposed routes appeared to be set aside (refer to plates 7 and 8). Fields to the south of the area may however, have areas of set aside which may be of ecological interest. Furthermore, The Yorkshire Wolds to the south are known to support a population of brown hares, which exploit long term set aside land.
- 9.85 Field margins were small or absent and were therefore unlikely to support any interesting communities. The hedgerows were gappy and species poor, made up almost exclusively of hawthorn and elder with few mature trees.
- 9.86 There was no access to the ditch draining the fields near Collinsons Lane, however, it is likely to be similar to that in the West field area, and could support populations of water vole and perhaps badger.

- 9.87 The area surrounding Rillington Beck contains a number of ecologically interesting habitats. To the east of the beck there is an area of rank grassland supporting tall ruderals such as lesser burdock, a favoured food source for goldfinches (*Carduelis carduelis*). Adjacent to this, is a small plantation of English elm (*Ulmus procera*), which is suckering over a large area. This provides a dense scrub area, which is likely to provide cover for birds (refer to plate 9). Tree cover continues along the beck until reaching the village (refer to plate 10).
- 9.88 Rillington Beck is a small and relatively fast flowing beck with a sand and gravel bed substrate. The small depression in which the beck is situated gives rise to a marginal habitat approximately 2m either side of the beck. Owing to the time of year many species that may be present, were not visible. Nonetheless, stands of rosebay willowherb were evident and much of the marginal area comprised fool's water-cress (*Apium nodiflorum*) and ramsons (*Allium ursinum*) (refer to plate 11). Several mature crack willow (*Salix fragilis*) line the stream bed and a mature Scots pine is adjacent to the ford where Sands Lane (track) crosses the beck.
- 9.89 The light sandy soils of the steep banks either side of the beck are ideal for badgers and it is likely that there are badger setts along this corridor. An entrance and some excavated material was observed near the ford, although appeared to be a collapsed or disused sett. The channel of this beck also provides a valuable wildlife corridor, linking hedgerows and woodlands alike.
- 9.90 To the east of the beck, a small area of semi-improved grassland occurs. This is likely to be managed by sheep grazing although none was evident at the time of survey. Adjacent to this area arable land dominates, most of which was stubble from a previous crop. A mature hedgerow and earth bank separates these crop fields from the field below Firs Plantation, where the land use is given over to turf production. Pigs are kept on the adjacent field.
- 9.91 Sands Lane (track) is bordered on both sides by hedgerows comprising hawthorn and ash with occasional dog rose (*Rosa canina*) (refer to plate 12). The northern hedgerow is maintained while the southern one has been left unmanaged. The understorey and associated verge of the northern hedgerow comprises rank grasses and ruderal species including wormwood (*Artemisia absinthum*) and mugwort (*Artemisia vulgaris*).
- 9.92 The southern hedgerow is mostly unmanaged, allowing trees to reach approximately 2 to 3m in height in places. There is greater diversity on this side and at times, areas of scrub have extended approximately 2m from the original hedge-line. Species present

include hawthorn, elder and ash with occasional oak (*Quercus robur*). Towards the end of the track, the hedgerows are lined with Scots pine.

- 9.93 Firs Plantation is an extensive area of Scots pines with bramble dominating the understorey layer (refer to plates 13 and 14). Public access was not permitted in the plantation, so observations could only be made from the periphery. A large area in the centre had recently been felled, creating a glade and ride habitat suitable for butterflies and invertebrates alike. This also creates the potential for a more diverse understorey to develop. Similar to Lodge Plantation, Firs Plantation is likely to support a variety of seed-eating birds and provide extensive nesting sites.
- 9.94 The land use surrounding Scampston Mill Farm comprises turf production and mixed plantation. Public access was not permitted therefore observation have been taken from aerial photographs (ref. 7). It is not possible to identify the species present in the plantation, although it is evident that the plantation is mature. This extends to the bridge crossing Scampston Lake (refer to plates 15 and 16). Remnants of tree-lined hedgerow runs eastwards linking the plantation with Park Plantation and Sands Plantation, which may still provide a wildlife corridor.
- 9.95 Both Mill Race and Blakey Beck are fed by Wintringham Beck. The Biological Water Quality of Wintringham Beck and Mill Race is B1B (good) and both supports brown trout, grayling and BAP species (Bullhead and Lamprey). Mill Race is a slow flowing stream approximately 2 metres wide with a silty substrate. Marginal species include great willowherb, reed sweet grass (*Glyceria maxima*), smooth rush (*Juncus effusus*), water mint (*Mentha aquatica*), water forget-me-not (*Myosotis scorpioides*) and bittersweet (*Solanum dulcamara*). It also attracts grey herons (*Ardea cinerea*).
- 9.96 Although no information was provided for Blakey Beck, it is likely that since the Water Quality of Wintringham and Scampston Beck is B1B (good), Blakey Beck may also be of the same quality and may also support similar species. Further more, they may also be suitable habitats for water vole.
- 9.97 The High Fish Pond at Scampston is entirely surrounded by reed sweet grass with scattered goat willow (*Salix caprea*). Great willowherb and yellow flag iris are also present. In addition the pond attracts waterfowl such as mallard (*Anas platyrhynchos*).
- 9.98 Finally, at the eastern limit of our survey area, an area of semi-improved grassland occurs adjacent to a coniferous plantation. This is likely to be managed by sheep grazing. The sandy nature of the soil in this area, gives rise to an unusual floral

community known as 'Breckland' flora. A good example of this can be found on the road verge, hence, it has been designated as a SINC (refer to plates 17 and 18). This rabbit grazed vegetation is typically very dry and acidic containing frequent bare patches. The dominant grasses are common bent (*Agrostis capillaris*) and sweet vernal grass (*Anthoxanthum odoratum*) with herbs such as lady's bedstraw (*Galium verum*), mouse-ear hawkweed (*Pilosella officinaria*), sheep's sorrel (*Rumex acetosella*), haresfoot clover (*Trifolium arvense*) and common stork's bill (*Erodium cicutarium*). Other species include bugloss, thyme-leaved sandwort, sticky mouse-ear, field mouse-ear, birds foot, whitlow grass, slender trefoil and knotted clover (ref. 3).

ROUTE ASSESSMENTS

- 9.99 All the southern routes would result in fragmentation of existing habitats to invertebrates, birds and mammals. Although the majority of hedgerows are highly maintained, they are poor species. However, the loss of hedgerows could result in disturbance to birds, loss of wildlife corridors and loss of flight paths for bats, barn owls and other birds. Some mature trees within hedgerows may also be lost.
- 9.100 The Red and Green Options would result in large losses to arable land and the Green Option would involve the removal of approximately half of Firs Plantation. This would fragment the existing plantation into two smaller areas and hence the proposed road would form a physical barrier to wildlife travelling between the two remaining fragments.
- 9.101 The Blue Option would have a similar impact to the Green Option as far as Rillington Beck. To the east of this point, the effect of the longer route would create additional impacts and include the loss of more arable land and hedgerows. Dissection of Mill Stream would create additional impact. The plantation is likely to support a range of associated fauna, many of which could be displaced. Additionally, the quality of water at Mill Stream could be compromised creating an impact on the associated fisheries and fauna.
- 9.102 All the southern options would have an impact on Rillington Beck and its immediate surroundings. Any crossing over Rillington Beck would disrupt its use as a wildlife corridor and involve the removal of mature trees that line the path of the beck. It has not yet been decided how the road would cross the Beck, but it is likely that it would incorporate an embankment and a culvert for the watercourse. The Green and the Blue Route sub options may have a slightly more significant impact as they would provide less clearance to the watercourse. This would restrict the size of a culvert.

However, the amount of vegetation lost would be similar to that of a ground level option and therefore the overall impact would be comparable.

Mitigation Measures

- 9.103 The provision of elliptical and advance planting to the new road would assist in minimising potential adverse impacts upon barn owls.
- 9.104 Hedgerows and other linear habitats that are identified as bat flight paths should be re-instated in order to maintain links between roosts and feeding areas.
- 9.105 Retention of mature trees should be achieved where possible and re-planting should be undertaken using native trees and shrubs of local provenance. Wherever possible, fragmentation and isolation of woodland habitats should be minimised.
- 9.106 Any potentially damaging activities to vegetation which is capable of supporting nesting birds should be restricted to a period outside the normal breeding period which approximately runs from March to the end of July. Alternatively, any vegetation capable of supporting nesting birds could be made inhospitable to breeding birds by undertaking the majority of the clearance works in the winter period prior to construction works. However, where trees are used as summer roosts or winter hibernation sites for bats, they should not be felled without a bat survey undertaken by a licensed worker. The use of bat bricks and the creation of alternative habitats in areas identified as supporting populations would be prudent.
- 9.107 Mitigation measures may be required in respect of badgers, but as the actual status of these species has not been confirmed, the level of detail will need to be addressed at a Stage 3 assessment. It is likely that badger tunnels and badger-proof fencing would also be required. Road-side reflectors about 30cm from the ground can be used to deter badgers from crossing the road (ref. 5).
- 9.108 It is anticipated that culverts would be used to cross the drainage ditches and Rillington Beck. Within these culverts, suitable raised dry ledges (at least 600mm wide, 150mm above the highest water level and 600mm headroom are suitable for badgers) and appropriate fencing and vegetation to funnel the resident mammals towards the entrance is advised. Alternatively, mammalian bypasses either side of the culvert with vegetation used as a guide to the entrance can be incorporated. In addition, logs or rubble/stone extending from the habitats on either side into and through the tunnel could encourage their use by smaller mammals that may be fearful

of meeting a predator in open spaces (ref. 6). These tunnels must be usable during spate conditions, and should therefore be oversized.

- 9.109 Water voles are most active between March and October. If any burrows are likely to be destroyed by the crossing, the population must be moved under licence to a suitable alternative habitat prior to the commencement of works.
- 9.110 Appropriate interceptors (oil/petrol) should be considered if the quantity and quality of surface water run-off is likely to be adversely affected.
- 9.111 The Contractors compounds should be sited to avoid sensitive sites.
- 9.112 Along the verges of the proposed routes there could be opportunities to create areas of Breckland flora similar to those found at the West Knapton Road Verge SINC. Suitable areas would be bordering the southern route options to the east of Rillington Beck. This could be achieved by using hay cuttings from existing areas of Breckland flora such as West Knapton Road Verge or the two enclosed fields within Sands wood.

SUMMARY OF IMPACTS

Route Options

- 9.113 The Magenta Route, which would pass to the north of Rillington, would cross 5 watercourse. This would cause considerable disturbance to any fauna that may use or inhabit these valuable wildlife corridors. The Magenta Route would incur the greatest losses of arable land and would also affect semi-improved grassland, much of which exhibits ancient ridge and furrow markings.
- 9.114 The Red Route is the shortest route and consequently has the least amount of habitat loss. Where it crosses Rillington Beck, the marginal and scrub community is wider than the other options and it would be necessary for careful mitigation measures to be implemented to minimise the impact. This route is the only southern route to pass through an area of semi-improved grassland.
- 9.115 The Green Option would remove a large area of arable land and have a significant impact on a large area of coniferous plantation. Although it is not a natural habitat, it does provide valuable woodland cover in an area that lacks natural woodland. It therefore provides a refuge for mammals and nesting birds as well as numerous insects and butterflies. The route would also have an impact on Rillington Beck

disrupting the watercourse as a wildlife corridor. The Green Route (In Cutting) would increase this impact owing to the removal of additional mature trees and scrub resulting in a further loss of a suitable habitat for bats and birds.

- 9.116 The Blue Option would have a similar impact to the Green Option. However, it would also involve the removal of a considerable area of mixed plantation adjacent to Mill Farm resulting in a direct loss of habitat for mammals and birds alike. It would also cross Mill Stream and pass close to High Fish Pond, both of which have good water quality and support excellent fisheries including BAP species.
- 9.117 The Blue Route (In Cutting) would have similar impacts to the Blue Route at ground level. However, there would be an additional impact on the use of Rillington Beck as a wildlife corridor and would necessitate the removal of many mature trees and a large amount of scrub resulting in the loss of suitable habitat for bats and birds.
- 9.118 With the above factors in mind, the Magenta and both Blue Options are the least desirable owing to the potential impact to semi-improved grassland and watercourses respectively. Both Green Options would involve a direct loss to the Rillington Beck wildlife corridor and both would involve extensive losses to coniferous plantation. The Red Option has the least ecological impact.
- 9.119 The NATA tables are provided in Volume 3. These have been completed for each nature conservation feature affected by the Stage 2 proposals. It should be noted that the type of impact and the overall Assessment score is based on the information currently available.
- 9.120 The approximate total habitat loss for each route option is shown in the following Table:

Table 9.1 – Approximate Habitat Loss

Route Option	Hedgerows	Arable Land	Semi-improved Grassland	Plantation and Scrub	Mixed Plantation Woodland	Coniferous Plantation Woodland	No. of Watercourses Crossed
Magenta	0.07	7.9	1.1	-	-	0.36	5
Red	0.05	4.5	0.64	-	0.1	1.0	3
Green	0.06	4.66	-	0.04	-	4.68	3
Blue	0.08	7.64	-	0.04	0.4	0.06	4

(Figures expressed in hectares)

CONCLUSIONS AND RECOMMENDATIONS

- 9.121 The walkover survey has highlighted certain areas that should be avoided, if engineering constraints allow. These are as follows:
- a) The semi-improved grassland to the north of the village. These contain ancient pasture and exhibit ridge and furrow markings.
 - b) A large badger sett identified in the west field drainage ditch area.
 - c) Mill Stream and Scampston Lakes area, whose water quality is deemed to be B1B (good) and support excellent fisheries including BAP species.
- 9.122 More detailed surveys of the local fauna are required in order to update information. A thorough survey of West Field drainage ditch and the channel of Rillington Beck to the south of the village to check for evidence of badgers is required. Scampston Park, Sands Woods Scagglethorpe Bogs and the area surrounding Bassett House should also be surveyed to confirm the present day status of badgers in these woods in order to incorporate specific mitigation measures into the scheme designs.
- 9.123 Summer surveys would be useful for the identification of the type and level of use of a sett, together with foraging pathways and territories. However, during the winter, confirmation of setts and their numbers are most useful as dense vegetation that can obliterate tracks and sett entrances has died back. Well colonised and impenetrable areas are more readily accessible in winter than in the summer months.
- 9.124 Licences are required for most types of construction activity in close proximity to a sett and therefore the early identification of setts is critical in the preparation of a road construction programme.
- 9.125 In summary, the following activities would require a licence: all work within 10 m of the nearest sett entrance; the use of machinery within 10-20m from a sett entrance; the use of explosives or similar operations at over 30 m distances. Any work near active badger setts should be restricted to the months of July to November with no works undertaken outside of this period as badgers will either be breeding or with their young. Mitigation measures will need to be agreed with English Nature and may include the use of badger-proof exclusion fencing, badger tunnels and underpasses. In circumstances where there are no alternatives to the destruction of an active sett, translocation of the badger will need to be assessed and the programme for sett

- relocation and original sett destruction needs to be programmed into the contractors' programme.
- 9.126 The exact status of otters within the study areas also needs to be confirmed. This should include a survey of Rillington Beck and Scampston Lake area. There are generally no seasonal restrictions for such surveys; however, surveys during the summer will produce the most valuable results with regard to general habitat requirements. Otter signs such as laying-up sites, holts, spraints, footprints and slides should be recorded.
- 9.127 Information on bat roosts, flight paths and feeding areas need to be updated. The best time for inspection of bat roosts is during the early summer months when the bats will be active. To identify hibernation sites, a survey would be required during the winter and spring months (November to March) when the temperatures are permanently low and bats become inactive and will hibernate. If any demolition works are required which may result in bats being directly affected this should take place in late September or early October under the supervision of a licensed bat worker. No demolition or felling of trees which hold hibernation sites should be undertaken during the hibernation period (November to March). Mitigation measures for bats include the provision of bat bricks in new structures, bat boxes in trees and alternative linear habitats if flight paths that are likely to be affected.
- 9.128 A survey of bird activity would be prudent particularly along the Rillington Beck channel to the south of the village and within woodlands affected by severance as a result of the proposed options. Section 1 of the Wildlife and Countryside Act 1981 (as amended) offers protection against injury to any wild bird, and protects its nest from damage or destruction whilst it is in use or being built. It is therefore recommended that any works involving the felling of trees or removal of any potential habitat such as hedgerows be restricted during the period March through to July.
- 9.129 A survey of all drainage ditches, Rillington Beck, Blakey Beck and Mill Beck is recommended to confirm whether or not water vole populations are present. Surveys for water voles are best timed for the lower water levels in the summer period when they are most active and burrows and foraging tracks are readily visible. The degree of aquatic vegetation and the presence of favoured species can also be most readily identified during the summer months (June-August). The maintenance of stable water levels, water quality and a corridor of natural habitats either side of a colonised water course is the most appropriate way to address adverse impacts. The provision of alternative habitats within the same catchment should also be considered.

- 9.130 Surveys of Rillington Beck, Mill Stream and Blakey Beck for freshwater crayfish are recommended by the EA.
- 9.131 A survey for brown hares should be performed in the area of the preferred option, particularly to the south of the village since they are known to have a high population on The Yorkshire Wolds.
- 9.132 When the walkover survey was performed, it was not possible to ascertain the floristic diversity of the habitats in the area. It is therefore recommended that detailed floristic surveys be performed in the semi-improved grassland areas and plantations in the spring and summer of 2000.
- 9.133 It would be prudent to survey the ponds in the area that could be either directly or indirectly affected to ascertain the degree of amphibian use.
- 9.134 A thorough hedgerow survey is recommended to assess whether any are likely to fall under the Hedgerows Act 1997. The Hedgerow Evaluation and Grading System (HIEGS) 1992 is a methodology that could be used in this instance.
- 9.135 In conclusion and based on the level of information available, the assessment has identified that the Magenta and Blue Routes are likely to result in the most significant ecological impacts (large adverse effects), closely followed by the Green Route (slight adverse effects). When the Green and Blue Routes are in cutting, their impacts are greater owing to the increased impact on Rillington Beck. The impacts arising from the Red Route, which is the shortest route, are likely to be slightly less significant (slight adverse effects) than all the other routes.

10. ARCHAEOLOGY AND CULTURAL HERITAGE

INTRODUCTION

Site Background

- 10.1 Rillington is a village situated within the Ryedale district in East Yorkshire, on the road between York and Scarborough (the modern A64), 6km north east of Malton. It extends in four directions away from the crossroads formed by Low Moorgate, High Street, Scarborough Road and Westgate. Traditionally an agricultural community, it has a present population of approximately 1000. It is thought to have taken its name from a small stream, or *rill*, which flows through the valley, although it has also been attributed to the name of a local Saxon clan, having appeared in the Domesday Book as *Redlington* (GENUKI, 1999).

Geological Background

- 10.2 The study area is situated at the southern edge of the Vale of Pickering, at the northern edge of the Yorkshire Wolds. The Wolds are designated an area of High Landscape Value (Ryedale Local Plan Village Insets, 1997). The Derwent Valley joins Rye Dale at this point to form a wide flat valley floor, covered by a huge glacial lake during the last Ice Age. The alluvial deposits and gravel of the floodplains contrast with the chalk of the Yorkshire Wolds. There is a significant change in the natural topography from the high (150m OD) Wolds to the valley floor (20m OD). Rillington is situated on the flat, fertile valley floor.

Topographical Background

- 10.3 Rillington is situated on an area of level land approximately 4km south of the River Derwent, which forms the natural northern boundary of the parish. The pattern of settlement along the valley is typical of the area; with parishes spreading southwards up the Yorkshire Wolds from the Derwent. These narrow parishes encompass a variety of landscape types; from the fertile valley floor to the more barren moorland on the uplands. The landscape is intensively farmed, except for steep areas that are too difficult to plough where farmers concentrate on livestock. There is very little

woodland in the area. The topographic features of the area have resulted in a typical rural economic arrangement of small villages clustered around larger market towns.

Scope

10.4 This Stage 2 Cultural Heritage Assessment has been undertaken in accordance with the Design Manual for Roads and Bridges, Volume 11, Section 3, Part 2 Cultural Heritage (1993). It will assess the impact of proposals to bypass Rillington.

10.5 The aims of this assessment are to:

- Identify the constraints relating to each of the proposed route options;
- Use the information collated to assess the impact of the route options on both existing and potential cultural heritage resources;
- Determine the archaeological potential along the line of the proposed route options;
- Make recommendations for further investigation which may be required (e.g. geophysics, field walking, trial trenching etc.) to fully assess the archaeological potential and impact of the proposals on the cultural heritage resources associated with Rillington.

Method of Assessment

10.6 Information on the cultural heritage resources has been obtained for a study area which measures 4km x 1.5km and is centred on a 4km stretch of the A64 where it passes through the village of Rillington, North Yorkshire. The following sources have been consulted:

- The North Yorkshire County Sites and Monuments Record (SMR).
- The Northallerton Local Studies Library, for documentary references.
- The Conservation Officer, North Yorkshire County Council for details of Listed Buildings.
- English Heritage Scheduling Section for details of Scheduled Ancient Monuments and Historic Parks and Gardens.

