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REPORT ON

A19 BURN BYPASS
STAGE 1/2 ENVIRONMENTAL ASSESSMENT

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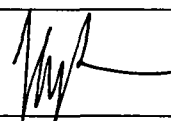
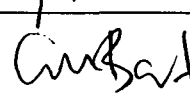
Project Manager Approval	Jan Falkingham	 (signature)	
Reviewer	George Barton	 (signature)	

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1 INTRODUCTION

1.1 BHWB (Golder) were instructed by Mouchel Parkman on behalf of North Yorkshire County Council to undertake an environmental appraisal of the proposed A19 Burn Bypass.

1.2 The A19 is a principle route that extends from Newcastle upon Tyne to Doncaster via Teeside, York and Selby.

1.3 Proposals to construct a bypass to the east of Bum are intended to alleviate congestion in the village, reduce severance of the community and improve road safety.

1.4 Consultations with statutory bodies have been carried out. Appendix 1 of this report contains copies of the responses received.

1.5 The study identifies the main environmental impacts and makes recommendations to mitigate potential adverse environmental effects. These recommendations will be used to help determine the choice of route option and influence the detailed design of the preferred option.

1.6 The following issues are covered in the report

- Air Quality
- Noise & Vibration
- Landscape and visual Impact
- Agriculture
- Nature Conservation
- Cultural Heritage
- Plans and Policies

2 METHOD

2.1 The assessment has been carried out in accordance with the methods described in the Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment Section 3 Environmental Assessment Techniques.

2.2 Information has been obtained from several sources including the following:

- Site visits carried out in May and June 2004.
- O.S. Maps 1:50000. 1:25000 and 1:10000 digital base.
- Selby District Council Local Plan
- North Yorkshire County Structure Plan
- Countryside Character Volume 3 – Yorkshire and the Humber published by the Countryside Commission 1998

Information sources to each specific section of this report are mentioned in that section.

2.3 Consultation with the following:

- North Yorkshire Count Council
- Countryside Agency
- English Nature
- Environment Agency
- English heritage
- Selby District Council
- Highways Agency
- Statutory undertakers

2.4 Responses from consultees are included in Appendix 1.

3 ROUTE OPTIONS DESCRIPTION

3.1 The environmental impacts of two route options are considered in this report.

Outline description of the proposed routes

3.2 Both routes under consideration pass to the east of Burn Village. It can be noted that the majority of the land required for a scheme along the line of an eastern route would be in the ownership of Yorkshire Forward.

3.3 Figure 2 shows the 2 route options being considered.

3.4 Both options provide: -

- A single access into Burn Village via a new 5-arm roundabout.
- A possible access may be provided at the northern end of the scheme.
- Stopping up of the A19 / Brick Kiln Lane junction, with access being provided from the proposed roundabout. The existing Brick Kiln Lane would be improved from "one-way" to standard "two-way" carriageway between the proposed roundabout and the Burn Lane / Brick Kiln Lane junction.
- Retention of the A19 / Common Lane junction with possible upgrading to ghost island standard depending on traffic demand.
- A mainline alignment with de-restricted speed limit.
- The closure of the A19 / Brick Kiln Lane junction and the straight approach to the roundabout provides a two-way overtaking opportunity between the existing railway bridge, (380m south of Brick Kiln Lane) and the proposed roundabout.

Option A Route Description

3.4 The route of option A heads northwards leaving the existing A19 immediately south of Burn Lane and passes through existing farm land into Burn Airfield land on a straight or near straight approach. A 70m ICD roundabout has been adopted to achieve adequate entry path deflection. The roundabout would be located approximately 0.5km from the beginning of the scheme at its southern end and approximately 0.25km south of properties on Park Lane. (See Figure 2A.)

3.5 The mainline route then passes through a small area of established woodland, and between the eastern edge of Burn village and the gliding club buildings, crossing the airfields apron before passing through two areas of existing screening before rejoining the line of the A19 in the vicinity of the A19 / Common Lane junction.

Option B Route Description

3.6 Option B heads northwards leaving the existing A19 immediately south of Burn Lane and passes onto existing farm land where a new roundabout is proposed east of Brick Kiln Lane on airfield land. An 80m ICD roundabout has been adopted to achieve the 5-arm layout and adequate entry path deflection. The roundabout would be located approximately 0.35km from the southern end of the proposed scheme and 0.35km from properties on Park Lane. (See Figure 3B)

3.7 The mainline route then continues northwards passing a small area of established woodland to the east. The proposed alignment passes east of the existing gliding club building and crosses the airfields apron before passing to the east of two areas of existing tree planting prior to rejoining the line of the A19 in the vicinity of the A19 / Common Lane junction. The northern section of the bypass is less straight than Option A and does not offer an overtaking opportunity.

4 AIR QUALITY

Introduction

4.1 This chapter details the findings of a two-stage air quality assessment of the proposed A19(T) Burn Bypass, North Yorkshire.

Stage 1 – Identification and preliminary evaluation of baseline conditions within the study area;
Stage 2 – Detailed assessment and evaluation of bypass options.

4.2 The object of the assessment is to indicate whether there are likely to be significant air quality impacts associated with the proposed road improvement scheme. The assessment will also assist in the selection of a preferred bypass route option based on knowledge of current and predicted future impacts of road traffic on local air quality. A detailed description of scheme options assessed is presented in Section 3 of this Report.

4.3 It should be noted that findings presented in this chapter are based on information obtained to date and the assessment of the proposed bypass alignments provided.

UK Air Quality Legislative Framework

4.4 The National Air Quality Strategy (NAQS2000) is the Government's framework for improving air quality and protecting human health from the effects of air pollution. The Strategy identifies eight key air pollutants (includes nitrogen dioxide (NO_2), fine particles (PM_{10}), benzene, 1,3-butadiene, sulphur dioxide (SO_2), lead, carbon monoxide (CO) and Ozone (O_3)) potentially harmful to human health for which clear measurable outdoor air quality standards have been set, and target dates by which these standards must be achieved. The combined standard and target date is referenced to as the Objective Level.

4.5 The standards are aimed at reducing exposure of the general population to key pollutants to levels at which acute health effects will be extremely uncommon. Adopted national standards and Objectives are based on the recommendations of the Expert Panel on Air Quality Standards (EPAQS) which have been translated into a set of Statutory Objectives within the Air Quality (England) Regulations 2000 and Air Quality (England) (Amendment) Regulations 2002.

Air Pollution Control Regime

4.6 In the UK, Local Authorities including Selby District Council (Selby DC), have formal powers to control air quality through a combination of Local Authority Pollution Control (LAPC),

Local Air Quality Management (LAQM), statutory nuisance and through their wider development planning policies.

4.7 LAPC is currently being replaced throughout the UK by Local Air Pollution Prevention and Control (LAPPC). LAPPC is a new system of industrial pollution control which was introduced under the European Union's Integrated Pollution Prevention Control Directive (IPPC Directive). Activities currently regulated under LAPC (i.e. Part B processes) will generally be phased into LAPPC according to a transitional timetable set out in Schedule 3 of the Pollution Prevention and Control (England and Wales) Regulations 2000. In addition, the Environment Agency (EA) also regulates emissions to atmosphere from Part A processes through the Pollution Prevention Control (PPC) regime.

4.8 The system of LAQM falls under Section 82 of the Environment Act 1995 (Part IV), where it is a requirement that Local Authorities periodically review air quality and assess whether the air quality standards and Objectives are being achieved. This statutory requirement involves assessing present and likely future air quality against the current NAQS Objective levels. In areas where it is unlikely that the prescribed Objectives will be met within the set period, under Section 83, Local Authorities are required to issue orders designating these areas as Air Quality Management Areas (AQMAs), in addition to drawing up and implementing an Action Plan to improve air quality in their area (Section 84).

4.9 Consultation with Selby DC confirmed that they have completed the first round of the Review and Assessment of Air Quality in Selby and have progressed to the second round completing the Updating and Screening Assessment (USA) in July 2003. To date, Selby DC has not declared an Air Quality Management Area (AQMA) within the Selby area.

4.10 For this assessment, Table 4.1 below presents the current national air quality standards and Objectives for specific road traffic pollutants of concern, NO_2 and PM_{10}.

Table 4.1: Summary of objectives of the National Air Quality Strategy

Pollutant	Objective	Measured as	To be achieved by
Nitrogen Dioxide (NO_2)	200 $\mu g/m^3$ (151 ppb) not to be exceeded more than 18 times a year 40 $\mu g/m^3$ (21 ppb)	1-hour mean Annual Mean	31/12/05 31/12/05
Particles (PM_{10}) (gravimetric) All authorities	50 $\mu g/m^3$ not to be exceeded more than 35 times a year 40 $\mu g/m^3$	24-hour mean Annual Mean	31/12/04 31/12/04
New particle objectives for England, Wales, Northern Ireland and Greater London not included in Regulations			
Rest of	50 $\mu g/m^3$	24-hour mean	31/12/10

England, Wales and Northern Ireland	not to be exceeded more than 17 times a year 20 μg/m^3	Annual Mean	31/12/10

A review of Selby District Local Plan has identified no specific policies relating to air quality.