- The National Trust for details of its inalienable land holdings.
- The North Yorkshire Public Record Office for historic maps, public records and first series Ordnance Survey maps.
- The Borthwick Institute of Historical Research, University of York, for tithe maps.
- Neil Campling, archaeological advisor to North Yorkshire County Council in a meeting on 14th April 2000 a meeting to discuss the archaeological potential of the area.

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 10.7 Precise date ranges for the periods discussed here are found within Appendix D.

Prehistoric

- 10.8 The Yorkshire Wolds are renowned for their prehistoric archaeological remains; and are perhaps rivalled only by Wessex in southern England for the quantity and potential of the standing monuments (Powlesland et al 1997). The earliest evidence of occupation in the area comes from Star Carr, a famous Mesolithic site on the edge of the Vale of Pickering at Scarborough. Star Carr is now thought to have been a temporary or seasonally occupied site, perhaps with areas for specialised activities such as the preparation of animal hides. Environmental evidence from Star Carr has suggested that the surrounding area was more widely inhabited (Mithen 1999:46), although no evidence of such early human activity has been found at Rillington.
- 10.9 The area around Rillington appears to have been intensively settled since the early prehistoric period. This probably reflects the utilisation of the landscape and the varied environments the local topography afforded the prehistoric communities. These would have included the accessible areas of the uplands provided by the Wolds, the River Derwent and floodplain of the Vale of Pickering.
- 10.10 The Neolithic has traditionally been seen as a period of consolidation and the development of permanent settlement, although this is now thought to be only partly true. The creation of standing monuments and the development of traditions such as the burial of the dead indicate a growing awareness of humanity's position in the world. Scatters of flint from the period are generally larger and more varied in form than from earlier phases of occupation. Prehistoric occupation of the Rillington area is typically indicated by a possible Neolithic long barrow and the finds of flint artefacts in the area.

- 10.11 Technological advances and widening trade networks during the Bronze Age resulted in more emphasis upon permanent settlements and territories (Parker-Pearson 1999:93). Burial barrows were evidence of the growing status of individuals within a society, and the concept of lineage and ancestry grew in importance. Numerous Bronze Age round barrows or ring ditches in the area with evidence of enclosures indicate the intensity of activity during the period. The largest Bronze Age round barrow in England is at Duggleby Howe, 5km to the south of Rillington.
- 10.12 The increasing sedentary nature of the society is shown by a system of linear earthworks dating from around 1000BC, dividing moorland in north-east Yorkshire into territories, each with an equal access to natural resources and water (Champion 1999:102).
- 10.13 Those Bronze Age settlements in good defensive positions were occupied into the Iron Age, although there are regional variations in the style and character of Iron Age settlements. In east Yorkshire the Arras culture predominated between the fifth and second centuries BC. This is thought to have been introduced by settlers from northern France, although it is just as likely that the local population had wide ranging contacts and adopted continental traditions. The most famous example of this is at Wetwang Slack, c. 10km to the south of Rillington, where a very high status burial included a complete wooden cart (Haslegrove 1999:124). The Iron Age at Rillington is well represented with barrow cemeteries, enclosures and field boundaries, and there are also many landscape features such as ditches, boundaries or trackways that are less precisely dated. Towards the end of the period the Wolds were inhabited by a tribe called the Parisii in the south, who had come from Belgium in the centuries preceding the arrival of the Romans, and the Brigantes to the north, who were a tribe known for their impressive fortifications and highly organised hierarchical society.

Roman

- 10.14 The Roman Army did not venture as far north as Yorkshire until the 70s AD. Transportation routes were constructed; there was a ferry across the Humber, and several roads led north from the Midlands. Malton (*Derventio*) to the west of Rillington, became an important location on the road between York (*Eboracum*) and Scarborough, where beacons were lit to guide shipping along the coast (Rawnsley & Singleton 1995:23). The Romans seem to have mixed relatively happily with the local tribes, and the resulting Romano-British society was a combination of the two cultures. During the Roman period it is likely that there was settlement in the Rillington area, although the exact nature of land use and settlement distribution is not certain. The present A64 is known to have been a major route during the period, and small settlements such as Tadcaster (*Calcaria*) further along the road to the south-

west originated during the Roman period. Finds from the Rillington locality include 3rd and 4th century pottery (WSA Site No 47-49). There is also a burial recorded (WSA Site No 53) and a spot find for a brooch (WSA Site No. 4). It is likely that there was scattered rural settlement in the area and finds of pottery scatters (WSA Site No 76 and 79) may support this.

Saxo-Norman

- 10.15 During the last years of the Roman period there were increasing numbers of Saxon raids along the eastern coastline of England. Saxon shore forts were constructed at points including Scarborough, possibly to repel invaders, although their precise function has never been satisfactorily defined. After the collapse of Roman rule the country as a whole divided into kingdoms, led by warring chiefs of both local and foreign origin (Hills 1999:176). Yorkshire became part of Northumbria but was later conquered by the West Saxons from Wessex. Christianity became the official religion in Northumbria under the rule of Oswald, who ruled until 671 AD. Rillington was at this time part of a large wood, the *Forest of Galtres* (Rawnsley & Singleton 1995:28) and little is known of Saxon activity in the area.
- 10.16 The arrival of the Vikings from Denmark and Norway on the east coast during the 9th century AD marked great changes in Yorkshire. The boundaries of the county were established under Viking rule, and remained the same until as recently as 1974. The Three Ridings (North, East and West) and the Kingdom of York (*Yorvik*) were also established under the rule of the Danish Kings (Danelaw). Gradually the Kingdom of York was re-absorbed into the rest of England, and by the time of the Norman Conquest Danelaw has ceased to exist (Rawnsley & Singleton 1995:30). There are no Viking sites in the Rillington area, the area presumably remained predominantly rural in character and perhaps the only signs of the Viking occupation in the area are the roads and tracks which cross the landscape (Rawnsley & Singleton 1995:32).

Medieval

- 10.17 After the Norman Conquest in 1066 there were several uprisings in Yorkshire. The Danes were reluctant to accept Norman rule. The revenge William the Conqueror took upon the area was devastating; every town between York and Durham was razed to the ground and many people were killed (Rawnsley & Singleton 1995:33), during what was later called the Harrying of the North. Rillington falls within the area belonging to the Archbishop of York during this period, the entry in the Domesday Book of 1086 shows the village was called *Redlington*. The settlement was probably small, with the agricultural system of strip farming used under the feudal system.

- 10.18 Large parts of the village were later owned by monasteries; Malton Priory had a large land holding with 18 houses, and held courts in Rillington (Rushton 1976:96). St Andrews Church was constructed during the 12th century, and possibly contains earlier features in the north aisle. The chancel arch was added in the 14th century. The village was struck by floods in 1344, and the pestilence in 1366 (Rushton 1976:96). A large earthwork mound at Collinsons Lane is thought to be a windmill, dating from the 14th century (SMR Ref: 34667.0-3incl.). Rectory Farmhouse at the north of the village is thought to have links with Byland Abbey as far back as the later Middle Ages, and the nearby Park Farm has moated earthworks, also suggesting a medieval origin for the site, if not the building itself.

Post-Medieval

- 10.19 Much of the present village of Rillington was built during the 17th and 18th centuries, although some of the buildings, dated as from this period, may well have earlier origins, including Rectory Farm at the north of the village which has some internal timber framing that may be medieval (Pevsner 1972:657). The pasture land was enclosed in 1638-1641 and the rest of the land in 1778 (Rushton 1976:96). The area remained predominantly rural in character.
- 10.20 Scampston Hall was built in the early 18th century for Sir William St Quintin, who later employed Lancelot 'Capability' Brown to landscape the grounds. The broad expanses of lawn, with clumps of tree planting and a serpentine lake are all typically Brownian. There is also a stone bridge at the south of the lake where the main road crosses the park dating from 1761, now a Grade II Listed Building. A derelict water mill with an adjoining mill race both built in 1778 also survive to the south of the main road (SMR Ref:3388.040 & 3388.042).
- 10.21 The River Derwent was made navigable in early eighteenth century and linked the Malton area to the canal system and the coast.
- 10.22 During the 19th century the village remained predominantly agricultural, with brickmaking and brewing also providing local employment. There were several inns in cottages, and the post office had its own brewery. There were also three smiths, five wheelwrights, four grocer-draper and four tailors. The village school was built in 1876 and extended in 1886 (Pevsner 1972:657). There was an infamous incident in 1786 when a pig that weighed 51 stone managed to jump a five foot gate (Rushton 1976:96).
- 10.23 The railway came to Rillington in the 1840s and trains continued to stop at the station at the north of the village until the 1960s. The station has now closed, but the track is

still used on the main line. Scampston Bridge was widened in 1938 by East Riding County Council.

Previous Archaeological Works

- 10.24 There have been previous archaeological works carried out at Rillington. Prior to housing development in 1980 excavations at the Scheduled Ancient Monument at East Field were undertaken by an amateur archaeologist Percival Turnbull, and reported in the Yorkshire Archaeological Journal Vol.55 (1983). Three small areas were excavated within a rectangular enclosure to the west of the main funerary features, to establish the size, shape, date and function of the enclosure. A shallow ditch was excavated at the north-east of the site, filled with domestic refuse and interpreted as evidence of a settlement nearby. Postholes and pits possibly representing a palisade fence were also excavated adjacent to the ditch. The second trench was placed at the east side of the site and revealed a slightly deeper ditch with a terminus at the southern end. This was interpreted as the eastern limit to the enclosure, with an entrance to the south. The third area contained a shallow slot, perhaps a beam slot for a fence. It also contained several small pits, from which no finds were recovered. Pottery from the site was Iron Age in date, made locally and tempered with calcite.
- 10.25 The site was interpreted as a settlement from the 2nd or 3rd centuries BC, contained within a ditched enclosure with an entrance at the southern corner.
- 10.26 A particularly interesting aspect of this excavation and the subsequent report is the mention of a possible Anglo-Saxon cemetery in the vicinity; during the excavation a local farmer handed Mr Turnbull artefacts from a grave found nearby, and two bronze brooches were found on the site at East Field. Mr Turnbull concluded that it was likely that a '*considerable cemetery lies in the area*'. This has yet to be proven, and the burial could have been an isolated example, but the possibility obviously exists for some Anglo-Saxon remains in the area.
- 10.27 The construction of a pumping main between Malton and Rillington was preceded by archaeological excavations during 1993. The route of the main was altered to avoid the Scheduled Ancient Monument at East Field. MAP Archaeological Consultants excavated several sites along the route and discovered prehistoric remains (MAP 1993).
- 10.28 MAP Archaeological Consultants also carried out a watching brief at Ellis Patents Factory, to the east of the High Street. This site is to the south-west of the Scheduled

Ancient Monument at East Field. Several intercutting pits were found, with struck flint waste flakes in the subsoil (MAP 1994).

- 10.29 One of the more well-known archaeological projects in the country is being undertaken at West Heslerton, a village approximately 4 miles to the east of Rillington. The Heslerton Parish Project began after an Anglo-Saxon inhumation cemetery was discovered prior to mineral extraction. By the end of 1980 the research design had been produced, with an emphasis on considering the site as part of a wider landscape context to investigate settlement in the area. The project was among the first 'landscape archaeology' surveys proposed in Britain and consisted of both rescue and research excavations. West Heslerton was inhabited in favour of other villages that had been settled during the Roman period. This was partly due to the changing political situation in the valley, with the arrival of the Anglo-Saxons. The excavations have uncovered evidence of a highly organised society; with areas divided up functionally, with spatial segregation of activities and people (Hills 1999:187).
- 10.30 Recently the team responsible for the excavations at West Heslerton have been involved in a project to record cropmarks across the surrounding landscape. Using non-invasive techniques such as oblique aerial photography they have concluded that the generally accepted view of the area as being sparsely populated during the prehistoric period is incorrect and the area was in fact quite densely populated. Their results will now be used to assist with landscape management, planning proposals and excavation strategies (Powlesland et al 1997).

Results

- 10.31 The sites referred to within this section can be found in Appendix D: The Gazetteer of sites.

North Yorkshire Sites and Monuments Record

- 10.32 Archaeological remains are very well represented in the Rillington area, particularly from the prehistoric period. These remains include extensive features such as ditch systems and enclosures representing significant surviving elements of the Bronze Age and Iron Age landscapes. A possible Neolithic long barrow (WSA Site No. 90) and finds of worked flint (WSA Site No. 91) have been recorded from aerial photographs and chance finds. Bronze Age ring ditches or barrows often occur in groups, thus forming cemeteries. A cluster of such ring ditches occurs in the southern part of Scampston Park (WSA Site Nos. 81-88) and a ditched trackway (WSA Site No. 88) may be associated with these barrows. Additional cemeteries and further round barrows (WSA Site Nos. 89, 99-101) occur in the East Field area, immediately south

of Rillington and in West Field (WSA Site Nos. 38-43). This is indicative of the intensive use of the area for burial and enclosure. The varied land use also includes trackways and field systems.

- 10.33 Early Bronze Age finds possibly associated with either local settlement or the cemeteries has also been recorded in the area. Spot finds of Beaker pottery (WSA Site No.102) and a riveted dagger have been recovered locally (WSA Site No.3).
- 10.34 An Iron Age cemetery site containing 23 square barrows, other possible burial pits (many within the Scheduled Ancient Monument), boundary ditches and ditched enclosures occurs on the south side of Rillington (WSA Site Nos. 94 – 98). Other evidence of the Iron Age landscape including further possible burials, field systems, enclosures, boundary ditches and trackways survives to the west of Rillington (WSA Site Nos. 64–74). This suggests over 800 years of continued intensive use of the local area.
- 10.35 A cropmark site to the south of the A64 Scarborough Road was partly excavated in 1980 (Turnbull 1983). This revealed evidence for ditches and post holes forming part of an enclosure. The majority of the associated site lies to the north within the Scheduled Monument (WSA Site No. 95) which comprises both square and round funerary barrows.
- 10.36 The medieval village of Rillington (WSA Site No. 46) was centred on the church which includes a 12th and 13th century chancel. A 13th century wall painting records the foundation of the church and its first priest in c.1250.
- 10.37 There was some expansion of the villages of Rillington and Scampston during the 17th and 18th century when many of the listed building were constructed or expanded. Scampston Hall was constructed during the later 17th century, although it may have been built on the site of a medieval manor house.

Scheduled Ancient Monument

- 10.38 There is one Scheduled Ancient Monument (Monument Number NY1117) within the study area. This is located to the south of the Scarborough Road in East Field, Rillington (centred on SE 8586 7433). This is a multi-period site containing Bronze Age and Iron Age barrow cemeteries with associated enclosure boundary ditches.

Listed Buildings

- 10.39 There are twenty-five listed structures within the study area. These are predominantly 17th to 19th century constructions and are largely residential properties associated with the villages of Scampston and Rillington.
- 10.40 In the village of Rillington itself, there are nine Listed Buildings. At the centre of the village is the Parish Church of St Andrew (WSA Site No. 54 and 55) which is a Grade 1 Listed Building. The earliest known features of the church are a 12th century chancel and 13th century font. The church appears on early 19th century Ordnance Survey maps. There is also the former 18th century vicarage on Westgate (WSA Site No. 62), a 19th century Congregational Chapel, and an 18th century public house (WSA Site Nos. 56 and 57). Other historic Listed Buildings include two 18th century houses along Low Moorgate, Holly House and Park View (WSA Site Nos. 58 and 61). Two farmhouses, Rectory Farmhouse, originally a timber framed 17th century house and the 18th century Park Farmhouse (WSA Site Nos. 59 and 60) are located at the northern end of the village. Both houses include elements of earlier buildings. A third listed farmhouse at the other end of the village is the 17th century, Church Farmhouse (WSA Site No. 63).
- 10.41 To the north of Rillington is the Grade 2 listed Rillington Manor built early in the 20th century with an adjacent stable block (WSA Site Nos. 29 and 35).
- 10.42 There are also Listed structures within the historic gardens of Scampston Park. These include the 18th century Scampston bridge (WSA Site No. 21), early 19th century gates (WSA Site No. 23), a 19th century milestone and the lodge of Scampston Hall (WSA Site Nos. 21-24) which are all situated close to the existing A64 road.
- 10.43 Scampston Hall (WSA Site No. 7) is a late 17th century, country house with outbuildings including a stable block (WSA site No. 18), an icehouse and pump house (WSA Site Nos. 13 and 17). Other listed structures include the garden wall and a sundial (WSA Site Nos. 15 and 16).

Historic Parks and Gardens

- 10.44 There is one Registered Park or Garden of special historic interest situated 1km east of Rillington at Scampston. Scampston Park covers approximately 170 hectares and is divided into two parts by the present line of the A64. The park designed by Capability Brown was laid out in the 1770's. The park includes late 17th century Scampston Hall and several other Listed structures.

- 10.45 There is no National Trust Inalienable Land within the study area.

Documentary Sources

Domesday Book

- 10.46 Rillington is referred to in the Domesday Book as *Redlington*. The settlement at this time was agricultural, with the land divided into strips for farming. No further information regarding the size of the village and its population is available from this period.

Parish Records

- 10.47 The parish records of Rillington are kept at both the North Yorkshire Records Office and the Borthwick Institute for Historical Research, in York. They consist of the written church records, rather than maps of the settlement. Many of the details which were included within Bulmer's History and Directory of East Yorkshire of 1892 have also been placed in an internet site (GENUKI 1999). No details of buildings or the general landscape are given, the information relates to the parish records only; births, deaths and marriages.

Cartographic Sources

Enclosure Map

- 10.48 The enclosure map of Rillington is held at the East Yorkshire Records Office in Beverly, and was not consulted during this assessment.

Tithe Map: 1848

- 10.49 The tithe map is held at the Borthwick Institute for Historical Research, in York. The scale of the tithe allowed for detailed study of the village. The Scheduled Ancient Monument (although not under statutory protection at this time) was not built on and appeared to be under agricultural use. Collinsons Lane was shown on the map, indicating its antiquity as a public right of way. There is another public right of way shown which runs from the south side of Scarborough Road (opposite Sands Lane) across the SAM to the south-east, which does not appear on modern maps. Rillington Railway Station is shown; at the now-disused depot to the north of the village. It has not been possible to reproduce the map in this document.

Ordnance Survey Maps: 1854 & 1929

- 10.50 The OS maps have a scale of 6 inches to a mile. They are held at the North Yorkshire County Records Office. They both indicate that much of the present village had been constructed by 1854, presumably as a result of the agricultural nature of the settlement and the arrival of the railway in the area. The later map shows the gradual increase in housing along Scarborough Road to the east.

Aerial Photographs

- 10.51 The Rillington area has been subject to periodic aerial photographic surveys and several of the sites, including the Scheduled Ancient Monument have been regularly recorded. The Sites and Monuments Record office at North Yorkshire County Hall holds many of these photographs. The available aerial photographs (which had not been rectified) were consulted and reviewed. This brief study confirmed the presence and extent of known archaeological remains throughout the study area, with concentrations of cropmarks at East Field, West Field and the Collinsons Lane area. No previously unknown sites were identified during the review of aerial photographs, but many photographs indicated that many of the sites would extend beyond their currently identified limits.

Walk Over Survey

- 10.52 The proposed routes were observed and photographed during a site visit in June 2000. Although the routes themselves were not publicly accessible, most of the landtake was visible from existing roads and pathways. The area is predominantly rural and most of the new roads will pass over agricultural land.
- 10.53 The SAM is presently under an arable crop. This suggests it may also have been ploughed, which will have affected the survival of the remains below ground.
- 10.54 Scampston Park, the Bridge and Lake to the east of Rillington are all very scenic and relatively untouched at present. Scampston village itself is at the end of a no through road, and is therefore very quiet and pastoral.

DISCUSSION

Previous Development at Rillington

- 10.55 Rillington has remained fundamentally rural in character; surrounded by agricultural land and farms, although a substantial percentage of the present population are not

directly involved with agricultural industries. The settlement has developed around the central crossroads, and along the main roads leading to York and Scarborough.

- 10.56 Recent developments in the village have been preceded by archaeological investigations, which have produced results outlined previously.
- 10.57 There has been no major destructive industrial activity such as quarrying or mining in the village, ensuring that the general state of preservation of the below ground archaeological remains has remained good.

Archaeological Potential of Rillington

- 10.58 Rillington falls within a very rare prehistoric landscape, the main elements of which are the funerary monuments (barrows) at East Field, obviously extending much further than the limits of the SAM suggest. Similar remains have been observed at West Field and Collinsons Lane, although the presence of prehistoric remains is not limited to these areas. There have been limited numbers of finds dating from the Roman period, but the presence of a burial on the High Street and the road nearby suggests there may be more evidence in the vicinity. The Anglo-Saxon burial found at East Field also hints at further discoveries.
- 10.59 The aerial photographs of the area also show that many of the sites would extend beyond their currently identified limits. Many of the sites on the Sites and Monuments Record were identified by cropmarks showing on aerial photographs. The archaeological potential represented by these sites is very high.
- 10.60 Previous excavations have discovered previously unknown remains, and the likelihood is that further works along the routes at Rillington will uncover more. The Anglo-Saxon burial found at East Field is particularly interesting, as it is unlikely to be an isolated example.

SCHEME ASSESSMENT

Proposed Routes

- 10.61 There are four routes with two sub-options that are currently being assessed for a bypass of Rillington. The routes are as follows;
- 10.62 The Magenta Route would pass to the north of Rillington.