Assessment Method

4.11 The approach to assessing air quality is based upon the Department of Environment, Transport and Regions (DETR's) Design Manual for Roads and Bridges (DMRB) method, Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1 Air Quality (February 2003).

4.12 DMRB, principally designed by the Highways Agency (HA) to assess the impact of new road schemes and projects in relatively rural areas, is accepted as the standard screening method for evaluating the air quality effects of road traffic and facilitates the direct comparison with current national air quality standards and Objectives. In regard to assessing road traffic impacts on local air quality, this method of assessment is used by Local Authorities as a means of convenient screening within their Local Air Quality Management (LAQM) Air Quality Review and Assessment process.

4.13 A complete DMRB air quality assessment follows three key stages; Stage 1 Baseline Assessment; Stage 2 Local 'Screening' Assessment; and Stage 3 Total Emissions 'Regional' Assessment. For this scheme, a combined Stage 1 and Stage 2 assessment has been undertaken for the each proposed bypass option.

DMRB Stage 1 Baseline Assessment Method

4.14 To identify existing air quality conditions and associated problems, baseline data collection techniques included:

- Review of Local Plans for the study area,
- Consultation with Selby DC Environmental Health Department,
- Review of available OS plans for the study area and site reconnaissance to identify sensitive receptors; and
- Review of road traffic data collection.

4.15 Given that sufficient data on baseline emissions to air within the study area was available through public records; ambient air quality monitoring has therefore not been conducted as

part of this assessment. Local baseline air quality data has been obtained using the following desk-based techniques:

- Review of ambient air quality monitoring data provided by the Local Authority and held at the National Air Quality Information Archive (NAQIA),
- Review of Selby DC's Air Quality Review and Assessment Reports and results of ambient air monitoring; and
- Search of public records, maintained by the Environment Agency detailing current Integrated Pollution Control (IPC) authorisations and associated emissions to air.

4.16 In addition to the evaluation of baseline air quality conditions, at Stage 1 sensitive receptors are identified including the number of properties located within 200 metres of each road expected to be affected by the proposals.

4.17 The findings of the Stage 1 assessment are discussed in the following sections of this Chapter and presented on an Air Quality Constraint Map (Figures 4, 6 and 7).

DMRB Stage 2 Local 'Screening' Assessment Method

4.18 For bypass options considered, a DMRB Stage 2 Local Screening Assessment[1] has been undertaken for primary traffic related pollutants, *nit*rogen d*iox*ide (NO_2) and *fi*ne par*ticulates* (PM_{10}). These pollutants are generally recognised by Local Authorities, Department of Transport (DoT) and the Highways Agency as pollutants of particular concern with respect to road traffic and the compliance with UK National Air Quality Strategy (NAQS) standards and Objectives.

4.19 The objective of the local screening assessment is to identify the preferred bypass option in terms of improvement to local air quality. For this assessment the criteria comprises the quantification of the change in properties exposed to specified ambient pollutant concentrations. This assessment is undertaken for either the UK NAQS pollutant specific Objective years (i.e. NO_2 (2005), PM_{10} (2004/2010)), or, where a scheme opens after these dates, for the scheme opening year. The proposed opening year for this scheme is 2007 and therefore the assessment was carried out for years 2007 and 2010.

4.20 The method for quantifying all significant changes in exposure to pollutants, whether on the existing or new route, or elsewhere on the local network is undertaken in two steps, as summarised below:

- Step 1 calculates pollution levels for pollutants PM_{10} and NO_2 on both existing and proposed routes, for the appropriate assessment year for both the 'do-minimum'

[1] DMRB Stage 2 assessment requires a three-way comparison between existing air quality, that which is expected in the future with the development and that, which would exist, should the development not proceed.

and 'do-something' scenarios. The calculation of pollution levels is carried out in accordance with DMRB 11.3.1, which provides an estimation of the magnitude of the effect that the scheme has upon future air pollutant concentrations.

- Step 2 quantifies the exposure of the general change in pollutant levels. This assessment produces a value that defines the predicted magnitude of exposure due to the addition or removal of significant pollution levels at a specified number of properties. Negative values indicate a reduction in exposure and therefore a general improvement in air quality, whereas positive values indicate an increase in exposure, a general detrimental effect upon air quality.

4.21 The evaluation of the impact of road traffic vehicle emissions on local properties and population requires the quantification of the number of properties (both residential and business properties) at given distances from the affected carriageways, for both the existing road network and proposed scheme options. The information collated at Stage 1 will assist with this evaluation.

4.22 To undertake a Stage 2 assessment, traffic data inputs to the DMRB screening model comprise the following:-

- Annual Average Daily Traffic (AADT) flow,
- Percentage of Heavy Goods Vehicles (%HGVs), and
- Average speed of vehicles.

4.23 Traffic data for this assessment has been provided by Mouchel Parkman, the design consultants for NYCC.

4.24 In addition, detailed calculations of the impact at sensitive locations close to the A19(T) and the bypass were carried out for existing and future conditions using modelled traffic data.

4.25 The findings of the Stage 2 assessment are discussed in the following sections of this Chapter.

Road Traffic Conditions

Existing Road Network

4.26 Within the study area the primary road network consists of the A19(T), a trunk road passing through Burn village. In addition, a number of local roads provide access within the village; Brick Kiln Lane and West Lane at the southern end of the village and Park Lane which provides access to Burn Gliding Club.

Existing Traffic Conditions

4.27 For the study area, several surveys of existing traffic flows have been undertaken in order to identify current traffic conditions. In October 2003, Count On Us Ltd were commissioned by NYCC to undertake a 12-hour[2] classified Junction Turning Count (JTC) of the A19 / Brick Kiln Lane/ West Gate junction in Burn. A further traffic survey undertaken in November 2003, comprised the use of video to accurately carry out a registration survey of the study area, the main objective of which was to establish the volume of traffic travelling straight through the village.

4.28 Traffic data was collected at six Automatic Traffic Count (ATC) locations and one Manual Traffic Count (MTC) location as given in Table 4.2 below presented in Figure 5 Traffic Count Location Plan.

Table 4.2: Location of Traffic Count

Count Type	Location	Survey Period
1No. MTC (Classified Junction Turning Count)	A19/ West Lane/ Brick Kiln Lane	12-Hour (07:00-19:00 – 14 October 2003)
6No. ATC Temporary (Video)	Point A - A19 south of Burn Site 1 - A19/ West Lane/ Brick Kiln Lane Site 2 - A19/ Park Lane Site 3 - A19/ Park Lane Site 4 – A19/ Barff View Point B – A19 north of Burn	12Hour (07:00-19:00) (02 Nov 2001)

4.29 Based on the 12-hour count data, Annual Average Daily Traffic (AADT) flows were estimated for the Base Year (2004) for the following road links in the study area. (See Appendix 6)

Table 4.3: Estimated AADT Flows for Base Year (2004)

Road Link	AADT
A19 (T)	9,318
West Lane	466
Brick Kiln Lane	69
Park Lane	122

[2] MTC (classified) was carried out on Tuesday 14 October 2003, 0700 to 1900 hrs.

Vehicle Classification and Traffic Speed

4.30 The percentage of Heavy Goods Vehicles (HGVs) using the A19(T) in the study area was derived from the MTC data. For the 12-hour survey period, 9.2% of traffic flow comprised HGVs on the A19(T).

4.31 In addition, a traffic speed survey of the A19(T) to the immediate north of Burn was carried out for a 1-week period (Wednesday 15 October 2003 to Wednesday 22 October 2003). The findings this survey indicated that hourly average traffic speeds on the A19(T) ranged from 33.55mph (0800-0900) to 42.49mph (0400-0500) on the southbound carriageway and 33.70mph (0800-0900) to 43.26mph (0100-0200) on the northbound carriageway.

4.32 It has been confirmed by Mouchel Parkman that the A19(T) and local road network within Burn are subjected to speed restrictions, all having a 30mph speed limit. In regard to the proposed bypass, a speed restriction of 60mph will be imposed.

Future Road Traffic Forecasts

4.33 To undertake the Stage 2 assessment, predicted traffic flows were provided in the format of Annual Average Daily Traffic (AADT) flows for the base year (2004) and the scheme's Opening Year (2007) and UKNAQS Objective Year (2010), for the 'do-minimum' and 'do-something' (i.e. with scheme) scenarios.