- 10.63 The Red Route would pass to the south of Rillington, close to the southern outskirts of the village.
- 10.64 The Green and Blue Routes would be located slightly further south of the Red Route and they would both have sub-options with the road in cutting over part of their length.

Impact of Routes

- 10.65 The potential impact of the proposed options on the cultural heritage resources in the study area has been assessed below. This analysis was completed by comparing the locations of the cultural heritage resources with the likely land take required for the proposed options.

Scheduled Ancient Monuments

- 10.66 The Scheduled Ancient Monument situated in East Field, Rillington (SAM NY1117) would be directly affected by the proposed construction of the Red Route and indirectly affected by the Blue and Green Routes. The alignment for the Red Route passes through the centre of the defined limits of the Scheduled Ancient Monument. The Blue and Green Routes pass further to the south, but they still pass within or close to the defined limits of the monument. Scheduled Monuments are protected by legislation and the permission of the Secretary of State would be required prior to carrying out any work within the defined extent of the monument.
- 10.67 The Magenta Route has no direct impact on any known Scheduled Ancient Monuments.

Known Archaeological Remains

- 10.68 There are extensive known archaeological remains within the study area on which the proposed options would have an impact. The most significant remains are Iron Age cemetery remains (WS Atkins Site nos. 95-102) centred on East Field and the area of the Scheduled Ancient Monument. The known archaeological remains include further possible barrows, enclosures and field boundaries are indicated both east and south of East Field. Aerial photographs suggest that the site extends beyond the limits of the SAM and that additional associated sites are located in the vicinity. Potential archaeological remains are highly likely to occur in this area.
- 10.69 Further archaeological remains have been recorded and identified to the east of Rillington in Firs Plantation and Scampston Park.

- 10.70 The Red Route would have an impact on known archaeological remains to the west of Firs Plantation and either side of Collinsons Lane. To the west of Collinsons Lane there is a further dense cluster of known or identified archaeological remains. Aerial photographs indicate the presence of additional Iron Age barrows and enclosures. The proposed construction of the road in this area along the proposed alignment would have a significant impact on known archaeological remains.
- 10.71 The Green and Blue Routes would have an impact on known archaeological remains associated with East Field and an adjacent area to the south. The known cluster of archaeological sites identified around Collinsons Lane would also be affected. The inclusion of a cutting at this junction would possibly increase the impact, although any form of ground works will impact upon below ground remains.
- 10.72 The Magenta Route will have an adverse impact upon the known sites in West Field, which consist of prehistoric ring ditches and barrows.

Potential Archaeological Remains

- 10.73 All proposed routes could have a major impact on any potential archaeological remains associated with the prehistoric landscape features identified in the area.
- 10.74 All options might also have a major impact on other potential unknown archaeological remains along the line of the proposed routes. The likelihood of encountering more Anglo-Saxon remains in the East Field area is high.
- 10.75 The scale of impact on potential archaeological remains varies between the schemes. The longer and wider the scheme the greater the potential impact.

Listed Buildings

- 10.76 The Magenta Route would have no direct physical impact on any Listed Buildings, although it will have an adverse visual impact upon Rillington Manor and Stables (WSA Site Nos. 29 & 35). This option will divert traffic to the north away from the centre of the village where a number of these buildings are situated. The proposed option would potentially have a moderate visual impact on the setting of a Listed Building, Park Farmhouse (WSA Site No. 60), which is situated on Low Moor Lane immediately south of the proposed route. There may also be a slight visual impact on Listed buildings on the north side of the village, including Rectory House and Park View (WSA Site Nos. 59 and 61).

- 10.77 The Red, Blue and Green Options would not have any physical impact on any Listed Buildings. These schemes, with the possible exception of the Red Route, are also sufficiently far away from the Listed Buildings that they are unlikely to have any indirect visual or noise impact.

Historic Parks and Gardens

- 10.78 Scampston Park, situated to the east of Rillington, is a Registered Historic Park and Garden. The A64 Scarborough Road currently runs through the park dividing it into two. Potential junction requirements associated with the Magenta and Red Options at their eastern end may have an impact on the boundaries or limits of the parkland.
- 10.79 The Green and Blue Routes would both have a direct impact on the south west corner of the park. The Green Route includes approximately 300m of carriageway within the Park and the Blue Route approximately 600m. In particular there would potentially be direct and visual impacts on several park features including the High Fish Pond (or Swan Beck) and the Mill Stream. Any junctions associated with these route options might also increase the potential impact on the park and garden.

Table 10.1 - Summary of the potential effects on the Cultural Heritage Resources

Route Option	Schedule Ancient Monument	Listed Buildings	Known Archaeological Remains	Potential Archaeological Remains	Historic Park or Garden	Comments on Potential Effects
Potential impact yes/no						
Magenta	no	no *	yes	yes	no	West Field will be particularly affected.
Red	yes	no *	yes	yes	no	Areas particularly affected include East Field and Firs Plantation.
Green	yes	no*	yes	yes	yes	Affects parkland and runs close to southern edge of SAM and Collinsons Lane.
Blue	yes	no*	yes	yes	yes	Severely affects park features and Collinsons Lane area

*Note: All options are likely to have a beneficial effect on Listed Buildings at the centre of Rillington

RECOMMENDATIONS

Mitigation

- 10.80 Successful mitigation is the result of the iterative process of the design of a scheme and assessment of its impact on the known and potential archaeological and cultural heritage resources. There are several different types of mitigation measures that can be implemented. In practice it is likely that a combination of measures will be required. Appropriate mitigation takes into account the significance, rarity and degree of preservation as well as the setting of the cultural heritage resources.
- 10.81 With regard to the mitigation of impact of development, there is a presumption in favour of the preservation *in situ* of cultural heritage resources of national importance and their setting whether statutorily protected or not (DoE, 1993). Scheduled Ancient Monuments and Listed Buildings are afforded statutory protection.
- 10.82 Mitigation measures generally fall into one of two categories 'mitigation by design' or 'mitigation by record'.

Mitigation by Design

- Relocation of the scheme or elements of it to remove or reduce impact;
- Engineering solutions to minimise impacts, in particular foundation design, avoidance of use of basements, piling design, landscape planting etc.

Mitigation by Record

- Excavation and recording of cultural heritage resources prior to construction;
- Watching briefs during construction so that any unanticipated cultural heritage resources encountered can be recorded.

Scheduled Ancient Monument

- 10.83 The southern route options should be realigned to pass further to the south and located in order to avoid the designated area of the Scheduled Ancient Monument. However, both known and potential archaeological remains are likely to extend beyond the defined extent of the site. Some form of field evaluation (trial trenching) is therefore necessary to determine the full extent of the SAM and allow further mitigation to be designed.

Known and Potential Archaeological Remains

- 10.84 The known archaeological remains have been largely identified by aerial photographic recording and further work would be required to evaluate the actual extent and nature of the sites.
- 10.85 Further archaeological investigation (DMRB Stage 3 Field Survey) is necessary in relation to the preferred option to establish:
- The potential nature and extent of the site or any associated known/potential archaeological and palaeoenvironmental remains;
 - The impact of the preferred option upon them;
 - Suitable measures to mitigate any impact.
- 10.86 As the archaeological remains that could be affected may include stratified or burial remains, perhaps buried at depth, further archaeological investigation should take the form of evaluation by trial trenching. The evaluation should include for the sampling and analysis of palaeoenvironmental deposits. Thereafter appropriate mitigation measures could be designed.

Listed Buildings

- 10.87 No mitigation is required in relation to physical impact on Listed buildings in the centre of Rillington. However those to the north along the Magenta Route (Rillington Manor, Park Farmhouse and Rectory Farmhouse) will be affected by the visual intrusion.

National Parks and Gardens

- 10.88 The junctions at the eastern end of the Blue and Green Routes should be located to reduce the direct impact on the parkland or its boundaries.
- 10.89 Increased tree planting could be considered to screen the route options from the Park and Manor. This should be designed with the Brownian landscape in mind by integrating any tree planting into the 18th gardens.

CONCLUSION

- 10.90 The cultural heritage resources of the study area consist of known and potential archaeological resources, Listed Buildings and a Registered Historic Park. These are located within and in the immediate vicinity of the village of Rillington. The primary components are prehistoric funerary monuments and associated earthworks. The major archaeological constraints to the proposed scheme will be the Scheduled Ancient Monument (WSA Site No.95) and those archaeological sites in close proximity to it, on the south side of the A64. This renders the Red Route almost impossible to mitigate against. Other clusters of known archaeological sites have been identified in aerial photographic surveys and in North Yorkshire Sites and Monuments record. These occur on the western side of the village, around West Field, Rillington and further south at Collinsons Lane.
- 10.91 The known archaeological resources identified in the Sites and Monuments Record and aerial photographic surveys suggest that in all areas around the village of Rillington there is a high potential for the occurrence of previously unknown archaeological resources. Further work will be required to assess more fully the potential archaeological resources, probably taking the form of trial trenching.
- 10.92 The other major constraint in the area is Scampston Park immediately north east of Rillington. The existing A64 already runs through the park, however both portions of the park contain either listed structures or elements of the gardens such as ponds. The Green and Blue Options and any proposed junctions associated with them could have a large impact within the Registered area or on the boundaries of the park.
- 10.93 Of the twenty five listed structures in the study area, most are located within the village of Rillington or within Scampston Park and therefore sufficiently far away from the proposed alignments of the bypass that there is unlikely to have any physical impact on them. However, several create a potential for visual impact.
- 10.94 A suitable mitigation strategy for the scheme is likely to be devised after field evaluation to determine the form, date and extent of archaeological remains along the route. A study of available aerial photographs would also be useful to locate areas of archaeology.

11. AIR QUALITY

INTRODUCTION

- 11.1 This chapter details the stage two air quality assessment for the Rillington bypass which has been undertaken in accordance with the Design Manual for Roads and Bridges (DMRB) Volume 11 section 3, part 1, air quality, revision March 2000.
- 11.2 Vehicle exhausts contain a number of pollutants including oxides of nitrogen (NO_x), carbon monoxide (CO), hydrocarbons, carbon dioxide (CO₂) and particulates (PM₁₀). The quantities of each pollutant emitted depend upon the type and quantity of fuel used, engine size, speed of the vehicle and abatement equipment fitted. Once emitted, the pollutants disperse in the air. Pollutant concentrations in the air can be measured or modelled and then compared with air quality criteria.
- 11.3 Pollutant concentrations were calculated at selected properties in the study area which would be affected by the proposed changes in traffic flow. The assessment was undertaken with and without the bypass, termed the scheme and do-minimum respectively, for six different options. A quantitative assessment was also carried out of the total change in concentrations of nitrogen dioxide and PM₁₀ due to the scheme.

AIR QUALITY CRITERIA AND POLLUTANTS

Air Quality Criteria

- 11.4 The air quality criteria can be readily divided into two groups; those that are mandatory and those that are designed for guidance. Mandatory criteria, which apply to the UK, are the European Community Directive limit values and the objectives from the Air Quality Strategy for the UK which are incorporated into regulations. The air quality criteria for vehicle derived pollutants are detailed in Appendix E.
- 11.5 It should be noted that concentrations of the pollutants listed in Appendix E, with the exception of PM₁₀, are given in two sets of units; as parts per million or billion (ppm or ppb) and as milligrammes per cubic metre (mg/m³) or microgrammes per cubic

metre ($\mu\text{g}/\text{m}^3$). Conversion rates between the two sets of units as given in the DETR's Pollutant Specific Guidance, May 2000, are provided in Appendix E.

- 11.6 In the 1980s, the European Community (EC) issued Directives containing limit and guide values for some of the principal air pollutants to which people are exposed. The EC Directives were incorporated into the UK legislation. The mandatory limit values were set in order to protect human health while guide values were set as advisory targets for the protection of human health and the environment in the longer term.
- 11.7 Under the 1996 European Union Ambient Air Quality Assessment and Management Directive, new Daughter Directives have been and are being prepared. The first of these sets legally binding limit values for concentrations of sulphur dioxide, nitrogen dioxide, particles and lead in air which must be complied with by 1 January 2005 or, in the case of nitrogen dioxide, 2010. This Directive was adopted in April 1999 and entered into force in July 1999. A second Daughter Directive was proposed in December 1998 for concentrations of benzene and carbon monoxide, and a third was proposed in June 1999 for ozone. Proposals are being prepared for further Daughter Directives for other pollutants. The Daughter Directives will supersede previous EC Directives on their achievement date (i.e. 1 January 2005 or 2010).
- 11.8 In 1997, the UK Government produced its first National Air Quality Strategy which contained standards and objectives for eight pollutants. The standards were based on the assessment of the effects of each pollutant on public health. The objectives were based on the standards and expressed as a given ambient concentration to be achieved by 2005. The objectives for seven pollutants in the Strategy were incorporated into Regulations in 1997.
- 11.9 A second edition of the Air Quality Strategy (AQS) was published in January 2000, which included revised objectives based on changes in government policy and scientific understanding. The changes included harmonising the objectives with the EU Daughter Directive limit values, and bringing target dates forward. The revised objectives have been incorporated into the 2000 Regulations for England and hence replace the objectives in the 1997 Regulations. The AQS standards and objectives for vehicle derived pollutants are provided in Appendix E.

Air Pollutants

Nitrogen Dioxide (NO₂)

- 11.10 Nitrogen dioxide is a secondary pollutant produced by the oxidation of nitric oxide (NO). Nitric oxide and nitrogen dioxide are collectively termed nitrogen oxides (NO_x). Over half of the UK NO_x emissions are from road transport. The majority of NO_x emitted from vehicles is in the form nitric oxide which oxidises rapidly in the presence of ozone to form nitrogen dioxide, which is the more toxic of the two pollutants. In high concentrations nitrogen dioxide can affect the respiratory system.

Carbon Monoxide (CO)

- 11.11 The majority of carbon monoxide emitted in the UK is from motor vehicles. It is readily absorbed through the lungs and reduces the oxygen carrying capability of the blood.

Hydrocarbons

- 11.12 The term 'hydrocarbons' is used to include all organic compounds emitted from vehicles both in the exhaust and by evaporation from the fuel system, and covers many hundreds of different compounds. About one third of the UK hydrocarbon emissions are produced by road transport. Hydrocarbons are important precursors of photochemical smog and oxidising compounds. The DMRB requires an assessment for benzene and 1,3-butadiene as these are included in the Air Quality Strategy. They are both genotoxic carcinogens and exposure to them is associated with certain types of leukaemia.

Particles (PM₁₀)

- 11.13 Particulate matter in vehicle exhaust gases consists of carbon nuclei onto which a wide range of compounds are absorbed. These particles are less than 10 microns(µm) in diameter. Particles with a median diameter of less than 10 µm are referred to as PM₁₀. The majority of vehicle particles come from diesel vehicles. About a quarter of PM₁₀ emissions in the UK are derived from road transport. Particulate matter appears to be associated with a range of measures of ill-health including effects on the respiratory and cardiovascular systems, on asthma and on mortality.

EXISTING CONDITIONS

- 11.14 Measurements may be made of pollutant concentrations by deploying sophisticated analytical instruments that measure continuously and record the average concentrations over specified time intervals. Simpler sampling devices, such as diffusion tubes, measure average concentrations over a longer time period and are analysed at a laboratory. The measurements made by the analytical instruments are superior to other techniques because they are more accurate, operate continuously and show the hour by hour variation in concentrations throughout the sampling period.

Continuous Monitoring

- 11.15 Air quality monitoring in the UK is carried out on behalf of the DETR who operate a network of UK automated continuous monitoring sites. Currently there are no continuous monitoring sites in Rillington. The closest sites in the North East of England, which monitor the pollutants associated with road traffic, are the Hull Centre and Middlesbrough sites, which are both located approximately 50 km away from Rillington. The Middlesbrough site is classed as industrial and would not be representative of the study area.
- 11.16 The Hull Centre site, classed as an urban centre site, has monitored carbon monoxide, nitrogen dioxide, PM₁₀, ozone and sulphur dioxide since 1994. This site is likely to record higher concentrations than in Rillington, which is much smaller in size than Hull. There is a suburban site (Redcar) in the North East of England which is located 8 miles east of Middlesbrough on the coast just over 50 km away. This is likely to be more representative. This site began monitoring concentrations of carbon monoxide, nitrogen dioxide, PM₁₀, ozone and sulphur dioxide in 1997. A summary of the existing air quality at both of these sites is provided below.
- 11.17 There are two sites in the North East of England which continuously monitor hydrocarbons. These are Leeds Potternewton, an urban background site, which began monitoring in 1995 and Middlesbrough, an urban industrial site which began monitoring in 1993. Concentrations at both of these sites are likely to be higher than in Rillington. The Leeds site is approximately 70 km south-west of Rillington. The concentrations at both of these sites are also summarised below.

Non-Continuous Monitoring

- 11.18 Nitrogen dioxide is also monitored using diffusion tubes. The closest sites to the study area in the DETR's diffusion tube network are in Malton, which lies approximately 7 km to the south-west of Rillington, but is much larger in size. Nitrogen dioxide is also monitored using diffusion tubes by the local authority, Rydale District, at a number of other sites close to the study area including Rillington, Ochre Farm, West Heslerton, Sherburn and Norton. Rydale District also measures hydrocarbons using BTEX diffusion tubes at kerbside sites in Malton, Pickering and Helmsley.
- 11.19 The location of the diffusion tube site in Rillington is shown in Figures 11.1 to 11.4. The air quality data is provided in Appendix F for the sites noted above and a summary is given below for each pollutant.

Nitrogen Dioxide

Hull Centre (1996-8)

- The EC Directive Limit Value and EC Directive Guide Value were not exceeded.
- The AQS annual mean objective (to be achieved by 2005) was exceeded in 1996-7, but not in 1998.
- The AQS 1-hour objective (to be achieved by 2005) was not exceeded.

Redcar (1997-8)

- None of the air quality criteria were exceeded.

Malton (1996-8), Rillington (1998-9), Ochre Farm (1998-9), West Heslerton (1998-1999), Sherburn (1998-9), Norton (1998-9)

- The AQS annual mean objective (to be achieved by 2005) was not exceeded at the background and intermediate sites. There were some exceedences at the kerbside sites.
- Concentrations of 40 $\mu\text{g}/\text{m}^3$ and 36 $\mu\text{g}/\text{m}^3$ were measured at the Rillington kerbside site in 1998 and 1999.

Carbon Monoxide

Hull Centre (1996-8) and Redcar (1997-8)

- The AQS maximum running 8-hour mean objective (to be achieved by 2003) was met in all years at both sites.

Particulate Matter (PM₁₀)

Hull Centre (1996-8)

- The AQS 24-hour objective (to be achieved by 2004) was met in 1997 and 1998.
- The AQS annual mean objective (to be achieved by 2004) was met in all years.

Redcar (1997-8)

- The AQS 24-hour objective (to be achieved by 2004) was not exceeded in 1998, data for comparison in 1997 was unavailable.
- The AQS annual mean objective (to be achieved by 2004) was not exceeded in either year.

Benzene

Leeds Potternewton and Middlesbrough (1996-8), Malton, Norton, Pickering and Helmsley (1998-9)

- Concentrations in all years were well below the AQS objective (to be achieved by 2003).

1,3-Butadiene

Leeds Potternewton and Middlesbrough (1996-8)

- Concentrations in all years were well below the AQS objective (to be achieved by 2003).

METHOD OF ASSESSMENT

11.20 The stage 2 screening method used to assess air quality near roads is given in the Department of Transport's publication 'Design Manual for Roads and Bridges' (DMRB Volume 11, section 3, part 1 air quality section revision March 2000). The assessment includes:

- constraints maps showing areas within 200 m of the proposed bypass and the existing A64 which might be affected by changes in air quality for each option;
- predicted pollutant concentrations at selected properties in relation to the relevant criteria, termed the Local Air Quality Assessment;
- a quantitative assessment for NO₂ and PM₁₀ determining the total change in concentrations due to the scheme, termed the Generalised Local Impact Assessment and also known as the 'NATA'.

Constraints Maps

11.21 The constraints maps for each option are shown in Figures 11.1 - 11.4. These identify the areas within 200 m of the proposed bypass and the existing A64 which are likely to have a change in air quality. There are approximately 450 properties within 200 m of the existing A64. These properties are likely to have an improvement in air quality as a result of the reduction in traffic. Places where susceptible people may be located include Rillington County Primary School within 200 m of the A64 and St. Mary's Lodge within 200 m of the bypass with the Red, Green and Blue Options.

Local Air Quality Assessment

- 11.22 The DMRB screening method was used to estimate carbon monoxide, nitrogen dioxide, benzene, 1,3-butadiene and particulate matter (PM₁₀) concentrations, which were then compared with the AQS objectives in the 2000 Regulations. The screening method is intended to be conservative and so to overestimate concentrations. If the screening method predicts that the criteria would be exceeded then the DMRB advises that detailed modelling should be carried out for those pollutants.
- 11.23 Predictions are generally made for the opening and design years of the scheme, both with and without the scheme and for a base year, with a requirement for assessing the year 2005 should the opening year fall before this date. The year 2005 has been chosen for assessment as the 1997 AQS objectives were to be met by this year. The

second edition of the Air Quality Strategy requires that the carbon monoxide, benzene and 1,3-butadiene objectives should be met by 2003, the PM₁₀ objectives by 2004 and the nitrogen dioxide objectives met by 2005. For this assessment the selected years were the base year (2000), the opening year (2005), and the design year (2020). These years are still thought to be appropriate, despite the changes in achievement dates of the objectives, as the assessment years of 2000 and 2005 cover the period in which the objectives have to be achieved.