4.34 For the above scenarios predicted AADT flows for the scheme's Opening Year (2007) are given in Table 4.4 below. With regard to the following traffic forecasts, Mouchel Parkman confirmed that the following assumptions have been applied:

- Local e and m factors were used to calculate the AADT flows;
- High National Average Road Traffic growth forecasts were used to forecast traffic growth, and
- From the Through Traffic Survey that 95% of all traffic on the A19(T) will use the Bypass.

Table 4.4: Future Traffic Flows (for the Opening Year (2007)

Link No.[a]	Road Link	'Do-minimum'	'Do-something'	Approx. % Change
1	A19	9900	495	-95
2	West Lane	495	495	0
3	Brick Kiln Lane	74	74	0
4	Park Lane	130	130	0
5	Proposed Bypass	n/a	9405	+100

Traffic data provided for the air quality assessment is given in Appendix 6.

Stage 1 Baseline Assessment

4.35 Information obtained from Selby DC and the NAQIA has been used to summarise baseline air quality conditions for local and wider area. Given that sufficient baseline data is available from these sources no baseline air quality monitoring has been undertaken as part of this assessment.

Consultation with Selby DC

4.36 During consultation with Selby DC Environmental Health Department[3] it was confirmed that the council has completed its first round of the air quality review and assessment process and since progressed onto the second round Updating and Screening Assessment (USA). Selby DC confirmed that on the basis on the findings of the USA (June 2003), the council has not declared an AQMA within the District. The USA findings are summarised below.

Emission Sources

4.37 Air quality information obtained from the NAQIA includes the contribution of key sectors to annual average total emissions within the UK. For the area in the vicinity of the proposed road scheme, it is estimated that in 2001, the road transport sector (including contributions from cars, HGVs, buses, etc.) was a significant source of pollutants; 1,3-butadiene, benzene, CO and NO_x (as NO_2) (see Table 4.5).

[3] Email correspondence from Simon Parkinson (Selby DC EHO) : Katherine Hauser (BHWB Golder), dated 26 July 2004

Table 4.5: Average Emissions of Area Sources for Year 2001 (NGR 459500 428500)

Sector	Pollutant				
	1,3-butadiene	Benzene	CO	Lead	NO_2
Combustion (energy production and transfer)	-	0.0000098	-	-	-
Combustion (commercial, institutions, residential and agricultural sectors)	-	0.014	1.0	0.048	0.082
Combustion (industry)	-	0.0065	0.23	0.66	0.48
Extraction and distribution of fossil fuels		0.00042			
Road Transport	0.032	0.060	25	0.17	7.0
Other transport and machinery	0.0031	0.00082	0.29	0.0052	0.58
Waste treatment and disposal	-	0.00100	0.0041	-	-

NB. All emission values are given in tonnes per annum per km^2

Source: NAQIA, August 2004

4.38 A review of the EA's Public Register of Integrated Pollution Control (IPC) Authorised Industrial Processes[4] (Part A Processes) identified nine current licences within Selby District. Operators comprise British Energy pic (Eggborough), Clariant UK Ltd (Selby) and Tate and Lyle Europe (Selby).

4.39 Under LAAPC, Selby DC regulates Part B processes within its area. Selby's USA states that a total of 45 Part B authorisations are currently operating within the District including processes such as mineral, concrete, animal feed, vehicle spraying and petrol stations. The council also confirmed that no processes subject to regulation under the existing pollution control regimes (PPC/LAAPC/IPC) are located within the vicinity of Burn.

Selby DC Air Quality Review and Assessment

4.40 Selby DC's completed its first round of review and assessments in July 2000 (Stages 1-3). A combined First and Second Stage Review and Assessment, deemed the potential for breaching the national Objectives for pollutants benzene, CO, 1,3-butadiene and lead as being negligible. The Third Stage detailed assessment of pollutants NO_2, PM_{10} and SO_2 concluded that exceedences of the national Objectives were unlikely. No Air Quality Management Areas (AQMAs) were declared following this assessment.

[4] Review of the EA Public Register was undertaken via a postcode search on www.airquality.co.uk in January 2004

4.41 For the second round of assessments, the council carried out its Updating and Screening Assessment (USA) for all pollutants. For pollutants of concern, NO_2 and PM_{10}, the USA concluded:

Nitrogen Oxides (NO_2)	*No* Exceedences	Predicted future NO_2 levels indicated that the annual average Objective of 40 pg m^{-3} is unlikely to be exceeded in 2005/ 2010 near main roads or busy junctions within Selby. Past exceedences have been recorded in the town centre, however the proposed Selby Bypass will alleviate traffic congestion in the town centre and thus reduce pollutant concentrations.
Particles (PM_{10})	*No* Exceedences	DMRB results indicated that the annual mean Objective for PM_{10} will be met in 2004. The 24-hour mean objective of 50 μg m^{-3} is unlikely to be exceeded in 2004 and in 2010 close to busy road junctions in Selby District.

Selby DC's USA report was issued in July 2003. No AQMAs were declared on the basis of assessment findings.

Ambient Monitoring

4.42 Within Selby, automatic monitoring is not currently undertaken by the council. However, real-time monitoring of pollutants NO_2, NO_x, and PM_{10} has been carried out across the District as part of a Joint Environmental Programme (JEP) and by AES Drax Power Ltd. In addition, a wide ranging diffusion tube network exists for NO_2 which is maintained by Selby DC.

4.43 In respect of the study area, Selby DC confirmed that no ambient monitoring has been undertaken within the area.

4.44 For the period of April 1998 to March 1999, continuous monitoring of NO_2 levels at various locations across the District has shown that annual mean NO_2 levels did not exceed the statutory annual mean Objective of 21pbb (see Table 4.1). Also, measured short-term hourly NO_2 concentrations were below their respective Objective level for 2005 (151ppb).

Table 4.6: Measured NO_2 Cone. at JEP sites (ppb)

Site	Annual Mean	Max. houriy Mean
Cliffe	8.9	49
Carr Lane	10.8	91
Gateforth Hall	11.5	52
N Featherstone	13.7	76

North Howden	13.3	48
Sherburn and Elmet	11.6	56
Smeathalls Farm	13.3	51
Temple Hirst	11.5	57
UKNAQS Objective	***21 ppb***	***151 ppb***

Source: Selby DC USA July 2003

4.45 AES Drax Power Ltd has also carried out continuous monitoring of PM_{10} levels across the Aire Valley. For 2002, monitored concentrations presented in Table 4.7 below, show that measured annual mean concentrations are significantly below the Objective level of 40 μgm^{-3}.

Table 4.7: Measured PM_{10} Cone. at AES sites (2002) (μgm^{-3})

Site	Annual Mean	Daily Mean (24-hour)	1-hr Mean 99.8^{th} %ile
Hemmingbrough Landing	17.6	-	70.7
Downes Ground	19.3	22	72.6
Smeathalls Farm	22.9	-	72.6
Park Farm	11.0	-	74.5
UKNAQS Objective	40 ***pg***m^{-3}	***50 pg***m^{-3}	***NA***

Source: Selby DC USA July 2003

4.46 A review of the National NO_2 Diffusion Tube Network has identified 3 sites currently active in Selby. These comprise two urban background monitoring sites (B) and *1* roadside monitoring site (*R*). Measured annual mean NO_2 levels for the period 2000 to 2003 are given below.

Table 4.8: Summary of Monitored Annual Mean NO_2 Cone. (pg m^{-3})

Site	Type	Year			
		2000	2001	2002	2003
Selby 3N (4608 4328)	B	29	30	27	32
Selby 7N (4612 4323)	***R***	***57***	***58***	***55***	***60***
Selby 9N (4608 4310)	B	25	29	25	27

Source: NAQIA Data & Statistics, July 2004; B= Background R= Roadside

4.47 For the given period, the above data shows that the measured annual average levels at the roadside site (Selby 7N), which is located in Selby town centre, was in excess of the Objective level 40 pgm^{-3}. It is noted that the opening of the Selby bypass scheme will alleviate congestion in Selby town centre and therefore improve pollutant levels reducing them below the statutory requirement.

Sensitive Air Quality Receptors

4.48 The NAQS standards and Objectives apply at locations where the public may possibly be exposed to pollution for a sufficient period for there to be any measurable health effect. The averaging period (i.e. annual, daily, hourly) and air quality Objective involved will determine which locations are considered to be sensitive receptors. For road traffic pollutants of concern NO_2 and PM_{10}, typical locations for sensitive receptors include residential properties, schools and hospitals for long-term impacts (i.e. annual) and kerbside sites and for short-term impacts (i.e. daily, hourly). any outdoor locations such as residential gardens, parks) to which the public might reasonably expected to have access.

4.49 The DMRB method considers receptors lying within a bandwidth of 200m of the affected roadside as potential receptors to experience changes in air quality due to a change in traffic flows. DMRB defines affected roads as the existing route, the new route and any other local routes on which traffic flow changes exceed the following criteria set out in DMRB 11.3.1:

'Relatively sizeable changes in traffic are required to bring about significant changes in air quality and consequently, options which change traffic flows by less than 10% can usually be scoped out, unless they are particularly sensitive (i.e. traffic queuing)'

4.50 Considering this criterion, the routes with a less than 10% change in traffic (either negative or positive) due to the scheme were screened out of the air quality assessment. Referring to Table 4.4, predicted traffic data shows that for the assessed links the percentage change in the opening year (2007) between the 'do-minimum' and 'do-something' scenario, the proposed scheme would not alter the traffic flow on local roads i.e. West Lane, Brick Kiln Lane, Park Lane. Subsequently, these links were omitted from the assessment on the basis of the DMRB Criteria.

4.51 The assessment of each bypass option therefore concentrates on receptors located within 200m of their proposed alignments. The number of properties located within 200m of the A19(T) carriageway and the proposed bypass options have been estimated for the following bandwidths, as given in DMRB methodology:-

- Roadside to 50m from roadside;
- 50 to 100m from roadside;
- 100 to 150m from roadside; and
- 150 to 200 from roadside.

4.52 The above bands takes into account the diminishing effects of pollution over distance, where beyond 200m from the roadside, contribution of vehicle emissions to local pollution levels is not significant.

4.53 In accordance with the DMRB Stage 1 method, the number of properties lying within 200m of each carriageway affected has been estimated (Table 4.9). However, it should be noted that given the proposed alignments of the bypass options with respect to the village, properties located within 200m of the A19(T) will also be located within a 200m bandwidth of the proposed bypass alignments. For the Stage 2 assessment, this will be considered when assessment calculations are undertaken, otherwise the assessment would result in the double counting of properties and thus an overestimation in quantifying the exposure of change in pollutant levels for the study area.

4.54 Table 4.9 shows clearly that the estimated number of properties within 0-50 metres of the A19(T) is significantly higher than the number of properties within 0-50m of the proposed bypass route options.

4.55 For proposed bypass options assessed, it is estimated that Option B has fewer properties located within its 200m corridor.

Table 4.9: Estimated No. Properties Located within 200m of Carriageway

Route	Property Count[1]				
	0-50m	50-100m	100-150m	150-200m	0-200m
A19(T)	59	30	12	6	107
Option A	1	31	30	27	89
Option B	1	6	21	27	55

[1] *Based on number of properties (properties incl. residential, gliding club); Carried out using available plans showing properties.*

4.56 In addition to residential properties, sensitive receptors also include properties such as schools, churches as well as public open spaces (i.e. recreational areas, public footpaths, areas of nature and built conservation).

4.57 Site reconnaissance identified the following receptors:

- A church and War Memorial is located within the village to the west of the A19(T),
- A public open space (Cricket Ground) located along the A19(T) approx. 100m to the south of the A19(T)/ West Lane/ Brick Kiln Lane Junction,
- A small network of public footpaths is present throughout the study area providing access to the village from the surrounding area. It is noted that the alignment of the two bypass options will either cross or lie within 200m of the existing public footpath network.

4.58 No schools or Listed buildings are located within Bum or the immediate surrounding area.

4.59 Review of the Local Plan Proposals Map identified no sites within the study area which are allocated for housing or other sensitive developments (i.e. hospital, schools). The locations of the above sensitive receptors are presented in Figure 5.

Stage 1 Summary

4.60 From the review of available information, consultation with Selby DC and information gained during site reconnaissance, it is considered that road traffic is the main contributor to emissions to air in the study area, which is predominantly rural in character. Other sources may include agriculture (slurry spreading, burning etc.), use of smoky fuels etc. With no available air quality monitoring data for the study area, data obtained has been limited to monitored data across the District. This showed that existing air quality within the District is generally good and is expected to meet the national air quality Objectives for future years (2005/ 2010).

4.61 In addition, estimation of future air quality carried out as part of the Selby's Air Quality Review and Assessment process identified that future NO_2 and PM_{10} levels are unlikely to cause the UKNAQS Objectives to be exceeded within the District.

4.62 Within the study area, properties lying within a 200m bandwidth of the carriageway alignment of the existing A19(T) and the proposed bypass options are considered as potential receptors to experience changes in air quality due to road traffic emissions. Estimated total number of properties located within a 0-200m bandwidth of the existing and proposed bypass alignment are summarised in Table 4.9. Option B is identified as the bypass route with the lowest number of potential receptors located within 200m of its alignment.

4.63 With regard to change in traffic levels, it is noted that in order to bring about significant changes in air quality, relatively sizeable changes are required. According to DMRB, options which change traffic flows by less than 10% can usually be scoped out, unless there are particular sensitivities (i.e. traffic queuing). Traffic data provided by Mouchel Parkman indicated that the bypass is likely to remove >10% of the existing traffic on the A19(T) in Burn. At this stage of the assessment it is therefore considered likely that the transfer of traffic onto a bypass will result in an improvement in road traffic pollutant levels along the existing A19(T), with resultant worsening in air quality along the line of the proposed bypass. However, given the number and relative concentration of residential properties and sensitive receptors along the line of the existing A19(T), the removal of a significant portion of road traffic from this route must be seen as a major beneficial effect of the bypass.

4.64 In light of the above findings, it is deemed that the transfer of road traffic from the existing A19(T) and onto a bypass will improve local air quality along its route.

Stage 2 Local Air Quality Assessment

4.65 As discussed earlier, the Stage 2 assessment of local air quality is carried out for either UKNAQS pollutant specific Objective years i.e. NO_2 (2005), PM_{10} (2004/ 2010), or, where a scheme opens after these dates, for the scheme opening year (2007). The assessment requires roadside NO_2 and PM_{10} levels to be calculated for all affected routes, which DMRB defines routes where relatively sizeable changes in traffic are required to bring about significant changes in air quality (refer to 4.49).

4.66 In accordance with DMRB, for each affected route (i.e. link), annual mean PM_{10} and NO_2 concentrations were calculated at selected distances from the roadside which are representative of average concentrations encountered at properties within the assessed bandwidths; 20m (0-50m), 70m (50-100m), 115m (100-150m) 170m (150-200m), for the both the 'do-minimum' and 'do-something' scenarios for the opening year (2007). Quantified results including property count data[5] were inputted to the assessment worksheet which calculates the change in concentration for each affected route. The worksheet then sums the changes to provide an Overall Assessment Score for the option assessed. A positive value indicates a worsening in the magnitude of exposure to air pollution, whereas a negative value indicates an improvement in air pollution exposure.

4.67 The Stage 2 assessment identified that Option A would result in 106 properties experiencing an improvement of air quality. However, the transfer of traffic onto the bypass would result in a worsening of air quality at 8 properties given their close proximity to the bypass (i.e. within 50m) (Figure 6).

4.68 For Option B, the assessment has also predicted that 106 properties would experience an improvement in air quality although fewer properties would experience a worsening, some 8 less than Option A (i.e. 3 properties would experience a worsening) (Figure 7).

4.69 For both options the more significant improvement in air quality would occur at properties aligning the A19(T) in Burn. However, it should be noted that not only will the bypass transfer a large volume of traffic away from Burn but will also result in a smoother flow of traffic through the study area and therefore an overall beneficial affect to local air quality.

4.70 The quantitative assessment has also showed that both Bypass Options would improve the magnitude of pollution exposure at receptors within the study area. However, of the two options assessed Option B would result in the greatest reduction due to its increased distance from local receptors (refer to Appraisal Summary Tables (AST)).

[5] The Stage 1 assessment identified that a number of properties in Burn are located within 200m of both the existing A19(T) and the bypass alignments. As property count data is applied to the quantitative assessment of air quality, a further property count was undertaken to ensure that properties were not double counted which would provide an inaccurate assessment.

Assessment of Selected Sensitive Receptors

4.71 As part of the quantitative Stage 2 assessment, calculations of annual mean NO_2 and PM_{10} concentrations were also carried out at a number of specific sensitive receptors for both existing and future conditions (Table 4.10).These receptors were selected by virtue of their nature, location (Figure 8) and/ or sensitivity to existing and future road traffic (scheme opening year).