- 11.24 The screening method takes into account vehicle flows and speeds, the distance between the receptor and the roads carrying the traffic, the proportion of heavy duty vehicles (HDVs), which consist of any vehicle with a gross weight greater than 3.5t thus including heavy goods vehicles (HGVs) and coaches, and changes in future exhaust emissions due to legislation. Data on annual average hourly traffic flows, and HDV proportions was provided by WS Atkins traffic engineers. A speed of 60 mph was used for the proposed bypass and 40 mph for all other roads. The data used in the assessment are shown in Appendix F.
- 11.25 Light and heavy duty vehicles sold in the UK have to comply with EC Directives for exhaust emissions. Since 1993 all new petrol engined cars have been required to be fitted with catalytic converters. These dramatically reduce emissions of oxides of nitrogen, hydrocarbons and carbon monoxide. Emission control legislation further reduces emissions from petrol cars with catalysts in 1996, 2000 and 2005. Lower emission limits for diesel light and heavy duty vehicles also take effect from 1992/1993, 1995/1996, 2000 and 2005.
- 11.26 Background concentrations for 1996 can either be taken from the DMRB which provides default values, or from the 1 km² background concentration maps calculated by NETCEN and available on the internet. For this study, background concentrations were taken from the internet site for each 1 km grid square in the study area. Concentrations were subsequently reduced for the predictions in 2000, 2005 and 2020 to take account of changes in UK emissions, using formulae given in the DMRB. The annual mean background concentrations used are shown in Table 11.1.

Table 11.1 - Background Concentrations in the Study Area

Pollutant	1996	2000	2005	2020
CO (ppm)	0.15	0.14	0.12	0.11
Benzene (ppb)	0.25	0.24	0.22	0.21
NO _x (µg/m ³)	21.0	20.4	19.8	19.5
PM ₁₀ (µg/m ³)	21.0	19.5	16.9	15.6

- 11.27 Twelve properties within the study area were selected for assessment. These properties, termed receptors, are shown on Figures 11.1 - 11.4. Receptors 1, 2, 5, 7, and 8 are close to the A64, which will be relieved by the by-pass. The other receptors are close to the by-pass with some of the options.
- 11.28 The screening method was used to estimate annual mean concentrations of CO, benzene, 1,3-butadiene, PM₁₀ and NO₂. Statistical relationships given in the DMRB were then used to derive concentrations that could be compared with the air quality criteria. The air quality criteria given in the DMRB and used in this assessment are provided in Table 11.2 and are based on the AQS objectives in the 2000 Regulations.

Table 11.2 - DMRB Air Quality Criteria

Pollutant		Air Quality Criteria
Nitrogen dioxide	40 µg/m ³	AQS annual mean objective
	200 µg/m ³	AQS maximum 1-hour objective not to be exceeded more than 18 times a year
Carbon monoxide	11.6 mg/m ³	AQS maximum running 8-hour mean objective
Benzene	16.25 µg/m ³	AQS running annual mean objective
1,3-Butadiene	2.25 µg/m ³	AQS running annual mean objective
Particulates (PM ₁₀)	50 µg/m ³	AQS maximum 24-hour mean objective not to be exceeded more than 33 times a year
	40 µg/m ³	AQS annual mean objective

Generalised Local Impact Assessment

- 11.29 This assessment gives a quantitative indication of whether the scheme would lead to an overall improvement or deterioration in air quality at properties and follows the Highways Agency's 'Guidance on the New Approach to Appraisal' (NATA).
- 11.30 Concentrations of nitrogen dioxide and PM₁₀ at the kerbside of each of the affected roads in 2005 were estimated using the DMRB screening method described above. The change in concentrations due to the scheme was calculated with an improvement (decrease in concentrations) having a negative value and a deterioration (increase in concentrations) having a positive value.
- 11.31 The number of properties in 50 m bands from each of the affected roads was counted out to a distance of 200 m from the road. Because pollutant concentrations decrease with increasing distance from a road, the number of properties in each band was

weighted using the factors given in the DMRB. For example, this has the effect of halving the change in concentrations at properties in the 150-200 m compared with those within 50 m of the road. The number of weighted properties were then added together to give a total which represents the number of properties within 50 m.

- 11.32 The change in concentrations at the kerbside was then multiplied by the total weighted properties for each road to give the overall change in concentrations for that road. The values for all of the roads are then added together to give an overall change for each pollutant.
- 11.33 The NATA worksheets for all options are provided in Appendix H.

RESULTS

- 11.34 This section describes the results from each of the six options. Exceedences of the criteria are marked in bold in the results tables below. For ease of understanding, the results are discussed per pollutant rather than per option. The greatest difference in concentrations between options is expected to occur for nitrogen dioxide. For this reason, the main differences between options are discussed in the nitrogen dioxide section.

Nitrogen Dioxide – annual mean

- 11.35 The estimated annual mean nitrogen dioxide concentrations for the six options are provided in Table 11.3. None of the receptors are estimated to exceed the AQS objective with any of the scheme options or with the do-minimum. The largest increases with the scheme are estimated to occur at receptors 6 and 10 with the Red Option in 2005 (+8 $\mu\text{g}/\text{m}^3$ and +6 $\mu\text{g}/\text{m}^3$ respectively). The largest decrease is estimated to occur at receptor 7 (-17 $\mu\text{g}/\text{m}^3$) with the Magenta, Red, Green and Green Sub-Option.
- 11.36 With the Magenta Option, receptor 1 (representative of properties near the A64 to the south-west of Rillington) is likely to have a decrease in concentrations due to the bypass joining the A64 further to the west of Rillington than with the other options. Receptor 4, near Low Moor Lane to the north of Rillington, is likely to have an increase in concentrations due to the close proximity of the bypass.
- 11.37 With the Red Option, receptors 6, 9 and 10 are all expected to have an increase in concentrations due to the alignment of the bypass. These properties are located to the south of Rillington.

- 11.38 Both Green Options are expected to lead to an increase in concentrations at receptors 6 and 10, with a decrease at receptor 11. This is due to the alignment of the bypass to the south of Rillington. There is likely to be a decrease in concentrations at receptor 3, as a result of the junction with Collinsons Lane.
- 11.39 With both the Blue Options, receptor 11, located near the A64 to the east of Rillington, is likely to have a decrease in concentrations, while receptors 6 and 12 are expected to have an increase in concentrations. This is due to the alignment of the bypass which joins the A64 further to the east than with the other options. Concentrations are expected to decrease at receptor 3 near Collinsons Lane, as a result of the junction with the bypass leading to a reduction in traffic along Collinsons Lane.
- 11.40 Diffusion tubes have been used to measure average concentrations of nitrogen dioxide at a kerbside site within Rillington as noted earlier. As the monitoring site is located within the study area, a comparison could be made between the measured and estimated concentrations. The measured value in 1999 was $36 \mu\text{g}/\text{m}^3$. The DMRB screening method gives a result of $37 \mu\text{g}/\text{m}^3$ at the site for the base year of 2000. This shows that the method has given an accurate estimate of the nitrogen dioxide concentration at this site.

Nitrogen Dioxide – 99.8th percentile of 1-hour Mean Concentrations

- 11.41 Table 11.4 shows the estimated 99.8th percentile of one-hour mean nitrogen dioxide concentrations for the six options. None of the receptors are estimated to exceed the criterion with any of the scheme options or with the do-minimum. The changes in concentrations follow the same pattern as for the annual mean concentrations, with receptors 2, 5 and 7 which are representative of properties in Rillington, having a large decrease in concentrations with all the options.

Carbon monoxide

- 11.42 Table 11.5 shows the estimated carbon monoxide concentrations for the six options. All of the results are predicted to be less than 20% of the AQS objective of $11.6 \text{ mg}/\text{m}^3$ in all scenarios and are predicted to decrease in future years. The scheme in each case has a negligible effect on the predicted concentrations, the greatest change at any receptor being $0.4 \text{ mg}/\text{m}^3$.

Benzene

- 11.43 The estimated benzene concentrations are shown in Table 11.6 for each of the six options. Concentrations at all receptors in all scenarios are less than a tenth of the AQS objective of $16.25 \mu\text{g}/\text{m}^3$. With all options, the scheme has a negligible effect on the predicted concentrations, the greatest change at any receptor being less than $0.1 \mu\text{g}/\text{m}^3$.

1,3-Butadiene

- 11.44 The estimated 1,3-butadiene concentrations are shown in Table 11.7 for each of the six options. The predicted concentrations at all receptors in all scenarios are well below the AQS objective of $2.25 \mu\text{g}/\text{m}^3$. The greatest change in concentrations at any receptor is less than $0.1 \mu\text{g}/\text{m}^3$.

PM₁₀

- 11.45 Tables 11.8 and 11.9 show the estimated PM₁₀ concentrations as the annual mean and as the 90th percentile of running 24-hour means for each of the six options. The AQS objectives are not expected to be exceeded at any of the receptors with any of the options. With all of the options the greatest change in annual mean concentrations at any receptor is $1 \mu\text{g}/\text{m}^3$.

Generalised Local Impact Assessment (NATA)

- 11.46 The results of the Generalised Local Impact Assessment are given in Table 11.3 and the worksheets produced in the assessment are provided in Appendix H.

Table 11.3 - Results from the Generalised Local Impact Assessment

	Magenta Option	Red Option	Blue Option	Blue Sub-Option	Green Option	Green Sub-Option
No. of properties with an improvement in air quality	560	406	435	410	435	410
No. of properties with a deterioration in air quality	14	55	13	13	7	7
Change in PM ₁₀ concentrations	-678	-686	-638	-626	-671	-658
Change in NO ₂ concentrations	-5060	-5105	-4864	-4759	-5129	-5024
Average change in PM ₁₀ concentrations at affected properties ($\mu\text{g}/\text{m}^3$)	-1.2	-1.5	-1.4	-1.5	-1.5	-1.6
Average change in NO ₂ concentrations at affected properties ($\mu\text{g}/\text{m}^3$)	-8.8	-11.1	-10.9	-11.3	-11.6	-12.0

- 11.47 All scheme options would lead to an improvement in air quality at more properties than would have a deterioration. Overall, annual mean nitrogen dioxide and 90th percentile of 24-hour mean PM₁₀ concentrations are expected to decrease. The Magenta Option is expected to have the most properties with an improvement, and the Red Option, the most with a deterioration. The average change in concentrations at properties affected by the scheme can be seen to range from -8.8 µg/m³ to -12.0 µg/m³ for annual mean nitrogen dioxide and between -1.2 µg/m³ to -1.6 µg/m³ for the 90th percentile of 24-hour mean PM₁₀. In both cases, the Green Sub-Option (In Cutting) has the greatest average reduction in concentrations.
- 11.48 Along the alignment of all the routes, there would be an increase of PM₁₀ concentrations of 2 µg/m³. Similarly, there would be an increase in NO₂ concentrations of over 4 µg/m³. Roadside concentrations are not expected to exceed an AQS objective, either with or without the scheme.

SUMMARY

- 11.49 Concentrations of nitrogen dioxide, carbon monoxide, benzene, 1,3-butadiene and particulate matter (PM₁₀) have been estimated at twelve properties close to roads likely to be affected by the proposed bypass using the screening method as described in the 2000 version of the DMRB. The assessment was carried out for the existing case (2000), the opening year (2005) and the design year (2020) for six different options and a Do-Minimum situation.
- 11.50 With all of the options, the properties in Rillington near the existing A64 experience a decrease in concentrations with the bypass, while those properties close to the proposed bypass experience an increase in concentrations. The change in concentrations is related to the proximity of nearby roads and their traffic flows.
- 11.51 The stage two screening assessments has shown that concentrations of all pollutants were estimated to be below the AQS objectives in future years with or without the scheme whichever option is chosen.
- 11.52 The Generalised Local Impact Assessment has shown that overall there is a large reduction in NO₂ and PM₁₀ concentrations at properties. Based on the overall reductions in concentrations, the order of preference, based on nitrogen dioxide results is Green, Red, Magenta, Green Sub-Option, Blue and Blue Sub-Option, and for PM₁₀ is Red, Magenta, Green, Green Sub-Option, Blue and Blue Sub-Option.

- 11.53 Over 400 properties in Rillington are expected to have an improvement in air quality with all scheme options. The average decrease in concentrations at properties affected by the scheme ranges between $-8.8 \mu\text{g}/\text{m}^3$ and $-12.0 \mu\text{g}/\text{m}^3$ for annual average nitrogen dioxide and between $-1.2 \mu\text{g}/\text{m}^3$ and $1.6 \mu\text{g}/\text{m}^3$ for the 90th percentile of 24-hour mean PM_{10} values. In both cases, the Green Sub-Option has the greatest average reduction in concentrations.

12. TRAFFIC NOISE AND VIBRATION

INTRODUCTION

- 12.1 An assessment of traffic noise and vibration has been carried out in accordance with DMRB Volume 11, Section 3, Part 7. This has been done to provide an appreciation of the likely consequences of noise from traffic associated with the four main options and two sub-options in cutting as follows:
- 12.2 All schemes have been assessed with roundabout junctions at each end with an intermediate priority junction at Low Moor Lane for the Magenta Route. All the southern options that are at ground level would have an intermediate junction at Collinsons Lane. For the Green and Blue Sub-Options which would be in cutting, Collinsons Lane would cross the bypass on a bridge.
- 12.3 All options and sub-options have been assessed to compare noise levels from traffic forecasts in 2020 with those in 2000 for the existing 'do minimum' situation.

APPROACH

Methodology

- 12.4 The following methodology has been employed in this assessment: -
- Design Manual for Roads and Bridges Vol. 11, Section 3, Part 7 – DoT 1994 (DMRB);
 - Calculation of Road Traffic Noise – DoT/Welsh Office 1988 (CRTN);
 - Guidance on the New Approach to Appraisal – DETR, July 1998 (NATA).
- 12.5 This assessment identifies the general noise and vibration effects to be taken into account in developing and refining route options. This is done in the following ways:

- Maps identifying noise sensitive locations within 300m wide bands on each side of the route, divided into strips, 0-100m, 100-200m and 200-300m distance from the *centreline* of the mainline of each option. Estimate of the number of properties within each of the above bands.
 - Estimates of noise levels at noise sensitive locations affected by each option and sub-option.
 - Estimates of the benefits of possible mitigation measures that will either form an integral part of the scheme, or would be considered as necessary additions.
 - Estimates of potential vibration, based on the number of properties within 40m of each option.
- 12.6 Preliminary noise measurements have been carried out in locations well away from A64 traffic noise and at locations close to that road. These can be compared with the preliminary calculations.
- 12.7 This assessment indicates the significance of the potential noise changes for each option and sub option. It takes each of these into account 'with' and 'without' possible mitigation measures for each option and sub-option.
- 12.8 The above is also illustrated on Figures 12.1 to 12.5.

Assumptions

- 12.9 In order to assess the potential impact of the options, the following assumptions have been made:
- Each route will be a single carriageway, at or near existing ground level with roundabout junctions at each end and an intermediate junction.
 - The Green and Blue Sub-Options would each have a lowered profile with no intermediate junction.
 - Mitigation measures are described for each option and sub option.
 - The basic schemes, without any form of noise mitigation have been assumed to incorporate a normal hot rolled asphalt wearing course.

- 'Do minimum' 18-hour annual average weekday traffic (AAWT) data is taken as current flows in year 2000 and has been used as the baseline for this comparison.
- Future traffic forecasts are taken for each option (including sub-options in cutting) for the year 2020 & assume 'high growth'. The difference in the 'low growth' situation is also stated.
- Commensurate forecasts of heavy vehicles are given for the same situations.
- The carriageway will be 7.3m wide and the national speed limit (60mph) will apply on all options and sub options. The estimated speed of 81 km/h given in CRTN is assumed.
- The existing A64 has a national 60 mph speed limit in force on the open road outside Rillington Village and again, the estimated speed of 81 km/h given in CRTN is assumed.
- There is a 40 mph speed limit within the village and advice in CRTN indicates that 50km/h should be used in the calculations. However, evidence by North Yorkshire County Council surveys conducted in February 1997 using portable speed meters indicate that mean speeds on the A64 near the Village Hall and near the Collinsons Lane junction were between 41 and 44 mph. Because of this, it is considered that 60km/h was an appropriate basis for calculations of present and future traffic noise from that road.
- Other roads (such as Collinsons Lane) have a 30 mph speed limit within the village and national limit outside. However, because the roads are narrow, this speed has been assumed here. The 70 km/h traffic speed advised in CRTN for noise assessments is considered too high in this situation.

FINDINGS

- 12.10 Table 12.1 sets out the number of houses that are within 300m of the centreline of each of the options. This is subdivided into the bands previously described and illustrated on the drawings. Because the main line of each sub-option is the same, this information is only given for the main options. Table 12.2 indicates other sensitive areas that are within 300m of each option.

Table 12.1 - Approximate Number of Houses within 300m of each Option (Laurel Farm to Scampston Bridge)

Option	Houses 0 – 100m	Houses 100 – 200m	Houses 200 – 300m
Do Minimum	160	170	110
Magenta	10	20	60
Red	20	60	140
Green	10	10	70
Blue	10	10	60

Table 12.2 - Other Noise Sensitive Areas within 300m of each Main Option

Option	Description
Do Minimum	St Andrews Church, Rillington County Primary School and most of the playing field; Church – Rillington Beck, Surgery and portion of the Cemetery; Sands Plantation; Grounds of Scampston Park.; Middle Fish Pond and High Fish Pond.
Magenta	Sands Plantation; High Fish Pond and Middle Fish Pond; Sands Plantation.
Red	Part of Rillington County Primary School and most of the playing field/ playground; Cemetery; High Fish Pond and Middle Fish Pond; Sands Plantation.
Green	Part of Rillington County Primary School playing field/ playground, not school building); Cemetery; High Fish Pond and Middle Fish Pond.
Blue	Part of Rillington County Primary School playing field/ playground, not school building); Cemetery; High Fish Pond and Middle Fish Pond and Mill Pond

12.11 Table 12.3 summarises the preliminary noise measurements carried out in February and April 2000. These figures give a preliminary indication of existing conditions.

Table 12.3 - Preliminary Noise Measurements

Location, Date and Time	OS Grid Ref: SE-	Measured Weekday Daytime Noise Levels dB ('free field')			Approx. Hourly Traffic Observed
		L _{A10}	L _{A90}	L _{Aeq}	
20m north of Oak Lodge, The Outgang, Collinson; 17/2/2000, 10:22 – 11:10	85650 73707	50-55	42-43	51-59	20
55m east of 'Five Beeches' 5.2m from kerb of A64, 17/2/2000, 11:30 – 11:51	84209 73666	79	54-55	74	700
Near Low Moor Lane by electricity pole at entrance to Sewage Works, 17/2/2000, 12:10 – 12:20 – noise affected by light aircraft circling	84986 74820	55	42	54	nil
As above – 7/4/2000, 11:33 – 12:17		46-49	36-37	54-60	20
8m north of 'Thorpe Bassett' sign, 4m from Collinsons Lane; 7/4/2000; 11:50 – 12:32	85675 73683	47-56	33-35	58-59	40
5m from A64, near Garage and opposite speed camera; 7/4/2000 12:45 – 13:20	84765 73982	74-75	48-51	70	930; 10-11% heavy vehicles
5m from A64, almost opposite Collinsons Lane junction; 7/4/2000; 13:25 – 14:00	85015 74045	74	49-53	70	950; 8% heavy vehicles
3m from junction with Pine Tree Avenue, 6m from A64; 7/4/2000; 14:11 – 14:44	85609 74545	73-75	44-54	69-70	1100; 10% heavy vehicles

12.12 Table 12.4 compares existing and future noise levels at representative locations for each option and sub option at key locations that are considered to represent noise sensitive areas. This does not take any account of mitigation measures. This table also indicates the change in noise levels between 2000 for the existing situation and 2020 with each option.

12.13 It is estimated that there are approximately 110 houses within 30m of the existing A64 that are not screened by other buildings or walls and are affected by noise levels of 68dB or more.

12.14 An indicative assessment of the *general* effects of each scheme is given by taking the sum of the overall changes in noise at all the representative properties. Thus, the greater the overall reduction, the better the scheme.

Traffic Mitigation

12.15 Table 12.5 is a similar comparison, taking into account mitigation measures. These measures comprise a quiet road surface on all new or altered carriageways for all options and sub-options. In the case of the Red, Green and Blue Routes, an acoustic barrier or earth bund could be built to protect 'Highfield', where noise levels will otherwise be increased by 10 – 20dB. In the case of the Red Route, an acoustic barrier or earth bund could be built to protect East Field Farm House. In the case of the Blue Route, a barrier or earth bund could be built to protect Scampston Mill Farm.