Table 4.10 - Sensitive Receptors for Air Quality Predictions

Receptor No.	Receptor Name	Description Location	Approx. Distance from Road Network (m)
1	Roseberry House	Residential property fronting the A19	13.5m from A19(T) 41m from Park Lane 58m from Brick Kiln Lane 145m from Bypass (Option A) 160m from Bypass (Option B)
2	Camelot	Residential property fronting the A19	15m from A19(T) 54m from Bypass (Option A) 78m from Bypass (Option B)
3	18 Park Lane	Residential property on Park Lane	106m from A19(T) 14m from Park Lane 155m from Brick Kiln Lane 50m from Bypass (Option A) 165m from Bypass (Option B)
4	Beech Tree House	Residential property set back fro the A19	70m from A19(T)
5	Chatsworth	Residential property on Park Lane	65m from A19(T) 75m from Bypass (Option A) 180m from Bypass (Option B)
6	Burn Gliding Club	Recreational building	80m from Bypass (Option A) 25m from Bypass (Option B)
7	A19 Roadside	Roadside Location	5m from A19(T)
8	Bypass Roadside	Roadside Location	5m from Bypass

The calculated pollutant concentrations for both Existing Year (2004) and Opening Year (2007) for Bypass Options A and B are presented in Tables 4.11 and 4.12 below.

Table 4.11 - Summary of Air Quality Predictions for Existing Year (2004) and the Opening Year (2007) 'Do-minimum' and 'Do-something' (Option A)

Receptor	Receptor Name	Pollutant $\mu g/m^3$	Existing 2004	2007 Do-minimum	2007 Do-something	Objective (Annual Mean)
1	Roseberry House	NO_2	27.64	25.09	19.80	40 [a]
		PM_{10}	21.45	17.96	16.33	40 [a] 20 [c]
2	Camelot	NO_2	27.40	24.88	21.96	40 [a]
		PM_{10}	21.35	17.86	16.92	40 [a] 20 [c]
3	18 Park Lane	NO_2	21.87	20.10	22.14	40 [a]
		PM_{10}	19.44	16.39	16.67	40 [a] 20 [c]
4	Beech Tree House	NO_2	22.96	21.04	19.27	40 [a]
		PM_{10}	19.75	16.63	16.19	40 [a] 20 [c]
5	Chatsworth	NO_2	23.18	21.24	20.98	40 [a]
		PM_{10}	19.81	16.68	16.62	40 [a] 20 [c]
6	Burn Gliding	NO_2	20.8 [(d)]	19.2 [(d)]	20.78	40 [a]
		PM_{10}	19.2 [(d)]	16.2 [(d)]	16.57	40 [b] 20 [c]
7		NO_2	28.78	26.08	19.43	40 [a]

	A19 Roadside	PM_{10}	21.94	18.34	16.25	40 [b] 20 [c]
6	Bypass Roadside	NO_2	20.8 [(d)]	19.2 [(d)]	26.41	40 [b]
		PM_{10}	19.2 [(d)]	16.2 [(d)]	18.52	40 [b] 20 [c]

Table 4.12 - Summary of Air Quality Predictions for Existing Year (2004) and the Opening Year (2007) 'Do-minimum' and 'Do-something' (Option B)

Receptor	Receptor Name	Pollutant $\mu g/m^3$	Existing 2004	2007 Do-minimum	2007 D0-something	Objective (Annual Mean)
1	Roseberry House	NO_2	27.64	25.09	19.74	40 [b]
		PM_{10}	21.45	17.96	16.32	40 [b] 20 [c]
2	Camelot	NO_2	27.40	24.88	20.96	40 [b]
		PM_{10}	21.35	17.86	16.62	40 [b] 20 [c]
3	18 Park Lane	NO_2	21.87	20.10	19.61	40 [b]
		PM_{10}	19.44	16.39	16.28	40 [b] 20 [c]
4	Beech Tree House	NO_2	22.96	21.04	19.25	40 [a]
		PM_{10}	19.75	16.63	16.21	40 [b] 20 [c]
5		NO_2	23.18	21.24	19.54	40 [b]

	Chatsworth	PM_{10}	19.81	16.68	16.26	40 [b] 20 [c]
6	Burn Gliding	NO_2	20.8 [(d)]	19.2 [(d)]	23.99	40 [b]
		PM_{10}	19.2 [(d)]	16.2 [(d)]	17.60	40 [b] 20 [c]
7	A19 Roadside	NO_2	28.78	26.08	19.43	40 [b]
		PM_{10}	21.94	18.34	16.25	40 [b] 20 [c]
6	Bypass Roadside	NO_2	20.8 [(d)]	19.2 [(d)]	26.41	40 [b]
		PM_{10}	19.2 [(d)]	16.2 [(d)]	18.54	40 [b] 20 [c]

[a] 2004, [b] 2005, [c] 2010 [(d)] Estimated background concentrations obtained from the NAEI.

N.B As no baseline monitoring has been carried out within the study area, for the assessment of air quality estimated baseline pollutant levels for NO_2 and PM_{10} were obtained from the National Atmospheric Emissions Inventory (NAEI) (www.airquality.co.uk) in the form of annual mean concentrations for year 2001. For the assessment years (2004 and 2007), this data was growthed in accordance with DMRB guidance (11.3.1).

The following input data was applied to the DMRB model:

Existing Conditions

- AADT flows data, Mouchel Parkman, Letter dated 04 Aug 2004;
- % HGVs: 9.2% on the A19(T), 0.5% on local roads;
- Traffic Speeds: 53kph on the A19(T) and local roads.

Future Conditions

AADT flows data, Mouchel Parkman, Letter dated 04 Augt 2004;
% HGVs: 0.5% on the A19(T) 9.2% on the bypass; 0.5% on local roads;
Traffic Speeds: 53kph on the A19(T) and local roads, 96kph on bypass.

4.72 For all selected receptors predicted annual mean NO_2 and PM_{10} concentrations for the Existing Year (2004) and Opening Year (2007) 'do-minimum' and 'do-something' show no infringements of UKNAQS Objectives for 2004,2005 and 2010 (Table 4.1).

4.73 The assessment for the Existing Year (2004) predicted that annual mean NO_2 concentrations varied slightly across the study area, whereas predicted annual mean PM_{10} concentrations were not dissimilar. At selected receptors lying adjacent to or in close proximity to the A19(T), highest pollutant levels were predicted (i.e. Receptors 1, 2 and 7). At the remaining receptors predicted concentrations were slightly lower due to the increased distance from the A19(T).

4.74 In the future year (2007), pollutant concentrations for the majority of selected receptors will improve for both the 'do-minimum' and 'do-something' scenarios, with the exception of Receptor 6; Burn Gliding Club. Table 4.11 shows that the more significant improvements will occur for the 'do-something' scenario, particularty at receptors aligning the A19(T). However, it is noted that not all receptors within 200m of the A19(T) will experience an improvement in pollutant concentrations. It is predicted that Receptors 3 and 7 (Fig.8) will experience a slight increase in annual mean pollutant concentrations although levels will remain well below the national air quality Objectives. The predicted increases are due to the distance of these receptors from the bypass in comparison to the A19(T).

4.75 The Stage 2 Air Quality Assessment findings are summarised as follows:

- For both Options, 106 properties are predicted to experience an improvement in air quality;
- For Option A, it is predicted that 10 properties will experience a worsening in air, whereas for Option B, it is predicted that 3 properties will be subjected to an air quality worsening;
- No exceedence of annual mean NO_2 and PM_{10} UKNAQS objectives in 2007;
- Overall, both Options will improve the magnitude of air pollution exposure at sensitive receptors located within the study area;

Based on the Stage 1/ 2 assessment findings, the preferred bypass option from an air quality perspective is Option B.

5 NOISE & VIBRATION

Introduction

5.1 This chapter details the findings of the road traffic noise and vibration assessment for the proposed A19 Burn Bypass Scheme, North Yorkshire. The assessment comprises a combined Stage 1 and 2 assessment of the proposed bypass route options.

5.2 The object of this assessment is to guide the selection of a preferred option based on knowledge of current and predicted future impacts of road traffic on the resultant noise level at local receptors.

Assessment Method

5.3 The approach to assessing road traffic noise and vibration is based upon the method provided in the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 7 Traffic Noise and Vibration, published by the Department of Environment, Transport and the Regions (DETR).

5.4 The DMRB method is accepted as a standard method for evaluating the noise impacts for road traffic and may be used to predict impacts of traffic derived noise at distances up to 300m from roadways and motorways.

5.5 The DMRB assessment has three key stages; Stage 1 appreciation of the likely noise and vibration consequences of road traffic, Stage 2 identification of noise and vibration impacts and Stage 3 further quantitative assessment of noise and vibration impacts.

5.6 At this stage of the Environmental Assessment, a combined DMRB Stages 1/ 2 assessment has been undertaken.

DMRB Stage 1 Assessment Method

5.7 The objective of Stage 1 assessment is to identify baseline conditions and an appreciation of the likely noise and vibration impacts from traffic associated with the proposed bypass options.

5.8 For this assessment, to identify existing noise conditions and associated problems baseline data collection technigues have included:

- Review of available OS plans for study area;
- Site Reconnaissance of Study area;
- Consultation with Selby District Council (DC) Environmental Health Department;

- Review of road traffic data collection, and
- Baseline noise monitoring.

5.9 In addition to the evaluation of baseline noise conditions, at Stage 1 sensitive receptors are identified including the number of properties located within 300 metres of each road expected to be affected by the proposals. For both the existing (i.e. A19) and new routes (i.e. bypass), where traffic changes of greater than or less than 25% are expected in the Opening Year (2007) the number of properties within 300 metres of the carriageway were estimated.

5.10 In addition, areas which are especially sensitive to noise and vibration (i.e. schools, hospitals) were identified.

5.11 The findings of the Stage 1 assessment are discussed in this Chapter and presented on the Stage 1 Noise Sensitive Locations Plan (Figure 9).

DMRB Stage 2 Assessment Method

5.12 The primary cause of potential noise changes due to road improvement schemes is considered to be due to road traffic movements. DMRB Stage 2 Assessment method has been used to predict potential noise level changes between the existing and future development scenarios, 'do-minimum' and 'do-something' scenarios.

5.13 At Stage 2 the assessment focuses on a number of noise-sensitive locations within the study area which may potentially be affected by the road scheme proposals. Predicted traffic flows on the road network within the study area have been used in order to calculate potential noise level changes using the Calculation of Road Traffic Noise (CRTN) method, Department of Transport, Welsh Office (1998).

5.14 To undertake the CRTN calculations, traffic data requirements comprise the following:-

- 18-hour Annual Average Weekday Traffic (AAWT) flow (06:00 – 24:00),
- Percentage of Heavy Goods Vehicles (%HGVs), and
- Average speed of vehicles.

Traffic data for this assessment has been provided by Mouchel Parkman, the traffic consultants for NYCC.

5.15 The findings of the Stage 2 assessment are discussed in the following sections of this Chapter.

Existing Road Conditions

5.16 The proposed scheme extends from the existing A19(T) carriageway approx. 200m south of Burn to the A19(T) junction with Common Lane, to the north of Burn. The study area for the noise assessment for this scheme envelops the entire stretch of both bypass options and the existing A19(T), as presented in Figure 9. Within the noise assessment study area, several minor road junctions are located along the A19(T); Brick Kiln Lane, West Lane, Park Lane and Barff View.

5.17 Land use within the study area largely comprises of the rural settlement of Burn surrounded by agricultural land and the disused airfield which is leased for use by Burn Gilding Club.

5.18 Within the study area the existing road network consists of the A19(T) trunk road which passes through Burn village and a number of local roads including Brick Kiln Lane, West Lane and Park Lane which provide access within the village. The A19(T) is aligned with residential properties with local roads providing access to inhabitants of the village. In respect of the proposed alignments of the bypass options, it is noted that no residential properties or other buildings lie within their route corridors.

Existing Traffic Conditions

5.19 As discussed in Chapter 4: Air Quality, several traffic surveys of existing conditions were undertaken within the study area in late 2003 by Count On Us Ltd. A summary of the survey locations are presented in Chapter 4, Table 4.2 (see Figure 4).

5.20 Based on survey count data, Base Year (2004) 18-hour Annual Average Weekday Traffic (AAWT) flows (06.00 – 24.00)[1] were estimated for the following road links in the study area. This format of traffic data is used in the assessment of road traffic impacts.

Table 5.1: Estimated AAWT 18-Hour Flows for Base Year (2004)

Road Link	AAWT
A19 (T)	9,783
West Lane	490
Brick Kiln Lane	72
Park Lane	124

Vehicle Classification and Traffic Speed

5.21 During the 12-hour traffic count period, 9.2% of traffic flow on the A19(T) within the study area comprised HGVs. See appendix 6.

[1] Mouchel Parkman confirmed that the 18-hour AAWT has been calculated by adding 5% to the 16-hour counts

5.22 Traffic speeds were also surveyed over a 1-week period in October 2003. This indicated that under existing conditions, hourly average traffic speeds on the A19(T) ranged from 33.55mph (0800-0900) to 42.49mph (0400-0500) on the southbound carriageway and 33.70mph (0800-0900) to 43.26mph (0100-0200) on the northbound carriageway.

5.23 Mouchel Parkman has confirmed that the A19(T) and local road network within Burn are subjected to speed restrictions, all having a 30mph speed limit. In regard to the proposed bypass, a speed restriction of 60mph will be imposed.

Future Road Traffic Forecasts

5.24 18-hour AAWT traffic flow forecasts were also provided for the scheme's Design Year (2022) for the 'do-minimum' and 'do-something' scenarios (i.e. 15th year after Opening Year). NB. It should be noted that in the case of 'do-something', Options A and B (the route options taken forward for consideration) give rise to identical traffic forecasts.

5.25 Tables 5.2 and 5.3 below present the traffic forecasts for the 'do-minimum' and 'do-something' scenarios in the Opening Year (2007) and Design Year (2022), and the relative % change in flow.

Table 5.2: Future AAWT (18hr) Flows for the Scheme's Opening Year (2007)

Link No.[a]	Road Link	'Do-minimum'	'Do-something'	Approx. % Change
1	A19	10,395	520	-95
2	West Lane	519	519	0
3	Brick Kiln Lane	77	77	0
4	Park Lane	132	132	0
5	Proposed Bypass	n/a	9,875	+100

Table 5.3: Future AAWT (18hr) Flows for the Scheme's Design Year (2022)

Link No.[a]	Road Link	'Do-minimum'	'Do-something'	Approx. % Change
1	A19	13,559	678	-95
2	West Lane	669	669	0
3	Brick Kiln Lane	99	99	0
4	Park Lane	170	170	0
5	Proposed Bypass	n/a	12,881	+100

5.26 Mouchel Parkman confirmed that it is assumed that 95% of all traffic will use the bypass. Traffic data provided for the noise assessment is given in Appendix 6.

5.27

Stage 1 Noise Assessment

Identifying Roads Subject to Traffic Changes

5.27 The DMRB Stage 1 assessment procedure is designed to establish the magnitude and significance of changes in noise for schemes which are likely to increase (+) or reduce (-) traffic levels by 25% respectively in the scheme Opening Year (2007), causing a relative change in noise level of 1dB(A).

5.28 Within the study area, roads subject to significant changes due to the road improvement scheme include the existing A19(T) and the new bypass. As presented in Tables 5.2. and 5.3 above, Mouchel Parkman has provided growth forecasts using National Road Traffic Forecast factors (Table 5.2) which show that both roads will be subject to changes of -/+ 25% in the Opening Year (2007). Consequently, options that change traffic flows by less than 25% can usually be scoped out, unless there are particular sensitivities (i.e. traffic queuing). For the proposed road scheme, it is predicted that there will be no change in traffic flow on the local roads within the study area and therefore these routes have not been considered to be affected by the scheme and therefore they have been omitted from the DMRB assessment.

Local Authority Consultation

5.29 Consultation has been undertaken with Local Authority Environmental Health Officer on existing sources of noise nuisance in the study area, including traffic.

5.30 Selby DC Environmental Health Officer[2] confirmed that the council has no records of any complaints of noise from road traffic along the length of the A19(T) within Burn and that there are no existing noise and vibration sources of significance within the vicinity of the village.

Sensitive Receptors

5.31 At Stage 1, evaluating the impact of road traffic noise requires the estimation of the number of properties within a 300m bandwidth of any existing roads and possible new routes subject to a traffic change of at least 25%. Given its rural locality, DMRB states that an estimation of the number of properties should be earned out for the following

[2] Email correspondence BHWB (Golder) : Simon Parkinson (Selby DC Environmental Services), 26 July 2004

bandwidths:

- Road centreline to 100m,
- 100m to 200m; and
- 200m to 300m.

On the basis of the above, a property count was undertaken for the existing A19(T) and the proposed bypass route options.

5.32 Table 5.4 shows clearly that the estimated number of properties within 100 metres of the A19(T) is significantly higher than the number of properties within 100m of either of the proposed bypass route options.

5.33 For proposed bypass options assessed, it is estimated that Option B has slightly fewer properties located within its 300m corridor with a significant lower number of properties located within 100m of its carriageway when compared with Option A.

Table 5.4: Estimated No. Properties Located Within 300m of Carriageway

Route	Property Count[1]			
	Centre line -100m	100-200m	200-300m	Centre line - 300m
A19(T)	84	19	24	127
Option A	40	49	10	99
Option B	7	48	35	90

[1] *Based on number of properties (properties incl. residential dwellings, recreational i.e.Burn gliding club. Barns and outbuildings have not been included);*
Carried out using available plans showing properties.

5.34 In addition, DMRB states that schools, public open spaces (i.e. nature / built conservation areas), Scheduled Ancient Monuments (SAMs) are other receptors potentially sensitive to noise and as such should be considered for noise assessment purposes.