Table 12.4 - Noise Levels at Representative Noise – Sensitive Locations, No Mitigation

Ref	Location	Predicted Noise Levels, $L_{A10,18h}$ dB														
		Do Min 2000	Do Min 2020	Do Min Change	Magenta 2020	Magenta Change	Red 2020	Red Change	Green 2020	Green Change	Green Cutting 2020	Green Cutting Change	Blue 2020	Blue Change	Blue Cutting 2020	Blue Cutting Change
1	2 Moorgate Place	51	53	2	64	13	39	-12	40	-11	40	-11	42	-9	42	-9
2	Rillington Manor	52	54	2	60	8	54	2	51	-1	51	-1	43	-9	43	-9
3	Lodge Plantation	74	75	2	82	8	75	2	58	-15	59	-14	61	-12	62	-11
4	10 East Field	72	74	2	64	-8	62	-10	61	-11	62	-10	64	-9	63	-9
5	11 Sands Lane	62	64	2	63	1	48	-14	50	-12	51	-11	53	-9	53	-9
6	86 Low Moorgate	50	52	2	64	14	38	-12	38	-12	39	-11	41	-9	41	-8
7	Rectory Farm House 76	52	54	2	59	7	40	-12	40	-12	41	-11	43	-9	43	-8
8	51 Scarborough Rd	67	69	2	61	-6	55	-13	56	-12	56	-11	58	-9	58	-9
9	Five Beeches	72	73	2	66	-5	73	2	73	2	73	2	73	2	73	2
10	Next To West Field Malton Rd	68	70	2	63	-6	70	2	70	2	70	2	70	2	70	2
11	Birtley Court	69	71	2	60	-9	58	-12	58	-12	58	-11	61	-9	61	-9
12	Park Farm, 43 Low Moorgate	51	52	2	62	11	43	-8	43	-8	43	-7	44	-7	44	-6
13	Woodsyde 34 Malton Road	76	78	2	67	-9	69	-7	68	-8	69	-8	69	-7	69	-7
14	26 Manor View	58	59	2	58	0	46	-12	46	-12	46	-11	49	-9	49	-9
15	Highfield	49	51	2	38	-11	71	22	70	21	63	14	62	13	58	8
16	Scampston Mill Farm	56	58	2	58	2	58	2	58	1	58	2	67	10	67	10
17	Beech Tree Farm	44	46	2	46	2	56	12	58	14	55	11	58	13	55	10
18	Oak Lodge, The Outgang	59	61	2	61	2	63	3	63	4	62	3	63	4	62	3
19	Holly Tree Farm	45	47	2	47	2	53	8	54	9	53	8	54	9	53	7
20	Bassett House	56	58	2	54	-2	58	2	58	2	58	2	57	2	57	1
21	11 Collinsons Lane	60	62	2	62	2	64	4	64	3	63	3	64	3	63	3
22	East Field Farm	55	57	2	58	2	70	15	57	1	54	-1	56	0	53	-2
23	26 Sledgate	50	52	2	54	4	54	4	54	3	52	2	53	3	52	2
24	House At Garage	68	70	2	62	-6	65	-3	66	-3	66	-2	65	-3	65	-3
25	The Lowlands	53	55	2	59	5	58	5	59	5	57	4	59	5	57	4
26	Church Farm	58	60	2	61	3	61	3	61	3	61	3	61	3	61	3
Rating Factor		46			23		-25		-56		-68		-39		-54	
Rank		7			6		5		2		1		4		3	

Table 12.5 Noise Levels at Representative Noise – Sensitive Locations, With Noise Mitigation

Ref	Location	Do Min 2000	Estimated Noise Levels, $L_{Aeq,10h}$ dB						Blue Cutting Mitigation 2020	Blue Cutting Mitigation Change
			Magenta Mitigation 2020	Magenta Mitigation Change	Red Mitigation 2020	Red Mitigation Change	Green Mitigation 2020	Green Mitigation Change	Green Cutting Mitigation 2020	Green Cutting Change
1	2 Moorgate Place	51	61	10	39	-12	40	-11	40	-11
2	Rillington Manor	52	57	5	51	0	49	-3	49	-3
3	Lodge Plantation	74	79	5	72	-1	58	-15	59	-14
4	10 East Field	72	64	-8	61	-11	61	-11	61	-11
5	11 Sands Lane	62	60	-2	48	-14	50	-12	51	-11
6	86 Low Moorgate	50	61	11	38	-12	38	-12	39	-11
7	Rectory Farm House 76	52	56	4	40	-12	40	-12	41	-11
8	51 Scarborough Rd	67	61	-7	55	-13	56	-12	56	-11
9	Five Beeches	72	59	-13	73	2	73	2	73	2
10	Next To West Field Malton Rd	68	54	-15	70	2	70	2	70	2
11	Birtley Court	69	62	-8	58	-12	58	-12	58	-11
12	Park Farm, 43 Low Moorgate	51	59	8	43	-8	43	-8	43	-7
13	Woodsyde 34 Malton Road	76	68	-8	68	-9	67	-9	68	-8
14	26 Manor View	58	56	-2	46	-12	46	-12	46	-11
15	Highfield	49	41	-9	68	14*	67	12*	60	11
16	Scampston Mill Farm	56	57	1	57	1	58	1	58	2
17	Beech Tree Farm	44	46	2	54	9	55	11	53	8
18	Oak Lodge, The Outgang	59	61	2	62	3	62	3	62	2
19	Holly Tree Farm	45	47	2	51	6	52	7	51	6
20	Bassett House	56	51	-5	58	2	55	-1	58	2
21	11 Collinsons Lane	60	62	2	63	3	63	3	63	3
22	East Field Farm	55	55	0	67	7*	54	-1	51	-4
23	26 Sledgate	50	52	2	51	1	51	1	49	-1
24	House At Garage	68	61	-8	64	-5	64	-5	64	-5
25	The Lowlands	53	57	4	57	4	57	4	56	3
26	Church Farm	58	60	3	60	2	60	3	60	2
Rating Factor			-24	-63	-87	-89	-79	-87	-79	-87
Rank			6	5	2=	1	4	2=	4	2=

* Estimated noise level takes account of screening from an acoustic barrier or earth bund

- 12.16 The 'rank order' is an indication only. A more quantitative estimate given in Table 12.6 follows NATA guidance. This gives an estimate of the number of properties subjected to a 3dB increase or decrease in noise.

Table 12.6 – Noise Changes of 3dB or more Do Minimum 2000 v Option 2020, High Growth Traffic.

Option	Changes of 3dB or More			
	Without Mitigation		With Mitigation	
	Decrease	Increase	Decrease	Increase
Red	120	150	120	100
Magenta	130	60	130	40
Green	130	200	130	70
Green (Cutting)	130	160	130	60
Blue	130	110	130	70
Blue (Cutting)	130	90	130	40

- 12.17 In general, noise levels would be 3 to 4dB lower than shown if a noise-reduced road surface was provided for any of the Options. This would *reduce* the number of properties affected by noise increases and *increase* the number benefiting. Such surfaces are now increasingly used as the standard solution in the road construction industry. The 'with mitigation' sub-options have assumed that such a surface will be included over all sections of the bypass, not existing roads or minor new road changes.

- 12.18 Preliminary noise measurements have shown that areas around Rillington that are not affected by traffic are unlikely to have traffic noise levels any lower than 40dB. This is due to other sources of noise such as distant aircraft, noise from people etc, and it has been assumed that this situation would not change in the future.

Discussion on Noise Effects

Based on Distance Only

- 12.19 By examining the number of houses that are within 300m of an option, a coarse indication of the effects of traffic noise can be obtained.

- 12.20 At present, there are 440 properties within 300 metres of the existing A64 and 160 of these are within 100 metres of the existing A64 within Rillington. The number of houses within 300 metres of all options will be considerable less. Figures for each option are summarised below:

Table 12.7 – Summary of Noise Effects

Option	Number of Houses within 300 metres	Number of Houses within 100 metres	Ranking (by No. affected)
Blue	80	10	Lowest
Magenta	90	10	
Green	90	10	
Red	220	20	Highest

- 12.21 All options affect other noise sensitive areas to a lesser extent than the existing A64. However the Red Option is closest to Rillington County Primary School and most likely to affect it. The Blue and Green Options are further from the school but still within 300m.

Based on Noise Assessments

- 12.22 The noise measurements have shown that L_{A10} noise levels 5-6m from this section of the A64 are in the range 74-79dB, the highest are outside the 40mph limit. Away from main road traffic, L_{A10} noise levels are in the range 46 to 56dB. L_{A10} noise levels at 110 houses are estimated to be over 68dB.
- 12.23 From the preliminary noise calculations at representative points, it can be shown that houses near to a particular option will experience significant noise increases. This is because existing levels are low in these areas, particularly those to the north of Rillington.
- 12.24 Without additional mitigation included, this method shows that the Green Option In cutting is likely to give the greatest amount of benefit and/or least amount of disbenefit. However, from this preliminary analysis, the difference between this and the Green Option at ground level is not large.
- 12.25 The Magenta Option causes more extensive noise increases as it has an impact on houses that are presently subject to very low levels of traffic noise.
- 12.26 Taking noise mitigation into account, there is very little to choose between any of the Green and Blue Options. The Red Option is a little more intrusive and the Magenta Option is significantly worse based on noise changes of 3db or more.

- 12.27 By making an assessment of the impact on the basis of taking the net numbers of houses experiencing an increase or decrease in noise of 3dB or more, it can be shown that Blue Option in cutting with mitigation and Magenta Option with mitigation gives most benefits. This is followed by Green Option in cutting with mitigation and the Blue and Green Options at ground level. The least favourable is the Red Route.

Vibration

- 12.28 Table 12.8 gives the number of houses on each option that are within 40m of each route option. These are properties that may be at risk from ground borne and air borne vibration. Ground borne vibration affects properties within 5 metres of a significantly undulating road. In Rillington, this risk is low. Air borne vibration is a result of low frequency noise.

Table 12.8– Potential Effects of Vibration

Option	Distance from existing or proposed A64 and effects
Do Minimum	Over 105 houses (most un-screened) are within 40 m of the existing A64 – risk of airborne vibration. Some of these houses are within 5 m of the road, risk of ground-borne vibration if the road is uneven.
Magenta	No houses within 40m, no risks of airborne or ground borne vibration.
Red	No houses within 5m. Therefore no risk of ground borne vibration. 2 houses within 40m, risk of airborne vibration if no screening is provided. Some houses on existing A64 remain within 40m near the junction tie-ins.
Green	No houses within 40m, no risks of airborne or ground borne vibration. Some houses on existing A64 remain within 40m near the junction tie-ins.
Blue	No houses on route within 40m, no risks of airborne or ground borne vibration. Some houses on existing A64 remain within 40m near the junction tie-ins.

- 12.29 All schemes will reduce potential vibration effects when compared with the present road layout. The Red Option has 2 houses within 40m of its route.

SUMMARY AND CONCLUSIONS

- 12.30 This assessment has shown the following:

- Over 100 houses are presently subject to noise levels of 68dB or more; these are in the village centre. Approximately 435 are within 300m of the A64.

- All route options will provide a significant reduction in village centre noise levels. A much lower number of houses will exist within 300m of any bypass route when compared to the existing route through Rillington. This reduction ranges from less than 90 with the Magenta Option to just fewer than 220 with the Red Option.
- Rillington County Primary School is affected by different degrees by all routes except the Magenta Option.
- By taking representative points in the general area, the Blue and Green Options show the best benefits of noise reduction. The Magenta gives the least benefit. However, this is not a quantitative approach.
- By examining the extent of houses with noise changes of 3dB or more, it can be shown that the Blue Option in cutting with mitigation and Magenta Option give the greatest benefits. The Red Options give the most disbenefit.
- All options except the Red Route reduce the risks of vibration when compared with the existing route. The Red Option would introduce potential risk to two properties.

13. VEHICLE TRAVELLERS

VIEWS FROM THE ROAD

- 13.1 This section considers the view from the road for vehicle travellers. The assessment considers the type of view from the existing route and discusses the effect on views for each of the route options.

Existing Conditions

- 13.2 For the section of A64 under consideration, the existing route comprises a single-carriageway, with no hard shoulder or cycleways. There is a footpath that generally runs adjacent to the northern side of the road, although in the centre of Rillington, there are pedestrian footways on both sides of the road.
- 13.3 Between Rillington Fields, at the western end of the scheme, and Rillington, vehicle travellers enjoy open views to either side of the road. Field boundaries alongside the existing roadway are maintained as low clipped hedgerows and do not restrict the nature of the view. To the south and east, attractive views are towards the sinuous escarpment of the Yorkshire Wolds, and the tree cover associated with Bassett House. To the north and west, the outlook is across the flat Vale of Pickering and towards the distant hills of the North York Moors. The presence of overhead electricity power lines and the railway lines in the middle-distance partly detracts from views in this direction.
- 13.4 Within Rillington itself, the view from the road is restricted by adjacent buildings. The church situated at the central cross-roads, acts as a focal point for vistas in both directions down the A64 Malton Road/ Scarborough Road.
- 13.5 Between Rillington and Scampston Bridge, views from the road are limited by the treed blocks of Sands Plantation, Lodge Plantation and Firs Plantation, together with the mature boundary trees of Scampston Park. The traveller may be able to glimpse Scampston Hall from this section of road.

- 13.6 From Scampston Bridge, there is a fine vista of Scampston Hall, seen with the ornamental lakes in the foreground. This view is likely to be merely glimpsed by vehicle travellers over the bridge parapet, as they negotiate the bend in the road.
- 13.7 Immediately to the east of Scampston Bridge, views become more open in nature. The outlook towards the south-east is of the parkland landscape of the former Scampston deer park. The Capability Brown gothic “deer lodge” can be seen framed by groups of trees in the midground.

ASSESSMENT OF ROUTE OPTIONS

Magenta Route Option

- 13.8 Between the western limit of the scheme and Rillington, travellers would experience open views across the flat Vale landscape. When travelling in an easterly direction, views to the distant North York Moors would be degraded to some extent by the railway line and overhead power lines in the middle-distance.
- 13.9 When travelling in a westerly direction, travellers would obtain pleasant views towards the sinuous escarpment of the Yorkshire Wolds, and the tree cover associated with Bassett House. Travellers would pass close to the unattractive sewage works.
- 13.10 At Low Moor Lane, travellers would pass close to two properties. Between Rillington and the eastern limit of the scheme, the route would then pass through a series of small plantations, giving contrasting open and enclosed views along the route, before joining the existing A64 at Lodge Plantation.

Red Route Option

- 13.11 From the western limit of the scheme, the start of the route would roughly follow the toe of the scarp slope of the Yorkshire Wolds. Views from the road towards the sinuous and treed scarp would be attractive, although there would also be views to the rows of properties along Malton Road and Collinsons Lane.
- 13.12 To the east of Collinsons Lane, views from the road to the south would again be attractive, encompassing a foreground of agricultural fields, with a backdrop of the Wolds. The Red Route would pass close to properties in Woodlands Road before entering plantation woodland to join with the existing A64.

Green Route Option

- 13.13 The view from the road for the length of route between the western limit of the scheme and Collinsons Lane would be similar to that of Red Route Option.
- 13.14 To the east of Collinsons Lane, views from the road would be more rural in character than those from the Red Route since properties in Rillington would form a less prominent part of the view. At the eastern end of the scheme, the route would pass through Firs Plantation to join the existing A64 at a junction sited within the plantation. Views from this part of the route would be restricted by the plantation vegetation

Green Route (In Cutting)

- 13.15 At the western end of the scheme, views from the road would be the same as those from the Green Route described above. However, as the route descends into cutting, the view from the road would become more limited. Views would be channelled down the road corridor and side views restricted to the cutting slopes. At the eastern end of the scheme, the views would again be the same as for the Green Route above.

Blue Route Option

- 13.16 Views from the Blue Route would be the same as views from the Green Route for the majority of its length. At the eastern end of the scheme, the route would pass close to Scampston Mill Farm before entering Mill Plantation. Travellers would be able to view the Capability Brown gothic “deer lodge” from slightly closer than at present, before the route joins the existing A64. Travellers are likely to obtain attractive views of Scampston Hall and its ornamental lakes from the new crossing over Mill Beck.

Blue Route (In Cutting)

- 13.17 At the western end of the scheme, views from the road would be the same as those from the Green and Blue Routes described above. However, as the route descends into cutting, the view from the road would become more limited. Views would be channelled down the road corridor and side views restricted to the cutting slopes. At the eastern end of the scheme, the views would again be the same as for the Blue Route above.

CONCLUSIONS

- 13.18 The route options that pass to the south of the village offer scope for the most attractive views from the road. Of these, the Blue Route is likely to provide the most highly attractive views. The views from the Blue Route (In Cutting) would be restricted by its length in cutting, while the view from the Green Route (In Cutting) would be restricted both by the cutting, and by its alignment through Firs Plantation.
- 13.19 The views likely to be offered from the Magenta Route would be degraded to some extent by the presence of the railway line, two overhead power lines and in particular, by the sewage works.

DRIVER STRESS

- 13.20 This section considers driver stress for vehicle travellers using the A64. The assessment considers the stress experienced along the existing route and the stress that is likely to be experienced on the route options.
- 13.21 Driver stress is made up of the three main components. These are frustration, fear of potential accidents and uncertainty relating to the route being followed.
- Frustration is related to a restriction of a drivers desired speed. This is usually caused by high traffic flows, frequency of junctions, road works, or a difficulty in overtaking slower moving traffic.
 - The main factors leading to fear are the presence of other vehicles, inadequate sight distances, and the likelihood of pedestrians stepping into the road. Fear increases with an increase in traffic speed, traffic flow, and the proportion of Heavy Goods Vehicles (HGVs).
 - Route uncertainty is primarily caused by inadequate signing.
- 13.22 During the assessment of driver stress, peak hourly traffic flows per lane for the worst year in the first fifteen after opening should be considered. Generally, the worst year will be the fifteenth year after the scheme opening date. For Rillington, this would be the year 2020.
- 13.23 The average peak hourly flow per lane in flow units per hour can be derived from the application of factors to the forecast 2-way Annual Average Daily Traffic (AADT)

flows for 2020. In calculating the peak hourly flow, a car or light van equals one flow unit, and commercial vehicles of unladen weight greater than 1.5 tons and public service vehicles equal three flow units.

- 13.24 The calculated peak hourly flows can then be compared with the figures in the tables contained in Volume 11, Chapter 4, Part 9 of the Design Manual for Roads and Bridges (DMRB) to obtain an initial assessment of driver stress.

Assessment of Routes

Existing A64 through Rillington

- 13.25 Existing traffic flows along the A64 have been obtained from the automatic traffic counter located to the west of Rillington. This information has been supplemented by local traffic surveys carried out in December 1999. Information from the counter showed that there were 13,600 vehicles AADT in 1999. The percentage of Heavy Goods Vehicles was 12%.
- 13.26 A formal assessment of vehicle speeds has not been undertaken. However, speeds will be influenced by the 40-mph speed limit, the built up nature of Rillington and the traffic signals at the crossroads at the village centre. During site visits and from driving along the route an idea of vehicle speeds has been obtained. It is apparent that vehicle speeds are quite high on the approaches to the village, but as the vehicles pass through the built up area, it is estimated that vehicle speeds reduce to between 30 and 40 mph. It is likely that these speeds will reduce even further during peak periods in the summer.
- 13.27 Without a bypass, 2-way AADT flows through the village are forecast to increase to nearly 20,000 in the year 2020. This would equate to a peak hourly flow in each lane of 173 units/hour. From Table 3 in Volume 11, Chapter 4 of the DMRB, for a journey speed between 50 and 70kph, an initial assessment of driver stress would be moderate.
- 13.28 The substandard horizontal alignment of the existing A64 can result in reduced vehicle speeds with poor opportunities for overtaking slower moving traffic. High summer traffic flows can be almost double those outside the holiday season giving rise to a reduction of vehicle speeds.
- 13.29 A driver's fear of potential accidents is likely to be relatively high because of high peak hour flows, inadequate sight distances and a relatively high proportion of HGVs.

The presence of pedestrians and slow moving agricultural vehicles also adds to the level of driver stress.

- 13.30 In view of the above factors it is considered that the level of driver stress for the existing route is moderate to high.

Magenta Option

- 13.31 The provision of a single carriageway standard bypass would result in a forecast average peak flow of approximately 150 flow units per hour per lane. From Table 3 in Volume 11, Chapter 4 of the DMRB, for a journey speed above 70 kph, an initial assessment of driver stress would be low.
- 13.32 The realignment of the A64 in the vicinity of Willow Farm would eliminate the existing sub-standard bends. The higher standard of the bypass would also allow road users to travel at a higher speed than along the current A64 through Rillington. In addition the straight sections of the bypass would provide some safe overtaking opportunities, reducing induced driver stress.
- 13.33 The route has been assessed on the assumption that there would be roundabout junctions at both ends. At the western end, a roundabout would provide a connection to Rillington via the existing A64. At the eastern end, a roundabout would provide a safe connection for vehicles travelling to Rillington and Scampston. The provision of roundabouts on the A64 would cause some delay to traffic with a resultant slight reduction in average journey times. However, roundabouts are one of the safest forms of junction, and would provide a safe and clearly understood connection to the local road network.
- 13.34 Apart from local farm accesses at West Moor Lane (Track), the only junction along the bypass would be at Low Moor Lane.
- 13.35 Signing would be provided on the approach to all junctions together with route confirmation signs along the bypass to reduce route uncertainty.
- 13.36 Street lighting would be provided at the roundabouts. In keeping with the rural surroundings, street lighting would not be used along the by-pass.
- 13.37 The retention of the existing A64 would provide local traffic with a safer and less busy route. It would also provide an alternative route for agricultural vehicles.