5.35 Site reconnaissance identified the following receptors:

- A church and War Memorial is located within the village to the west of the A19(T),
- A public open space (Cricket Ground) located along the A19(T) approx. 100m to the south of the A19(T)/ West Lane/ Brick Kiln Lane Junction,

No schools or SAMs are located within Burn or the immediate surrounding area.

5.36 Review of the Local Plan Proposals Map identified no sites within the study area which are allocated for housing or other sensitive developments (i.e. hospital, schools). The above receptors and locations are presented in Figure 9.

Baseline Noise Conditions

5.37 A qualitative assessment of noise levels across the study area was made during a site visit on 16 September 2004, which found that existing ambient noise levels result primarily from the road traffic noise associated with the A19(T), with highest ambient noise levels at roadside receptors aligning the A19(T).

5.38 It was noted that at properties located on Park Lane which will lie closest to the proposed bypass alignment, ambient noise levels were considered to be representative of its rural locality.

Stage 2 Noise Assessment

5.39 In order to bring about significant changes in road traffic noise levels, relatively sizeable changes in traffic levels are required. It should be noted that a change in noise level of 1dB(A) would be produced by a change in traffic flow of approx. 25%, assuming that other factors remain broadly unchanged, (i.e. average speed and % HGVs using the road).

5.40 At Stage 1, the number of properties located within a 300m bandwidth of both the A19(T) and the bypass options subject to a traffic change of greater than 25% due to the scheme were estimated (Table 5.4). Additional noise-sensitive locations were also identified during a site reconnaissance (para 5.35).

Baseline Noise Survey

5.41 To quantify baseline noise conditions within the study area, a day-time baseline noise survey was undertaken for a selection of noise-sensitive receptors. These receptors were selected by virtue of their sensitivity and location with respect to existing and future traffic conditions. Using the measured ambient data, potential noise level changes between the existing and future scenarios, i.e. 'do-minimum' and 'do-something' were predicted in accordance with the CRTN prediction method.

5.42 The following receptor locations were selected for the Stage 2 assessment for the measurement of ambient noise levels:

- A19(T) roadside (near to 9 Barff View)
- A19(T) roadside (1m from the facade of Sefton Cottage), and
- 18 Park Lane.

Daytime noise measurements were undertaken at the above locations on Thursday 16 September 2004. Details of the monitoring locations and dominant noise sources identified are given in Table 5.5 below and Figure 10.

Table 5.5: Ambient Noise Monitoring Locations

Receptor No.	Receptor Location	Receptors / Sensitivity	Dominant Noise Sources	Comments
1	~4m from A19(T) Roadside (~10m from façade of No. 9 Barff View)	Roadside location	Road traffic noise (RTN) from A19(T).	Principally affected by road traffic noise from A19(T), (incl. HGV movements and slow moving tractors).
2	Sefton Cottage (~1m from façade, ~1m from A19 (T) roadside)	Residential property	Road traffic noise (RTN) from A19(T).	Principally affected by road traffic noise from A19(T), (incl. HGV movements).
3	18 Park Lane (~1m from façade)	Residential property	Rustling trees	Monitored levels were affected by the increased wind conditions during the survey resulting in the rustling of trees located within the area.

Measured Noise Levels

5.43 As in accordance with CRTN guidance[3] measurements were undertaken for four consecutive 15-minute periods at Receptors 1 and 2 (A19 Roadside locations) and three 1-hour periods at Receptor 3 (18 Park Lane). During the surveys, weather conditions were generally mild and dry with low wind speeds (<5m/s). However, during monitoring at Receptor 3 it was noted that wind speeds increased towards the latter end of the 3-hour survey period.

5.44 Noise measurements were conducted using a calibrated Bruel & Kjaer Integrating Sound Level Meter Type 2238, fitted with an all-weather microphone. The microphone was mounted on a tripod at a height of 1.5m above ground level and the instrument was configured with a time constant set to fast, dynamic range set to 40 to 120dB and

[3] CRTN Section III The Measurement Method; Shortened measurement procedure and comparative measurements.

measurements were obtained with 'A' weighting frequency corrections for L_{Aeq},[4] L_{A90}[5] and L_{A10}[6].

5.45 Measured daytime noise levels at each monitoring location are presented in Table 5.6 below.

Table 5.6: Measured Daytime Noise Levels

Receptor No. / Location	Start Time (hrs)	Duration (mins)	Parameters (dB)			
			L_{Aeq}	L_{A90}	L_{A10}	L_{AMax}
(1) 9 Barff View	08:19-08:34	15	69.0	53.5	72.0	91.3
	08:35-08:50	15	69.6	54.5	73.0	88.8
	08:51-09:06	15	67.5	48.0	71.5	82.4
	09:07-09:22	15	67.6	49.0	71.5	84.9
(2) Sefton Cottage	09:30-09:45	15	67.9	45.5	71.5	82.9
	09:46-10:01	15	69.7	51.0	73.5	86.1
	10:02-10:17	15	68.4	50.5	72.0	83.5
	10:18-10:33	15	68.8	50.0	72.5	83.6
(3) 18 Park Lane	11:25-12:25	60	55.2	49.5	58.0	71.2
	12:26-13:26	60	56.8	50.5	59.0	82.0
	13:27-14:27	60	56.9	50.5	60.0	65.3

5.46 At Receptors 1 and 2 which align the A19(T) measured L_{Aeq} and L_{A10} noise levels were not dissimilar for these two locations. Measured 15-minute L_{A10} noise levels ranged from 71.5 to 73.5 dB(A), which were generally 2 to 3dB greater than the measured 15-minute L_{Aeq} noise levels (ranged from 67.5 to 69.7 dB(A)). These measurements indicate that road traffic is the dominant noise source at Receptors 1 and 2.

5.47 At Receptor 3, a location selected due to its increased distance from the A19(T) (>100m) and also its close proximity to the proposed road scheme (approx. 50m from Option A alignment), it was noted that during the three 1-hour monitoring surveys measured houriy noise levels were more or less consistent. Compared to noise measurements carried out at A19(T) roadside receptors, measured L_{Aeq} and L_{A10} noise levels were significantly lower, where measured L_{A10} noise levels were at least 10dB lower.

[4] L_{Aeq} is the equivalent continuous noise level over the period.
[5] L_{A90} is the noise level exceeded for 90% of the measurement period.
[6] L_{A10} is the noise level exceeded for 10% of the measurement period. Given that traffic stream is not constant (i.e. varies from moment to moment), $L_{A10, 18h}$ is the index used to assess traffic noise.

5.48 In regard to measured background noise levels (L_{A90}), the survey results showed that L_{A90} levels at Receptors 1 and 2 were similar to the levels measured at the Receptor 3. Given its increased distance from the A19(T), it is considered that L_{A90} levels at Receptor 3 should be lower. However, it was noted that during the measurements at Receptor 3 the dominant noise was trees rustling in the wind which was consistent for the three hour monitoring period. Subsequently, elevated background noise levels prevailed at this location during the survey.

Predicted Noise Levels

5.49 At Stage 2, in addition to measuring ambient noise levels predictions of noise level changes due to the scheme were undertaken at a selection of noise sensitive locations following the CRTN methodology. To undertake the CRTN calculations a number of other factors in addition to traffic flows must be taken into account, as identified below. N.B. where such information has not been available, assumptions have been made, as noted.

- Carriageway gradients have been assumed to be 0.5%; source height 0.5m; receptor heights 1.5m;
- % HGV's on affected carriageways have been used as per the traffic data from Mouchel Parkman;
- Local road speed limits have been used as a default;
- A19(T) assumed to be of an permeable bitumen nature where the bypass will be of an impervious bitumen nature;
- Information regarding distance between source and receptor has been taken from relevant OS plans;
- Angles of view for each carriageway segment were taken from OS plans;
- All predictions have been made at 1m from the façade of each receptor and therefore a correction of 2.5dB has been included in the calculated levels.

5.50 At Stage 2, predictions are required to assess the likely change in noise levels at noise sensitive locations likely to be significantly affected by the scheme. It should be noted that the predictions are based on the information provided on route alignment to date and that detailed designs (i.e. cross-sections) or mitigating measures have not been taken into account and therefore predictions are likely to be conservative. In addition, it should be noted that a Stage 3 noise assessment would comprise a more detailed assessment of potential noise nuisance of all properties where the noise change is predicted to be 1 dB(A) or more

5.51 Table 5.7 and 5.8 below presents CRTN calculated predictions of L_{A10} noise levels at selected property facades for bypass options assessed.