- 13.38 The level of driver stress for the Magenta Option has been assessed as low.

Red Option

- 13.39 The provision of a single carriageway standard bypass would result in a forecast average peak flow of approximately 151 flow units per hour per lane. From Table 3 in Volume 11, Chapter 4 of the DMRB, for a journey speed above 70 kph, an initial assessment of driver stress would be low.
- 13.40 The route has been assessed on the assumption that there would be roundabout junctions at both ends that would provide connections to Rillington via the existing A64. The provision of roundabouts on the A64 would cause some delay to A64 traffic with a resultant slight reduction in average journey times.
- 13.41 Apart from farm accesses, the only junction along the bypass would be at Collinsons Lane. This junction would be a staggered ghost island junction maintaining direct connections between Rillington and Thorpe Basset.
- 13.42 Signing would be provided on the approach to all junctions together with route confirmation signs along the bypass to reduce route uncertainty.
- 13.43 Street lighting would be provided at the roundabouts. Street lighting would not be used along the by-pass.
- 13.44 The retention of the existing A64 would provide local traffic with a safer and less busy route. It would also provide an alternative route for agricultural vehicles.
- 13.45 The Red Route would relieve Rillington of a large proportion of vehicles. However, vehicles using the bypass would travel further than if they had driven through the village. The alignment of the bypass would also preclude any overtaking opportunities. Driver stress for the Red Option has been assessed as low.

Green Option (At Ground Level)

- 13.46 The provision of a single carriageway standard would result in a forecast average peak flow of approximately 149 flow units per hour per lane. From Table 3 in Volume 11, Chapter 4 of the DMRB, for a journey speed above 70 kph, an initial assessment of driver stress would be low.

- 13.47 The route has been assessed on the assumption that there would be roundabout junctions at both ends. At the western end, a roundabout would provide a connection to Rillington via the existing A64. At the eastern end, a roundabout would provide a safe connection for vehicles travelling to Rillington, Wintringham and Scampston. The provision of roundabouts on the A64 would cause some delay to A64 traffic with a resultant slight reduction in average journey times.
- 13.48 Similarly to the Red Route, the only junction along the bypass apart from farm accesses would be at Collinsons Lane. This junction would be a staggered ghost island junction maintaining direct connections between Rillington and Thorpe Basset.
- 13.49 Signing would be provided on the approach to all junctions together with route confirmation signs along the bypass to reduce route uncertainty.
- 13.50 Street lighting would be provided at the roundabouts. Street lighting would not be used along the by-pass.
- 13.51 The retention of the existing A64 would provide local traffic with a safer and less congested route. It would also provide an alternative route for agricultural vehicles.
- 13.52 This route would relieve Rillington of a large proportion of vehicles. Vehicles using the bypass would travel slightly further than if they had driven through the village. The alignment of the bypass would also limit overtaking opportunities. Consequently, driver stress for the Green Option (at grade) has been assessed as low.

Green Option (In Cutting)

- 13.53 The provision of a single carriageway standard would result in a forecast average peak flow of approximately 149 flow units per hour per lane. From Table 3 in Volume 11, Chapter 4 of the DMRB, for a journey speed above 70 kph, an initial assessment of driver stress would be low.
- 13.54 The route has been assessed on the assumption that there would be roundabout junctions at both ends. At the western end, a roundabout would provide a connection to Rillington via the existing A64. At the eastern end, a roundabout would provide a safe connection for vehicles travelling to Rillington, Wintringham and Scampston. The provision of roundabouts on the A64 would cause some delay to A64 traffic with a resultant slight reduction in average journey times.

- 13.55 Apart from farm accesses, there would not be any junctions along the bypass. At Collinsons lane the bypass would be in a cutting and the local road to Thorpe Basset would cross the bypass on new bridge.
- 13.56 Signing would be provided on the approach to all junctions together with route confirmation signs along the bypass to reduce route uncertainty.
- 13.57 Street lighting would be provided at the roundabouts. Street lighting would not be used along the by-pass.
- 13.58 The retention of the existing A64 would provide local traffic with a safer and less congested route. It would also provide an alternative route for agricultural vehicles.
- 13.59 This route would relieve Rillington of a large proportion of vehicles. Vehicles using the bypass would travel slightly further than if they had driven through the village and the alignment of the bypass would limit overtaking opportunities. There would not be any junctions along the route. Driver stress for the Green Option has been assessed as low.

Blue Option (At Ground Level)

- 13.60 The provision of a single carriageway standard bypass would result in a forecast average peak flow of approximately 144 flow units per hour per lane. From Table 3 in Volume 11, Chapter 4 of the DMRB, for a journey speed above 70 kph, an initial assessment of driver stress would be low.
- 13.61 The route has been assessed on the assumption that there would be roundabout junctions at both ends that would provide connections to Rillington via the existing A64. The provision of roundabouts on the A64 would cause some delay to A64 traffic with a resultant slight reduction in average journey times.
- 13.62 Apart from local farm accesses, the only junction along the bypass would be at Collinsons Lane. This junction would be a staggered ghost island junction maintaining direct connections between Rillington and Thorpe Basset.
- 13.63 Signing would be provided on the approach to all junctions together with route confirmation signs along the bypass to reduce route uncertainty.

- 13.64 Street lighting would be provided at the roundabouts. Street lighting would not be used along the by-pass.
- 13.65 The retention of the existing A64 would provide local traffic with a safer and less busy route. It would also provide an alternative route for agricultural vehicles.
- 13.66 This route would relieve Rillington of a large proportion of vehicles. Vehicles using the bypass would travel marginally further than if they had driven through the village. They would follow a route that was generally straight and predominantly free of junctions. This would create a reassuring environment for drivers with improved overtaking opportunities. Consequently, driver stress for the Blue Option has been assessed as being low.

Blue Option (In Cutting)

- 13.67 The provision of a single carriageway standard bypass would result in a forecast average peak flow of approximately 140 flow units per hour per lane. From Table 3 in Volume 11, Chapter 4 of the DMBR, for a journey speed above 70 kph, an initial assessment of driver stress would be low.
- 13.68 The route has been assessed on the assumption that there would be roundabout junctions at both ends which would provide connections to Rillington via the existing A64. The provision of roundabouts on the A64 would cause some delay to A64 traffic with a resultant slight reduction in average journey times.
- 13.69 Apart from farm accesses, there would not be any junctions along the bypass. At Collinsons lane the bypass would be in a cutting and the local road to Thorpe Basset would cross the bypass on new bridge.
- 13.70 Signing would be provided on the approach to all junctions together with route confirmation signs along the bypass to reduce route uncertainty.
- 13.71 Street lighting would be provided at the roundabouts. Street lighting would not be used along the by-pass.
- 13.72 The retention of the existing A64 would provide local traffic with a safer and less busy route. It would also provide an alternative route for agricultural vehicles.

- 13.73 This route would relieve Rillington of a large proportion of vehicles. Although, vehicles using the bypass would travel marginally further than if they had driven through the village, they would follow a route that was generally straight with improved overtaking opportunities. Driver stress for the Blue Option has been assessed as low.

CONCLUSIONS

The following table summarises the impact on vehicle travellers.

Table 13.1 – Summary of Impact on Vehicle Travellers

Route	Driver Stress Associated With...			
	View From Road	Peak Hourly Flow	Overtaking	Average
Existing A64	Moderate	Moderate	High	Moderate-High
Magenta Option	Low	Low	Low	Low
Red Option	Low	Low	Low	Low
Green (At Grade)	Low	Low	Low	Low
Green (In Cutting)	Low	Low	Low	Low
Blue (At Grade)	Low	Low	Low	Low
Blue (In Cutting)	Low	Low	Low	Low

- 13.74 The existing A64 as it passes through Rillington is likely to produce a moderate to high driver stress. There are many factors that would contribute to this including the close proximity to pedestrians, likelihood of delays at the traffic signals and the lack of overtaking opportunities.
- 13.75 All the bypass routes would improve upon the existing situation to varying degrees. Each route would provide improved views over a rural landscape and provide a much-improved standard of road.
- 13.76 The Blue Route in cutting is most likely to produce the least driver stress although the benefit is only marginal when compared with the other options. This route is the closest in length when compared to the alternative route through Rillington and affords greater overtaking opportunities. Views from the road would be over agricultural land with some glimpses of Scampston Hall.

14. DISRUPTION DUE TO CONSTRUCTION

INTRODUCTION

- 14.1 Construction effects are temporary but may be significant, particularly for those living or working in the vicinity of the works. Disruption can occur between the start of any advance works and the end of the contract maintenance period. Disruption can be caused not only by the road construction itself, but also by works carried out by utility companies. These works may extend some distance beyond the highway construction site. Other off site works may include improvements to watercourses.
- 14.2 Construction impacts typically include a localised increase in noise, vibration and dust, and a loss of amenity caused by the presence of heavy construction traffic. Those affected can include people in their homes or places of work, visitors to community facilities, pedestrians, cyclists, equestrians and vehicle travellers. There can also be potential impacts on the environment, for example to watercourses or to ecologically valuable land. Wildlife may also be disturbed. There is likely to be an increase in traffic along construction access routes associated with delivery and disposal of materials, and delivery and collection of plant and labour.
- 14.3 Research has shown that disruption due to construction is generally a more localised phenomenon than the impacts of a scheme once it has opened to traffic. A study showed that at least 50% of the people living within 50 metres of a site were seriously bothered by construction nuisance. However, less than 20% of people living beyond 100 metres of the works were seriously bothered. In accordance with the guidance contained in volume 11 of the DMRB, the number of properties that would be within 100 metres of a bypass route has been noted.

ASSESSMENT OF ROUTES

Magenta Option

14.4 The Magenta Option would be constructed to the north of Rillington. Junctions would be provided with the A64 to the west and east of Rillington and on the north side of the bypass at Low Moor. The route would be predominantly at ground level.

14.5 Key locations where there is likely to be an impact from the works are:

- The western end of the route adjacent to the A64.
- Low Moor Lane.
- Sands Lane.
- The eastern end of the route adjacent to the A64.

Impact on Property

14.6 10 properties would be within 100 metres of this route. Properties that are identified on the Ordnance Survey plan and within or close to 100 metres from the works include Laurel Farm, Five Beeches, Moorgate Place and Rillington Manor.

14.7 Residents of Rillington Fields are likely to experience some impacts during the construction of a new western junction and associated realignment works of the A64. Residents on Low Moor Lane are likely to experience some impacts during construction of the new bypass and the junction with Low Moor Lane. Residents located on Scarborough Road at the eastern end of Rillington are likely to experience some impacts during the construction of a new eastern junction and associated realignment works to the A64.

Road users

14.8 Restrictions would be placed on the routes used by construction traffic. To minimise the construction impact, it is anticipated that construction traffic would be restricted to using the A64 for access to the site. It would therefore be necessary to construct a haul route along the line of the bypass and access to the site would only be obtained to the west and east of Rillington from the A64 in the vicinity of the tie-ins.

- 14.9 As the route is predominantly off-line, there is unlikely to be a significant impact to road users along the A64. However, there may be some delays to A64 traffic during the construction of the tie-ins at both ends of the bypass.
- 14.10 Disruption is likely to occur where the proposed route crosses existing routes. At Low Moor Lane it would be necessary to provide a temporary crossing as there is no alternative route. At Sands Lane, there is a short alternative route to the A64 that could be used by local traffic. Six Public Rights of Way would be crossed and it would be necessary to provide temporary diversions and crossings.

Environmental Issues

- 14.11 The proposed route would cross Rillington beck near the sewage works, ditches and field drains. It would therefore be necessary to ensure that measures were in place to prevent pollution of watercourses.

Red Option

- 14.12 The Red Option would be constructed to the south of Rillington. Junctions would be provided with the A64 to the west and east of Rillington and at Collinsons Lane. The route would be predominantly at ground level.
- 14.13 Key locations where there is likely to be an impact from the works are:
- The western end of the route where a new junction would be constructed to connect with the A64.
 - Collinsons Lane.
 - Rillington Beck.
 - The important archaeological site.
 - The eastern end of the route where a new junction would be constructed to connect with the A64 and Sands Lane.

Impact on Property

- 14.14 20 properties would be within 100 metres of this route. Properties that are identified on the Ordnance Survey plan and within or close to a 100 metres from the works include West Field, the property to the south of the depot and the farm at East Field
- 14.15 Residents near West Field are likely to experience some impacts during the construction of a new western junction and associated realignment works to the A64. Residents on the south side of Rillington are likely to experience some impacts during construction of the new bypass and the junction with Collinsons Lane. Residents located on Scarborough Road at the eastern end of Rillington are likely to experience some impacts during the construction of a new eastern junction and associated realignment works to the A64.

Road Users

- 14.16 Restrictions would be placed on the routes used by construction traffic. To minimise the construction impact, it is anticipated that construction traffic would be restricted to using the A64 for access to the site. It would therefore be necessary to construct a haul route along the line of the bypass and access to the site would only be obtained to the west and east of Rillington from the A64 in the vicinity of the tie-ins.
- 14.17 As the route is predominantly off-line, there is unlikely to be a significant impact to road users along the A64. However, there may be some delays to A64 traffic during the construction of the tie-ins at both ends of the bypass.
- 14.18 Disruption is likely to occur where the proposed route crosses existing routes. At Collinsons Lane it would be necessary to provide a temporary crossing as there is no convenient alternative route to Thorpe Bassett. Three Public Rights of Way would be crossed and it would be necessary to provide temporary diversions and crossings.

Environmental Issues

- 14.19 The proposed route would cross Rillington beck, ditches and field drains. It would therefore be necessary to ensure that measures were in place to prevent pollution of watercourses.
- 14.20 At the eastern end of Rillington, the route would pass through a scheduled ancient monument (SAM). Construction works including drainage trenches are likely to

cause significant damage to the SAM and the NYCC archaeologist has stated that this would be unacceptable.

Green Option (At Grade)

14.21 This option would be constructed to the south of Rillington. Junctions would be provided with the A64 to the west and east of Rillington, at Collinsons Lane and the road to Wintringham. The route would be predominantly at ground level.

14.22 Key locations where there is likely to be an impact from the works are:

- The western end of the route where a new junction would be constructed to connect with the A64
- Collinsons lane
- Rillington Beck
- Road to Scampston Mill Farm and Wintringham.
- The eastern end of the route where a new junction would be constructed to connect with the A64 and the Wintringham Road.

Impact on Property

14.23 10 properties would be within 100 metres of this route. Properties that are identified on the Ordnance Survey plan and within or close to a 100 metres from the works include West Field and the property to the south of the depot.

14.24 Residents near west Field are likely to experience some impacts during the construction of a new western junction and associated realignment works to the A64. Residents on the south side of Rillington and on the north side of Thorpe Bassett are likely to experience some impacts during construction of the new bypass and the junction with Collinsons Lane.

Road Users

14.25 Restrictions would be placed on the routes used by construction traffic. To minimise the construction impact, it is anticipated that construction traffic would be restricted to

using the A64 for access to the site. It would therefore be necessary to construct a haul route along the line of the bypass and access to the site would only be obtained to the west and east of Rillington from the A64 in the vicinity of the tie-ins.

14.26 As the route is predominantly off-line, there is unlikely to be a significant impact to road users along the A64. However, there may be some delays to A64 traffic and traffic that uses the road to Wintringham during the construction of the tie-ins and junctions at both ends of the bypass.

14.27 Disruption is likely to occur where the proposed route crosses existing routes. At Collinsons Lane it would be necessary to provide a temporary crossing as there is no convenient alternative route to Thorpe Bassett. Three Public Rights of Way would be crossed and it would be necessary to provide temporary diversions and crossings.

Environmental Issues

14.28 The proposed route would cross Rillington beck, ditches and field drains. It would therefore be necessary to ensure that measures were in place to prevent pollution of watercourses.

Green Option (In Cutting)

14.29 The impact of this route is identical to the Green Option (At Grade) except for the following differences:

Impact on Property

14.30 The construction of the bypass would be in cutting for the middle part of the route. This would increase the volumes of material to be excavated and moved around the site. This would give rise to increased impact from construction traffic and equipment compared with the Green Option (At Grade). Properties located on the southern extremities of Rillington and the northern end of Thorpe Bassett would be most affected.

14.31 At Collinsons Lane, a new bridge would be constructed over the bypass. At this stage, it is not known whether it will be necessary to pile the foundations. However, the bridge works are likely to increase the impact of the construction works on properties located on the southern extremities of Rillington and the northern side of Thorpe Bassett when compared to the Green Option (At Grade).

Road Users

- 14.32 The proposed bridge would be constructed off-line, just to the west of the existing Collinsons Lane. This would ensure that disruption to vehicles travelling to Thorpe Bassett was kept to a minimum. However, it would be necessary to ensure that the bridge works were completed before excavation works for the bypass were commenced in the vicinity of Collinsons Lane to ensure that links with Thorpe Bassett were maintained. Otherwise, if diversion routes were required, they would involve long detours.
- 14.33 As the route would be in a cutting for part of its length, Public Rights of Way would need diverting to Collinsons Lane or the Wintringham Road to maintain connections.

Blue Option (At Grade)

- 14.34 This option would be constructed to the south of Rillington. Junctions would be provided with the A64 to the west and east of Rillington, at Collinsons Lane and the road to Wintringham. The route would be predominantly at ground level.
- 14.35 Locations where there is likely to be an impact from the works are:
- The western end of the route where a new junction would be constructed to connect with the A64
 - Collinsons lane
 - Rillington Beck
 - Road to Scampston Mill Farm and Wintringham.
 - Scampston Mill Stream and High Fish pond.
 - The eastern end of the route where a new junction would be constructed to connect with the A64.
- 14.36 10 properties would be within 100 metres of this route. Properties that are identified on the Ordnance Survey plan and within or close to a 100 metres from the works include West Field, the property to the south of the depot and Scampston Mill Farm.

Road Users

- 14.37 Restrictions would be placed on the routes used by construction traffic. To minimise the construction impact, it is anticipated that construction traffic would be restricted to using the A64 for access to the site. It would therefore be necessary to construct a haul route along the line of the bypass and access to the site would only be obtained to the west and east of Rillington from the A64 in the vicinity of the tie-ins.
- 14.38 As the route is predominantly off-line, there is unlikely to be a significant impact to road users along the A64. However, there may be some delays to A64 traffic during the construction of the tie-ins and junctions at both ends of the bypass.
- 14.39 Disruption is likely to occur where the proposed route crosses existing routes. At Collinsons Lane it would be necessary to provide a temporary crossing as there is no convenient alternative route to Thorpe Bassett. However, it is anticipated that the road to Wintringham could be closed as the diversion route is fairly short, joining the A64 approximately 800 metres further west. Three Public Rights of Way would be crossed and it would be necessary to provide temporary diversions and crossings.

Environmental Issues

- 14.40 The proposed route would cross Rillington beck, High Fish Pond and field drains. It will therefore be necessary to ensure that measures are in place to prevent pollution of these watercourses.

Blue Option (In Cutting)

- 14.41 The impact of this route is identical to the Blue Option (At Grade) except for the following differences:

Impact on Property

- 14.42 The construction of the bypass would be in cutting for the middle part of the route. This would increase the volumes of material to be excavated and moved around the site. This would give rise to increased impact from construction traffic and equipment compared with the Green Option (At Grade). Properties located on the southern extremities of Rillington and the northern end of Thorpe Bassett would be most affected.

- 14.43 At Collinsons Lane, a new bridge would be constructed over the bypass. At this stage, it is not known whether it will be necessary to pile the foundations. However, the bridge works are likely to increase the impact of the construction works on properties located on the southern extremities of Rillington when compared to the Blue Option (At Grade).

Road Users

- 14.44 The proposed bridge would be constructed off-line, just to the west of the existing Collinsons Lane. This would ensure that disruption to vehicles travelling to Thorpe Bassett was kept to a minimum. However, it would be necessary to ensure that the bridge works were completed before excavation works for the bypass were commenced in the vicinity of Collinsons Lane to ensure that links with Thorpe Bassett were maintained. Otherwise, if diversion routes were required, they would involve long detours.
- 14.45 As the route would be in a cutting for part of its length, Public Rights of Way would need diverting to Collinsons Lane or the Wintringham Road to maintain connections

Summary of Route Assessments

14.46 The following table summarises the key issues.

Table 14.1 – Construction Impacts

Route	Number of properties within 100m	Earthworks Quantities (Cubic Metres)		Other Impacts
		Cut	Fill	
Magenta	10	47,000	5,000	A64, Low Moor Lane, Sands Lane & Rillington beck
Red	20	40,000	4,000	A64, Collinsons Lane, Rillington beck & SAM
Green (At Grade)	10	46,000	5,000	A64, Collinsons Lane & Rillington beck
Green (In Cutting)	10	130,000	5,000	A64, Collinsons Lane & Rillington beck
Blue (At Grade)	10	46,000	5,000	A64, Collinsons Lane, road to Wintringham, Rillington beck, High Fish Pond & Mill Stream
Blue (In Cutting)	10	130,000	5,000	A64, Collinsons Lane, road to Wintringham, Rillington beck, High Fish Pond & Mill Stream

Mitigation

14.47 Disruption caused by construction activities can be mitigated to a certain extent under powers conferred by the Noise Insulation Regulations and the Land Compensation Act. Insulation against construction noise can be provided independently of insulation for future traffic noise. Where disruption is of such an extent that continued occupation is not reasonably possible, the Land Compensation act allows for temporary rehousing.

14.48 At this stage in the assessment procedures, mitigation measures have not been considered in detail. However, the following measures would be considered during the development of a scheme:

- Consultations would be held with the Local Authority to determine acceptable limits on potential construction impacts.

- Restriction on Contractors working hours.
- Restriction on routes used by construction vehicles.
- Restriction on the levels of noise, vibration and dust emissions.

- 14.49 Disruption to vehicle travellers could be limited by careful programming of the works, particularly at points of conflict between new construction and the existing A64. It may be possible to limit some construction work to periods of low traffic flows, for example, outside the summer period and/or at night and at weekends.
- 14.50 The permanent realignment of minor roads and public footpaths and bridleways could be carried out during the early phases of the construction program, with a view to limiting the duration of any potential disruption to vehicle travellers, pedestrians, cyclists, or equestrians.
- 14.51 Mitigation measures such as noise bunds and noise screens, which may be required as part of the permanent works could be constructed early in the works program so that the benefits are available during the construction period.
- 14.52 Contractual working restraints could be used to protect the natural environment against potentially adverse impacts. These could be used to control the method of working and the type of plant employed in sensitive areas. The contractor could also be prevented from storing materials or plant in sensitive areas, and be required to employ special measures to avoid contamination of sensitive areas such as Rillington Beck.
- 14.53 It may be necessary to carry out systematic, quantitative monitoring of conditions during the construction period, particularly with regard to noise and vibration.

15. PEDESTRIANS, CYCLISTS, EQUESTRIANS AND COMMUNITY EFFECTS

INTRODUCTION

- 15.1 The methodology used to assess the impact on the journeys made in the locality of the route corridors follows the guidelines in Part 8, Section 3 of the DMRB Volume 11. The assessment considers journeys made by pedestrians, cyclists, and equestrians. This group is described as '*pedestrians and others*' for the purpose of this report.
- 15.2 During the construction period, pedestrians and others are likely to experience disruption to their journeys, as well as users of community facilities. Disruption can take the form of loss of amenity, increase in journey length and time, increase in severance, or a decline in user safety.

Existing Conditions

- 15.3 Sixteen Public Rights of Way (PRoW), fourteen footpaths and two roads used as footpaths, connect with the section of the A64 under consideration. None of these PRoW's form a direct crossing of the A64, although several connect with it. There is a considerable amount of equestrian activity in the area, with a number of stables located in the vicinity of the proposed scheme.
- 15.4 The locations of existing PRoW have been established from the definitive map held by North Yorkshire County Council and are shown on Figure 15.1. Community facilities have been identified and are also shown on the same figure.
- 15.5 Local community facilities in Rillington include a church, hall, post office, public houses, primary school and a cemetery. In Thorpe Bassett there is a church. As the facilities in Rillington are fairly limited, most local residents would need to travel to Malton or Norton to use other facilities such as the hospital, library, museum, railway station and secondary schools. It is considered unlikely that many people would undertake this journey on foot or by bicycle owing to the distance.

- 15.6 The PRow that have been identified are likely to be used by pedestrians and others primarily for leisure purposes rather than for journeys to reach community facilities.
- 15.7 The A64 currently represents an existing line of severance to pedestrians, equestrians and others using ProW's. When using ProWs to make journeys between the north and the south, it will often be necessary to walk alongside and cross the A64. This is an unattractive and potentially dangerous prospect owing to the high traffic flows, narrow verges, and in some locations poor visibility.
- 15.8 Buses are the only means of public transport in the area since there are no railway stations in the vicinity of Rillington. The A64 is used by national coach operators particularly during the summer months and on bank holidays.
- 15.9 Yorkshire Coastliner operates bus services in Rillington. A scheduled local bus service operates between Rillington and Malton on a twice daily basis including Saturdays and Sundays. A scheduled service also operates between Rillington and Scarborough. This service runs from Monday to Friday at approximately 1-hour intervals and at weekends on a limited hourly basis. Several local mini buses also operate a community bus service through Rillington, predominantly to Malton, Pickering, and York.

ASSESSMENT OF ROUTE OPTIONS

Magenta Option

- 15.10 This route crosses PRow numbered 4, 5, 7, 8, 10, and 11 on Figure 15.1 as well as Low Moor Lane and Sands Lane. At these locations, connections to the proposed bypass would be provided, maintaining links.
- 15.11 Pedestrians and others using the PRow, Low Moor Lane or Sands Lane between the centre of Rillington and the north would be affected by the proposals. Where these routes cross the bypass, it is anticipated that users would incur a slight delay compared with previous travel along these routes. However, it is considered that usage of these routes would be fairly low and any delays and increases in journey lengths would be negligible.
- 15.12 Removal of through traffic from the existing A64 in Rillington would substantially improve the safety for pedestrians and others within Rillington. In particular, it would be easier and safer to cross the current A64. This would be of significant benefit to

vulnerable users such as children travelling to and from the school in the centre of Rillington and elderly people walking to local facilities.

- 15.13 Although there is a slight increase in community severance for pedestrians and others travelling from the north towards Rillington, there is a large reduction in severance for most of the community within Rillington. It is therefore considered that the bypass would provide a large benefit to the community.

Red Option

- 15.14 The route crosses PRoW numbers 12, 14, 15, 17. At these locations, connections to the proposed bypass would be provided, maintaining links. A new staggered junction would also be provided at Collinsons Lane to maintain links with Thorpe Bassett.
- 15.15 Pedestrians and others using the PRoW and Collinsons Lane between the centre of Rillington and the south would be affected by the proposals. Where these routes cross the bypass, it is anticipated that users would incur a slight delay compared with previous travel along these routes. However, it is considered that usage of these routes would be fairly low and any delays and increases in journey lengths would be negligible.
- 15.16 Removal of through traffic from the existing A64 in Rillington would substantially improve the safety for pedestrians, cyclists and equestrians within Rillington. In particular, it would be easier and safer to cross the A64. This would be of significant benefit to vulnerable users such as children travelling to and from the school in the centre of Rillington and elderly people walking to local facilities.
- 15.17 Although there is a slight increase in community severance for pedestrians and others travelling from the south towards Rillington, there is a large reduction in severance for most of the community within Rillington. It is therefore considered that the bypass would provide a large benefit to the community.

Green Options (In Cutting and At Grade)

- 15.18 These options follow the same horizontal route and only differ in their junction strategy at Collinsons Lane. There will be minimal differences between impacts on pedestrians and others, and community facilities, for the two routes.
- 15.19 The two routes cross PRoW numbered 12, 13, 14, 15 and 17 on Figure 15.1. At these locations, connections to the proposed bypass would be provided, maintaining links.

A new staggered junction would be provided at Collinsons Lane to maintain links with Thorpe Bassett when the route was at ground level and a bridge would carry Collinsons Lane over the bypass when it was in cutting.

- 15.20 Pedestrians and others using the PRoW, and Collinsons Lane between the centre of Rillington and the south would be affected by the proposal when it was at ground level. Where these routes cross the bypass, it is anticipated that users would incur a slight delay compared with previous travel along these routes. However, it is considered that usage of these routes would be fairly low and any delays and increases in journey lengths would be negligible.
- 15.21 For the Green Option (in cutting), severance along Collinsons Lane would be reduced. Pedestrians and others would be able to cross the bypass in safety with minimal delays. However, pedestrians and others walking southwards from Rillington would incur an increase in the length of their journey as the footpath would need to be diverted to the new bridge.
- 15.22 Removal of through traffic from the existing A64 in Rillington would substantially improve the safety for pedestrians, cyclists and equestrians within Rillington. In particular, it would be easier and safer to cross the A64. This would be of significant benefit to vulnerable users such as children travelling to and from the school in the centre of Rillington and elderly people walking to local facilities.
- 15.23 Although there is a slight increase in community severance for pedestrians and others travelling from the south towards Rillington, there is a large reduction in severance for most of the community within Rillington. It is therefore considered that the bypass would provide a large benefit to the community.

Blue Options (In Cutting and At Grade)

- 15.24 These options predominately follow the same route path as the Green Options, until the field boundary just north of Sands Lane (Track). Consequently, impacts on pedestrians and others, as well as community facilities users, will be similar to those associated with the Green Options.
- 15.25 Compared with the Green Option, additional impacts will occur at the crossing of Wintringham Road (C357). However, the number of pedestrians and others is likely to be low.

- 15.26 Although there is a slight increase in community severance for pedestrians and others travelling from the south towards Rillington, there is a large reduction in severance for most of the community within Rillington. It is therefore considered that the bypass would provide a large benefit to the community.

CONCLUSIONS

- 15.27 The Magenta Option would increase severance for pedestrians and others travelling from the centre of Rillington to the north. The other options would increase severance in varying degrees for pedestrians and others travelling from the centre of Rillington to the south.
- 15.28 All options would have a significant benefit for pedestrians and others within the centre of Rillington.
- 15.29 It is therefore considered that a bypass would in general provide a large benefit to the community.

16. SUMMARY OF KEY ISSUES

INTRODUCTION

16.1 This section summarises the key issues relating to the route options that have been assessed previously in this report.

16.2 The key issues are described below:

DO-MINIMUM CONDITIONS

Existing Highway

16.3 The existing highway passes through Rillington and is generally in a good state of repair. At the centre of the village, traffic signals control the movement of vehicles. At peak periods, queues can form at these signals. The alignment of the existing A64 is substandard at a number of locations in the vicinity of Rillington.

16.4 The accident records show that the locations of accidents are spread out along the route. However, in 1997 a fatal accident occurred at the bend opposite Laurel Farm to the west of Rillington and at the Yedingham Junction to the east of Rillington. Eight accidents have also occurred at the traffic signals over the last 5 years.

16.5 The Automatic traffic counter to the west of Rillington indicated that AADT flows were 13,600 vehicles in the year 1999. This is forecast to rise to 14,171 in 2005 (Low Growth, Assumed year of opening of a bypass) and 16,760 in 2020 (Low Growth, 15 years after opening)

Land Use

16.6 The residential part of the village is located mainly to the south of A64. In recent years, new residential development has taken place in the area off Woodland Road in recent years and a limited amount of infill development has also taken place to the

north of Low Moorgate. Westgate farm, to the south of the A64 is allocated for residential development.

- 16.7 Land surrounding Rillington is predominantly agricultural. In general terms, the land quality to the north of the A64 is better than the quality to the south.

Landscape and Visual Amenity

- 16.8 Rillington and its immediate surroundings are located on the southern fringe of the Vale of Pickering, a low-lying plain that extends as far as the east coast. The uplands of the Yorkshire Wolds lie immediately to the south. The escarpment slope of the northern edge of the Wolds falls within the area designated as the Wolds Area of High Landscape Value

- 16.9 A notable feature of the landscape is that of Scampston Park - a registered Historic Park and Garden, dating from the 18th century.

Water Quality and Drainage

- 16.10 At this stage of the assessment, details of existing drainage are not known. However, it is likely that the surface water from the A64 discharges into adjacent watercourses. As the A64 has been developed over a long period, it is unlikely that discharge and pollution control meets the current standards.

Ecology and Nature Conservation

- 16.11 In the vicinity of Rillington, there is one SSSI. It is known as Wintringham Marsh and it is predominantly marsh and grassland.
- 16.12 There is one SINC located in the south verge of the A64. (West Knapton Road verge)
- 16.13 Other notable features are the hedgerows that act as valuable ecological corridors and the two fields enclosed by Sands Wood which support uncommon flora.
- 16.14 Evidence of protected species includes badgers and bats.

Archaeology and cultural heritage

- 16.15 The area around Rillington appears to have been intensively settled since the early prehistoric period and is rich in archaeological remains. There is one scheduled

ancient monument in the area located to the south of the A64 at East Field which contains Bronze Age and Iron Age barrow cemeteries.

16.16 There are 25 listed structures within the study area, which are predominantly 17th to 19th century construction. Nine of the buildings are within Rillington including the Parish Church.

16.17 Other notable features include Rillington manor which is a Grade 2 listed building and the listed structures within the historic park and gardens of Scampston Hall.

Air Quality

16.18 Air quality readings have not been recorded in Rillington. However, as the A64 passes through the village centre, emissions from vehicles will have a detrimental affect on air quality. The forecast increase in traffic would exacerbate any impact.

Traffic Noise and Vibration

16.19 The existing A64 is located within the centre of Rillington. Traffic noise from vehicles will therefore affect a large number of properties within the village centre. The forecast increase in traffic would exacerbate any impact.

16.20 Within the study area, 160 properties are located within 100 metres of the existing A64, 170 properties are located between 100 metres and 200 metres of the existing A64 and 110 properties are located between 200 metres and 300 metres of the existing A64.

Vehicle Travellers

16.21 Vehicle travellers enjoy open views on the approaches to the village. Within the village, views are curtailed by the close proximity of buildings. However, the Parish church acts as a focal point at the crossroads.

16.22 It is considered that vehicle travellers are likely to suffer from increased stress levels when travelling through Rillington. Causes may include delays at the traffic signals, the presence of parked cars and delivery vehicles and the presence of pedestrians.

Pedestrians, Cyclists, Equestrians and Community Effects

- 16.23 An assessment of the numbers of people using pedestrian facilities has not been made at this stage. However, as local community facilities are located in the centre of Rillington it is likely that the existing A64 creates a line of severance.

MAGENTA ROUTE

Highway Alignment

- 16.24 The Magenta Route would be a single carriageway road constructed at ground level passing to the north of Rillington. The alignment would provide connections to the village from both the western and eastern approaches of the A64. Low Moor Lane would only be connected on the north side of the bypass. This would increase the distance for vehicles travelling from the northern end of Low Moor Lane to Rillington. Sands Lane would be severed by the route. A new connection to the bypass would not be provided as an alternative route to Scampston Village already exists.

Traffic and Economics

- 16.25 It is forecast that the proposed bypass would remove over 80% of traffic from the centre of Rillington. It has been calculated that the construction of the bypass with its improved standards when compared with the existing A64 would reduce the number of accidents by 65 (low traffic growth) or 83 (high traffic growth) over a 30-year assessment period.
- 16.26 The economic assessment has shown that the inclusion of roundabout junctions at each end would create large disbenefits. If single lane dualling junctions replaced the roundabouts, the economic assessment would be improved.

Policies and Plans

- 16.27 At a regional level, the proposed road scheme would comply with priorities identified in Regional Planning Guidance and would meet County Council aspirations for the improvement of A64. It would also meet objectives relating to improving road safety.
- 16.28 The route would not have any adverse impacts on Local Plan policies.

Land Use

- 16.29 This route would pass through land (Landbeach soils) which is classified as Grade 3a.

Landscape and Visual Amenity

- 16.30 The bypass would cross the flat vale landscape to the north of the existing A64, and for the majority of its length the route would pass through vale farmland, of landscape quality 4. The route cuts across the general field pattern and thus does not fit with the local landscape structure. The eastern end of the route passes through parkland associated with Rillington Manor.
- 16.31 With respect to visual impact, the route would have a substantial impact on 10 residences, a moderate impact on 69 residences and a slight impact on 34 properties.

Water Quality and Drainage

- 16.32 Although the route would create a new line of impact, measures to control flooding and pollution would be incorporated within the proposed scheme. Similar control measures are unlikely to be found along the existing A64. Consequently, the removal of a large proportion of traffic from the centre of Rillington onto the bypass would reduce the risk of pollution to local watercourses. It is therefore considered that the impact of the scheme would be slightly beneficial.

Ecology and Nature Conservation

- 16.33 This route would cross 5 watercourses including Rillington Beck which provide important wildlife corridors. It would therefore be necessary to provide mitigation measures at these points. These could include features such as culverts with raised ledges or “mammalian bypasses”. Appropriate fencing and vegetation could be used to funnel animals towards the entrances.
- 16.34 The route would pass through arable land, semi improved grassland (which exhibits ancient “ridge and furrow” markings) and areas of plantation.

Archaeology and Cultural Heritage

- 16.35 The route has no direct impact on any known Scheduled Ancient Monuments.

- 16.36 This option will remove traffic from the centre of Rillington where many listed buildings are located giving rise to a moderate beneficial impact. However, it will have an adverse visual impact upon Rillington Manor and the Stables.

Air Quality

- 16.37 The scheme would lead to an improvement in air quality for 560 properties, whilst only 14 properties would suffer a deterioration. Properties in Rillington particularly near the existing A64 would experience a decrease in concentrations of pollutants with the bypass, whilst those properties close to the proposed bypass would experience an increase.

Traffic Noise and Vibration

- 16.38 Following construction of the bypass, 10 properties would be located within 100 metres of the proposed route, 20 properties would be located between 100 metres and 200 metres of the proposed route and 60 properties would be located between 200 metres and 300 metres of the proposed route. The removal of a large proportion of traffic from the centre of Rillington would provide a significant reduction in village centre noise levels. However, a few properties to the north of Rillington would suffer an increase in noise.
- 16.39 No houses would be within 40m of the proposed route. Consequently, it is considered that there would be no risk of airborne vibration.

Vehicle Travellers

- 16.40 Vehicle travellers would enjoy open views along the proposed route.
- 16.41 Travellers along the proposed route are likely to experience reduced driver stress compared with the existing route and its associated urban environment. The retention of the existing A64 would provide local traffic with a safer and less busy route. As the junction at Low Moor Lane would only be connected on the northern side of the bypass, there would be an increase in severance for users travelling from Rillington to the north of the bypass.

Pedestrians, Cyclists, Equestrians and Community Effects

- 16.42 Removal of through traffic from the existing A64 in Rillington would substantially improve the safety of pedestrians, cyclists and equestrians within the village. This

would be of significant benefit to vulnerable users such as school children and the elderly.

- 16.43 There is a large reduction in severance for most of the community within the village. However, there is a slight increase in severance for pedestrians and others travelling from the north towards Rillington. Overall, it is considered that the bypass would provide a large benefit.

RED ROUTE

Highway Alignment

- 16.44 The Red Route would be a single carriageway road constructed at ground level passing to the south of Rillington. The alignment would provide connections to the village from both the western and eastern approaches of the A64. Collinsons Lane would be connected to the bypass at a new staggered junction maintaining links with Thorpe Bassett.

Traffic and Economics

- 16.45 It is forecast that the proposed bypass would remove over 80% of traffic from the centre of Rillington. It has been forecast that the construction of the bypass with its improved standards when compared with the existing A64 would reduce the number of accidents by 40 (low traffic growth) or 49 (high traffic growth) over a 30-year assessment period.
- 16.46 The economic assessment has shown that the inclusion of roundabout junctions at each end would create large disbenefits. If single lane dualling junctions replaced the roundabouts, the economic assessment would be improved.

Policies and Plans

- 16.47 At a regional level, the proposed road scheme would comply with priorities identified in Regional Planning Guidance and would meet County Council aspirations for the improvement of A64. It would also meet objectives relating to improving road safety.
- 16.48 The route would have an adverse impact on Local Plan policies, as it would pass through an area designated as being of High Landscape Value.

Land Use

- 16.49 The route would pass entirely through land that is entirely within the area of Newport soils. These are assessed as being marginal Grade 3a/3b.

Landscape and Visual Amenity

- 16.50 The route would pass through vale farmland of landscape quality 3 for the most part.
- 16.51 The proposed route would cause increased visual impact for properties at the eastern end of Rillington Fields and along the southern side of Rillington. It would also cause high visual impact for users of the community facilities on the southern edge of Rillington.
- 16.52 With respect to visual impact, the route would have a substantial impact on 51 residences, a moderate impact on 54 residences and a slight impact on 42 properties.

Water Quality and Drainage

- 16.53 Although the route would create a new line of impact, measures to control flooding and pollution would be incorporated within the proposed scheme. Consequently, the removal of a large proportion of traffic from the centre of Rillington onto the bypass would reduce the risk of pollution to local watercourses. It is therefore considered that the impact of the scheme would be slightly beneficial.

Ecology and Nature Conservation

- 16.54 The route would pass through semi improved grassland crossing 3 watercourses, including Rillington Beck, that provide important wildlife corridors. It would therefore be necessary to provide mitigation at these points. Appropriate features such as raised ledges or “mammalian bypasses” together with fencing and vegetation could be used to funnel animals towards the entrances.

Archaeology and Cultural Heritage

- 16.55 The route would have an impact on known archaeological remains to the west of Firs Plantation and either side of Collinsons Lane. The alignment also passes through the centre of the defined limits of the Scheduled Ancient Monument. Consequently, any proposed construction works would seriously affect the Scheduled Ancient Monument.

- 16.56 This option would not have a physical impact on any Listed Buildings. However, it would remove traffic from the centre of Rillington where many listed buildings are located giving rise to a moderate beneficial impact.

Air Quality

- 16.57 The scheme would lead to an improvement in air quality for 406 properties, whilst 55 properties would suffer deterioration in air quality. Properties in Rillington particularly near the existing A64 would experience a decrease in concentrations of pollutants, whilst those properties close to the proposed bypass would experience an increase.

Traffic Noise and Vibration

- 16.58 Following construction of the bypass, 20 properties would be located within 100 metres of the proposed route, 60 properties would be located between 100 metres and 200 metres of the proposed route and 140 properties would be located between 200 metres and 300 metres of the proposed route. The removal of a large proportion of traffic from the centre of Rillington would provide a significant reduction in village centre noise levels. However, some properties to the south of Rillington would suffer an increase in noise.
- 16.59 There are no houses within 5 metres of the proposed route. There are 2 houses within 40m of the proposed route giving rise to a risk of airborne vibration if no screening was provided.

Vehicle Travellers

- 16.60 Vehicle travellers would enjoy open views along the proposed route.
- 16.61 Travellers along the proposed route are likely to experience reduced driver stress compared with the existing route and its associated urban environment. The retention of the existing A64 would provide local traffic with a safer and less busy route. However, there would be a slight adverse impact for drivers travelling from Thorpe Bassett to Rillington as they would need to cross the bypass at a new staggered junction. The retention of the existing A64 would provide local traffic with a safer and less busy route.

Pedestrians, Cyclists, Equestrians and Community Effects

- 16.62 Removal of through traffic from the existing A64 in Rillington would substantially improve the safety of pedestrians, cyclists and equestrians within the village. This would be of significant benefit to vulnerable users such as school children and the elderly.
- 16.63 There is a large reduction in severance for most of the community within Rillington. However, there is a slight increase in severance for pedestrians and others travelling from the south towards Rillington. Over all, it is considered that the bypass would provide a large benefit to the community.

GREEN ROUTE

Highway Alignment

- 16.64 The Green Route would be a single carriageway road constructed at ground level passing to the south of Rillington. The alignment would provide connections to the village from both the western and eastern approaches of the A64. Collinsons Lane would be connected to the bypass at a new staggered junction maintaining links with Thorpe Bassett.

Traffic and Economics

- 16.65 It is forecast that the proposed bypass would remove over 80% of traffic from the centre of Rillington. It has been forecast that the construction of the bypass with its improved standards when compared with the existing A64 would reduce the number of accidents by 80 (low traffic growth) or 106 (high traffic growth) over a 30-year assessment period.
- 16.66 The economic assessment has shown that the inclusion of roundabout junctions at each end would create large disbenefits. If single lane dualling junctions replaced the roundabouts, the economic assessment would be improved.

Policies and Plans

- 16.67 At a regional level, the proposed road scheme would comply with priorities identified in Regional Planning Guidance and would meet County Council aspirations for the improvement of A64. It would also meet objectives relating to improving road safety.

- 16.68 The route would have an adverse impact on Local Plan policies as it would pass through an area designated as being of High Landscape Value.

Land Use

- 16.69 This option would pass entirely through farmland that is entirely within the area of Newport soils. These have been assessed as being marginal to Grade 3a/3b.

Landscape and visual amenity

- 16.70 The route would generally pass through vale farmland of landscape quality 3. It would also cut through Firs Plantation, of landscape quality 4.
- 16.71 The proposed route would cause increased visual impact for properties at the eastern end of Rillington Fields and along the southern side of Rillington. It would also cause high visual impact for users of the community facilities on the southern edge of Rillington.
- 16.72 At the eastern end of the scheme, the Green Route would cut through Firs Plantation. However, locating the new junction within Firs Plantation would help to limit its impact. Scampston Lodge would be subject to moderate visual impact, and the proposals would have a limited adverse effect on the setting of this listed building.
- 16.73 With respect to visual impact, the route would have a substantial impact on 33 residences, a moderate impact on 37 residences and a slight impact on 70 properties.

Water Quality and Drainage

- 16.74 Although the route would create a new line of impact, measures to control flooding and pollution would be incorporated within the proposed scheme. Consequently, the removal of a large proportion of traffic from the centre of Rillington onto the bypass would reduce the risk of pollution to local watercourses. It is therefore considered that the impact of the scheme would be slightly beneficial.

Ecology and Nature Conservation

- 16.75 The route would generally pass through semi improved grassland crossing 3 watercourses including Rillington Beck that provide important wildlife corridors. It would therefore be necessary to provide mitigation measures at these points. These could include features such as culverts with raised ledges or “mammalian bypasses”.

Associated fencing and vegetation could also be provided to funnel animals towards the entrances.

- 16.76 The route would result in large losses to arable land and would involve the removal of approximately half of Firs Plantation. This would fragment the existing plantation into two smaller areas and hence the proposed road would form a physical barrier to wildlife.

Archaeology and Cultural Heritage

- 16.77 The route would have an impact on known archaeological remains associated with East Field and an adjacent area to the south. The known cluster of archaeological sites identified around Collinsons Lane would also be affected by the construction of this route. The route also passes close to the defined limits of the scheduled ancient monument.
- 16.78 This option would not have any physical impact on any Listed Buildings. However, it would remove traffic from the centre of Rillington where many listed buildings are located giving rise to a moderate beneficial impact.

Air Quality

- 16.79 The scheme would lead to an improvement in air quality for 435 properties, whilst 7 properties would suffer a deterioration in air quality. Properties in Rillington, particularly near the existing A64, would experience a decrease in concentrations of pollutants, whilst those properties close to the proposed bypass would experience an increase in concentrations of pollutants.

Traffic Noise and Vibration

- 16.80 Following construction of the bypass, 10 properties would be located within 100 metres of the proposed route, 10 properties would be located between 100 metres and 200 metres of the proposed route and 70 properties would be located between 200 metres and 300 metres of the proposed route. The removal of a large proportion of traffic from the centre of Rillington would provide a significant reduction in village centre noise levels. However, some properties to the south of Rillington would suffer an increase in noise.
- 16.81 There would not be any houses within 40m of the proposals. Consequently there are no risks of airborne or ground borne vibration.

Vehicle Travellers

- 16.82 Vehicle travellers would enjoy open views along the proposed route.
- 16.83 Travellers along the proposed route are likely to experience reduced driver stress compared with the existing route and its associated urban environment. The retention of the existing A64 would provide local traffic with a safer and less busy route. However, there would be a slight adverse impact for drivers travelling from Thorpe Bassett to Rillington as they would need to cross the bypass at a new staggered junction. The retention of the existing A64 would provide local traffic with a safer and less busy route.

Pedestrians, Cyclists, Equestrians and Community Effects

- 16.84 Removal of through traffic from the existing A64 in Rillington would substantially improve the safety for pedestrians, cyclists and equestrians within Rillington. In particular, it would be easier and safer to cross the A64. This would be of significant benefit to vulnerable users such as school children and the elderly.
- 16.85 There is a large reduction in severance for most of the community within Rillington. However, there is a slight increase in severance for pedestrians and others travelling from the south towards Rillington. Over all, it is considered that the bypass would provide a large benefit to the community.

GREEN ROUTE (IN CUTTING)

- 16.86 The Green Route in cutting follows the same route as the Green Route described above. However, the route would be in a cutting over the middle section to a depth of around 4 metres. This would allow Collinsons Lane to pass over the bypass on a new bridge.
- 16.87 The impacts of the Green Route in cutting would be very similar to the impacts when it was at ground level. Differences are identified below.

Traffic and Economics

- 16.88 It has been forecast that the construction of the bypass with its improved standards when compared with the existing A64 would reduce the number of accidents by 107 (low traffic growth.) or 134 (high traffic growth) over a 30-year assessment period.

Policies and Plans

- 16.89 Same impact as route at ground level.

Land Use

- 16.90 As the road would be in a cutting, it would affect a wider corridor than when at ground level.

Landscape and Visual Amenity

- 16.91 The effect of lowering the central section of the route would be to decrease the visual impact from the south-eastern edge of Rillington as the majority of vehicles would be screened from view.
- 16.92 Although properties on the northern edge of Thorpe Bassett would benefit from the route being in cutting, the benefit would partly be offset by the visual impact of the proposed Collinsons Lane overbridge.
- 16.93 With respect to visual impact, the route would have a substantial impact on 28 residences, a moderate impact on 30 residences and a slight impact on 77 properties.

Water Quality and Drainage

- 16.94 There is likely to be an increased risk to pollution of ground water over the length where the route is in cutting. However, it is considered that the overall impact of the scheme would be slightly beneficial.

Ecology and Nature Conservation

- 16.95 This option would have a higher impact owing to the increased loss of vegetation and stream corridor. There would be a significant impact on the use of Rillington Beck by a wildlife corridor. It would be necessary to remove many mature trees and a large amount of scrub, resulting in the loss of a suitable habitat for bats and birds.

Archaeology and Cultural Heritage

- 16.96 The construction of the cutting would potentially increase the impact on archaeology.

Air Quality

- 16.97 The scheme would lead to an improvement in air quality for 410 properties, whilst 7 properties would suffer deterioration in air quality. Properties in Rillington particularly near the existing A64 would experience a decrease in concentrations of pollutants, whilst those properties close to the proposed bypass would experience an increase in concentrations of pollutants.

Traffic Noise and Vibration

- 16.98 Placing the road in cutting over part of its length would reduce the impact at 10 additional properties compared with the scheme at ground level after mitigation measures have been implemented.

Vehicle Travellers

- 16.99 Vehicle travellers would have restricted views over the length where the route was in cutting.

Pedestrians, Cyclists, Equestrians and Community Effects

- 16.100 The construction of a new bridge on Collinsons Lane would maintain direct links to Thorpe Bassett. This would be an improvement compared with the route at ground level.

BLUE ROUTE

Highway Alignment

- 16.101 The Blue Route would be a single carriageway road constructed at ground level passing to the south of Rillington. The alignment would provide connections to the village from both the western and eastern approaches of the A64. Collinsons Lane would be connected to the bypass at a new staggered junction maintaining links with Thorpe Bassett.

Traffic and Economics

- 16.102 It is forecast that the proposed bypass would remove over 80% of traffic from the centre of Rillington. It has been forecast that the construction of the bypass with its improved standards when compared with the existing A64 would reduce the number

of accidents by 119 (low traffic growth.) or 155 (high traffic growth) over a 30-year assessment period.

- 16.103 The economic assessment has shown that the inclusion of roundabout junctions at each end would create large disbenefits. If single lane dualling junctions replaced the roundabouts, the economic assessment would be improved.

Policies and Plans

- 16.104 At a regional level, the proposed road scheme would comply with priorities identified in Regional Planning Guidance and would meet County Council aspirations for the improvement of A64. It would also meet objectives relating to improving road safety.
- 16.105 The Route would have an adverse impact on Local Plan policies as it would pass through an area designated as being of high landscape value.

Land Use

- 16.106 This option would pass entirely through farmland that is entirely within the area of Newport soils. These have been assessed as being marginal to Grade 3a/3b.

Landscape and Visual Amenity

- 16.107 The Blue Route would generally pass through vale farmland of landscape quality 3.
- 16.108 The proposed Route would cause increased visual impact for properties at the eastern end of Rillington Fields and along the southern side of Rillington. It would also cause high visual impact for users of the community facilities on the southern edge of Rillington.
- 16.109 The route would pass close to Scampston Mill Farm, causing a substantial degree of visual impact. The impact on the setting of Scampston Bridge would depend on the extent of woodland removed in this area.
- 16.110 At the eastern end of the scheme, the junction of the proposed route with the existing A64 would be partially visible from Scampston Hall and from the gothic deer lodge on the opposite side of the existing A64. The degree of visual impact and the effect on the historic park would depend on the extent of woodland that would be removed.

- 16.111 With respect to visual impact, the route would have a substantial impact on 34 residences, a moderate impact on 36 residences and a slight impact on 77 properties.

Water Quality and Drainage

- 16.112 Although the route would create a new line of impact, measures to control flooding and pollution would be incorporated within the proposed scheme. Consequently, the removal of a large proportion of traffic from the centre of Rillington onto the bypass would reduce the risk of pollution to local watercourses. It is therefore considered that the impact of the scheme would be slightly beneficial.

Ecology and Nature Conservation

- 16.113 The route would generally pass through semi improved grassland crossing 4 watercourses including Rillington Beck, and Scampston Mill Stream that provide important wildlife corridors. It would therefore be necessary to provide mitigation measures at these points. These could include features such as culverts with raised ledges or “mammalian bypasses”. Appropriate fencing and vegetation could be provided to funnel animals towards the entrances. Care would also need to be taken in the vicinity of Mill Stream and High Fish Pond, as they have good water quality and support excellent fisheries.
- 16.114 The Blue Route would involve the removal of 3.6 hectares of arable land and 0.04 ha of hedgerow, resulting in adverse impacts to the small animals, birds and invertebrates that currently use these habitats. This option would also involve the removal of a considerable area of mixed plantation adjacent to Mill Farm resulting in a direct loss of habitat for mammals and birds alike.

Archaeology and Cultural Heritage

- 16.115 The Blue Route would have an impact on known archaeological remains associated with East Field and an adjacent area to the south. The known cluster of archaeological sites identified around Collinsons Lane would also be affected by the construction of this route. The route also passes close to the defined limits of the scheduled ancient monument.
- 16.116 This option would not have any physical impact on any Listed Buildings. However, it would remove traffic from the centre of Rillington where many listed buildings are located giving rise to a moderate beneficial impact.

Air Quality

- 16.117 The scheme would lead to an improvement in air quality for 435 properties, whilst 13 properties would suffer deterioration in air quality. Properties in Rillington particularly near the existing A64 would experience a decrease in concentrations of pollutants, whilst those properties close to the proposed bypass would experience an increase in concentrations of pollutants.

Traffic Noise and Vibration

- 16.118 Following construction of the bypass, 10 properties would be located within 100 metres of the proposed route, 10 properties would be located between 100 metres and 200 metres of the proposed route and 60 properties would be located between 200 metres and 300 metres of the proposed route. The removal of a large proportion of traffic from the centre of Rillington would provide a significant reduction in village centre noise levels. However, some properties to the south of Rillington would suffer an increase in noise.
- 16.119 There would not be any houses within 40m of the proposals. Consequently there are no risks of airborne or ground borne vibration.

Vehicle Travellers

- 16.120 Vehicle travellers would enjoy open views along the proposed route.
- 16.121 Travellers along the proposed route are likely to experience reduced driver stress compared with the existing route and its associated urban environment. The retention of the existing A64 would provide local traffic with a safer and less busy route. However, there would be a slight adverse impact for drivers travelling from Thorpe Bassett to Rillington, as they would need to cross the bypass at a new staggered junction. The retention of the existing A64 would provide local traffic with a safer and less busy route.

Pedestrians, Cyclists, Equestrians and Community Effects

- 16.122 Removal of through traffic from the existing A64 in Rillington would substantially improve the safety for pedestrians, cyclists and equestrians within Rillington. In particular, it would be easier and safer to cross the A64. This would be of significant benefit to vulnerable users such as school children and the elderly.

- 16.123 There is a large reduction in severance for most of the community within Rillington. However, there is a slight increase in severance for pedestrians and others travelling from the south towards Rillington. Over all, it is considered that the bypass would provide a large benefit to the community.

BLUE ROUTE (IN CUTTING)

- 16.124 The Blue Route in cutting follows the same route as the Blue Route described above. However, the route would be in a cutting over the middle section to a depth of around 4 metres. This would allow Collinsons Lane to pass over the bypass on a new bridge.
- 16.125 The impacts of the Blue Route in cutting would be very similar to the impacts when it was at ground level. Differences are identified below.

Traffic and Economics

- 16.126 It has been forecast that the construction of the bypass with its improved standards when compared with the existing A64 would reduce the number of accidents by 143 (low traffic growth.) or 183 (high traffic growth) over a 30-year assessment period.

Policies and Plans

- 16.127 Same impact as route at ground level.

Land Use

- 16.128 As the road would be in a cutting, it would affect a wider corridor than when at ground level.

Landscape and Visual Amenity

- 16.129 The effect of lowering the central section of the route would be to decrease the visual impact from the south-eastern edge of Rillington as the majority of vehicles apart from high-sided lorries would be screened from view.
- 16.130 Although properties on the northern edge of Thorpe Bassett would benefit from the route being in cutting, the benefit would partly be offset by the visual impact of the proposed Collinsons Lane overbridge.

- 16.131 With respect to visual impact, the route would have a substantial impact on 29 residences, a moderate impact on 29 residences and a slight impact on 78 properties.

Water Quality and Drainage

- 16.132 There is likely to be an increased risk to pollution of ground water over the length where the route is in cutting. However, it is considered that the overall impact of the scheme would be slightly beneficial.

Ecology and Nature Conservation

- 16.133 This option would have a higher impact owing to the increased loss of vegetation and stream corridor. There would be a significant impact on the use of Rillington Beck by wildlife. It would be necessary to remove many mature trees and a large amount of scrub resulting in the loss of suitable habitat for bats and birds.

Archaeology and Cultural Heritage

- 16.134 The construction of the cutting would potentially increase the impact on archaeology.

Air Quality

- 16.135 The scheme would lead to an improvement in air quality for 410 properties, whilst 13 properties would suffer deterioration in air quality. Properties in Rillington particularly near the existing A64 would experience a decrease in concentrations of pollutants, whilst those properties close to the proposed bypass would experience an increase in concentrations of pollutants.

Traffic Noise and Vibration

- 16.136 Placing the road in cutting over part of its length would reduce the impact at 30 additional properties compared with the scheme at ground level after mitigation measures had been undertaken..

Vehicle Travellers

- 16.137 Vehicle travellers would have restricted views over the length where the route was in cutting.

Pedestrians, Cyclists, Equestrians and Community Effects

- 16.138 The construction of a new bridge on Collinsons Lane would maintain direct links to Thorpe Bassett. This would be an improvement compared with the route at ground level.

SUMMARY

- 16.139 Table 16.1 summarises the major issues for each option.
- 16.140 From the table it can be seen that all options would improve the environment within Rillington. However, there would be some adverse effects to a small number of properties on the perimeter of the village that currently are remote from the A64.
- 16.141 The Magenta Route passes to the north of Rillington and would have the least severance effects of all the options.
- 16.142 The Red Route would have a major impact on the scheduled ancient monument and this would be unacceptable to the North Yorkshire County Council Archaeologist and English nature. In view of this impact it is recommended that the Red Route should be removed from further assessment.
- 16.143 The southern routes at ground level would all have a slight impact on properties to the south of Rillington and travellers to Thorpe Bassett. The sub-options in cutting would mitigate this impact to some extent. However, the construction costs of the sub-options is greater than for the routes at ground level.

Table 16.1 Summary of Major Issues

Option	Net Present Value (Low /High Growth)	Benefits	Dis-Benefits
Magenta	£-4.71m £-4.84m (With R'bouts)	Removes over 80% of traffic from centre of Rillington. Improves Air Quality at 560 properties. Reduces Noise levels at 130 properties. Severance effects significantly reduced. No severance for communities to south of Rillington.	Increase in severance along Low Moor Lane for small number of travellers. Degrades Air Quality at 14 properties. Increases Noise levels at 40 properties Affects grade 3a agricultural land.
Red	£-4.84m £-45.71m (With R'bouts)	Removes over 80% of traffic from centre of Rillington. Improves Air Quality at 406 properties Improves Noise levels at 120 properties Severance effects significantly reduced within Rillington.	Degrades Air Quality at 14 properties. Increases Noise levels at 100 properties. Airborne vibration at 2 properties. Affects grade 3a/3b agricultural land. Significant impact on the Scheduled Ancient Monument. Severance effects slightly increased for travellers to Thorpe Bassett.
Green (ground level)	£-6.19m £-6.69m (With R'bouts)	Removes over 80% of traffic from centre of Rillington. Improves Air Quality at 435 properties Improves Noise levels at 130 properties Severance effects significantly reduced within Rillington.	Degrades Air Quality at 7 properties. Increases Noise levels at 70 properties. Affects grade 3a/3b agricultural land. Affects fir plantation at eastern end Severance effects slightly increased for travellers to Thorpe Bassett.
Green (in cutting)	£-5.94m £-6.13m (With R'bouts)	Removes over 80% of traffic from centre of Rillington. Improves Air Quality at 410 properties Improves Noise levels at 130 properties Severance effects significantly reduced within Rillington.	Degrades Air Quality at 7 properties. Increases Noise levels at 60 properties. Affects grade 3a/3b agricultural land. Affects fir plantation at eastern end
Blue (ground level)	£-3.96m £-3.57m (With R'bouts)	Removes over 80% of traffic from centre of Rillington. Improves Air Quality at 435 properties Improves Noise levels at 130 properties Severance effects significantly reduced within Rillington.	Degrades Air Quality at 13 properties. Increases Noise levels at 70 properties. Affects grade 3a/3b agricultural land. May have an impact on High Fish Ponds and the Mill Stream. Severance effects slightly increased for travellers to Thorpe Bassett.
Blue (in cutting)	£-3.64m £-2.96m (With R'bouts)	Removes over 80% of traffic from centre of Rillington. Improves Air Quality at 410 properties Improves Noise levels at 130 properties Severance effects significantly reduced within Rillington.	Degrades Air Quality at 13 properties. Increases Noise levels at 40 properties. Affects grade 3a/3b agricultural land. May have an impact on High Fish Ponds and the Mill Stream.