Table 5.7: Predicted Noise Level Changes due to Road Traffic and Existing Measured Levels Corrected to 18 hour (Option A)

Receptor No. / Location	Predicted Noise Level (dB $L_{A10\ 18\ hour}$)			
	2004 Measured Level*	2004 [b] CRTN Predicted Level	2022 Design Year	
			Do-something	Noise Level Change [a]
1 - A19(T) Roadside @ Barff View	72.0	71.4	61.7	-10.3
2 - A19(T) Roadside @ Sefton Cottage (A19 facing façade)	72.4	72.7	56.5	-15.9
3 - 18 Park Lane (Bypass facing façade)	58.0	-	66.5	+8.5
4 - Maris (North facing façade)	-	65.6	64.4	-1.2
5 - 12 Barff View (A19 facing façade)	-	66.4	65.3	-1.1
6 - *Kelburn (North facing façade)*	-	56.1	62.4	+6.3
7 - Kelburn (south facing façade)	-	58.3	59.2	+0.9
8 - Kelburn (A19 facing façade)	-	65.6	50.5	-15.1
9 - Forty Nine Steps (north facing façade)	-	58.3	60.1	*+1.8*
10 - Forty Nine Steps (bypass facing façade)	58.0 [c]	-	63.7	+5.7

11 - Hall Bower Cottage (south facing façade)	-	60.6	56.3	-4.3
12 - Birch Tree House	58.0 [c]	-	63.7	+5.7

*Followlng CRTN shortened measurement procedure. [a] With Existing Year 2004 [b] Calculated for existing road traffic on the A19(T) [C] Facades are screened from A19(T), therefore L_{A10} measured at 18 Park Lane is considered to be representative of noise level at these receptors.

Table 5.8: Predicted Noise Level Changes due to Road Traffic and Existing Measured Levels Corrected to 18 hour (Option B)

Receptor No. / Location	Predicted Noise Level (dB $L_{A10\ 18\ hour}$)			
	2004 Measured Level*	2004 [b] CRTN Predicted Level	2022 Design Year	
			Do-something	Noise Level Change [a]
1 - A19(T) Roadside @ Barff View	72.0	71.4	59.9	-12.1
2 - A19(T) Roadside @ Sefton Cottage (A19 facing façade)	72.4	72.7	56.5	-15.9
3 - 18 Park Lane (Bypass facing façade)	58.0	-	58.1	+0.1
4 - Marls (North facing façade)	-	65.6	59.2	-6.4
5 - 12 Barff View (A19 facing façade)	-	66.4	64.2	-2.2
6 - Kelburn (North facing façade)	-	56.1	56.3	+0.2
7 - Kelburn (south facing façade)	-	58.3	53.0	-5.3

8 - Kelburn (A19 facing façade)	-	65.6	50.5	-15.1
9 - Forty Nine Steps (north facing façade)	-	58.3	56.8	-1.5
10 - Forty Nine Steps (bypass facing façade)	58.0 [c]	-	53.9	-4.1
11 - Hall Bower Cottage (south facing façade)	-	60.6	53.7	-6.9
12 - Birch Tree House	58.0 [c]	-	57.3	-0.7

*Following CRTN shortened measurement procedure. [a] With Existing Year 2004 [b] Calculated for existing road traffic on the A19(T) [C] Facades are screened from A19(T), therefore L_{A10} measured at 18 Park Lane is considered to be representative of noise level at these receptors.

5.52 Predicted changes in noise levels due to the proposed scheme options has identified that the provision of a bypass would result in a significant change in noise levels at sensitive properties aligning the existing A19(T) (i.e. >10 dB reduction). However, the transfer of traffic onto the proposed bypass would result in an increase in noise levels along its alignment and at a number of properties within Burn located within 0-200m of its carriageway.

5.53 For both Option A and Option B, it is predicted that for the majority of properties located to the west of the A19(T), road traffic noise generated on the bypass would be screened by those properties located to the east of the A19(T) and the west of the bypass. Consequently, several properties located to the east of the A19(T) are likely to be sensitive to a change in noise levels due to the bypass, particulariy at property facades of those located on Park Lane and the A19(T) which back onto the bypass (i.e. located within 100-200m of the bypass).

5.54 Referring to Tables 5.6 and 5.7, the predicted change in noise levels show that Option A will have the greater impact on the above mentioned properties, with predicted noise level changes ranging from negligible to significant (increases of 0.9 to 8.5 dB). For Option B, the predicted increase of noise levels is somewhat lower.

5.56 Evidently, the change in noise levels at sensitive receptors (both +/ -) are deemed to be of significance ranging from negligible to significant. With regard to increasing noise levels, it is predicted that Option B will have the lesser adverse impact owing to its increased distance from sensitive receptors. Figure 11 shows the selected noise-sensitive properties assessed at this stage which are likely to be affected by a change in noise of greater than +1dB(A) (i.e. noise increase) due the improvement scheme. For Option B it is predicted that of the selected noise-sensitive properties assessed at this stage, none would be affected by an increase in noise level of 1dB (A).

Traffic Vibration

5.57 Previous studies have found that for a given increase in traffic noise, the increase in the percentage of people bothered by vibration is similar to noise over much of the exposure range. DMRB guidance states that the $L_{A10,\ 18hour}$ index should be used as an indicator of traffic induced vibration disturbance. It should be noted that there is little evidence that noise levels below 58dB(A) produce significant vibration nuisance, whilst at 75dB(A), appreciable nuisance may be experienced by about 35% of the people exposed.

5.58 Considering DMRB guidance, the increases in vibration levels at the receptors due to changes in road traffic associated with the scheme is considered to be negligible, based upon data provided.

Conclusion

5.59 Based on the Stage 1/ 2 assessment findings, the preferred bypass option from a noise perspective is Option B. No mitigation measures have been identified at this stage of the assessment given the limited assessment of noise nuisance.

5.60 At the detailed design stage of the preferred option (Stage 3), it is recommended that in order to provide a more robust assessment of noise nuisance a detailed ambient monitoring survey should be undertaken for the study area, particularly at the facades of the noise-sensitive receptors identified at this stage of the assessment.

6 LANDSCAPE / TOWNSCAPE

METHOD AND SCOPE

6.1 The assessment process has been carried out in accordance with the method described in the Highways Agency's Design Manual for Roads and Bridges (DRMB) Volume 11, Section 3, Part 5 Landscape Effects.

6.2 Methods for assessing landscape and visual impact have progressed. Latest guidance from the Landscape Institute with the Institute of Environmental Management and Assessment is "Guidelines for Landscape and Visual Impact Assessment, second edition, 2002". The guidance in this publication has been used to augment the method outlined in DMRB Volume 11, Section 3, Part 5.

6.3 This landscape/townscape and visual assessment comprises:

i. A description of the landscape and visual baseline.
ii. An evaluation of the existing landscape character/quality and sensitivity.
iii. An assessment of the predicted impacts on landscape character.
iv. An assessment of predicted impacts on views from residential properties and public areas.
v. Mitigation.

6.4 Information has been obtained from the following sources:

- Site visits carried out in April and May 2004
- O.S. Maps-
  1:50,000 Landranger Series No.105
  1:10,000 Digital Base
- Selby District Local Plan July 1997
- Countryside Character Volume 3 – Yorkshire and the Humber Published by the Countryside Commission 1998
- Selby Landscape Character Assessment

LANDSCAPE CONTEXT

Location

6.5 Burn is situated approximately 4.5km south of the centre of Selby the nearest town, and is within the District of Selby in the County of North Yorkshire.

6.6 Figure 1 is a Location Plan for the proposed scheme.

Landscape Planning Policy

6.7 Selby District Local Plan contains policy related to landscape. The study area is not within a Special Landscape Area. Policy ENV 1 requires a high standard of design that respects the environment including landscape.

6.8 Policy ENV21 requires an appropriate landscape schemes to be submitted with applications for some developments.

6.9 Section 10 of this report outlines relevant policies in more detail.

Topography

6.10 The dominant physical influence on the landscape are the drift deposits, which overiie the bedrock of Triassic Mercia Mudstones. These helped to create the flat to gently undulating landform around the village of Burn and the surrounding Selby District. Higher ridges particularly at Brayton Barff are formed from underiying sandstone, which rise above the alluvium deposits.

6.11 Across the study area the landform is a constant 10m AOD. The land rises to the north of Selby Canal at Brayton Barff to 50m AOD. This is the highest point within the surrounding landscape and affords views of Burn Village to the south.

Cultural Heritage

6.12 There are no listed buildings or scheduled monuments in the study area. Burn village does not have a conservation area. The airfield is an important local heritage feature currently used by Burn Gliding Club. The cultural heritage section of this assessment contains more detailed information regarding heritage and potential archaeology in the area.

Vegetation Cover

6.13 The landscape within, and surrounding the study area is dominated by arable farmland, consisting of large fields bounded by hedgerows and drainage ditches. Areas of woodland are limited to occasional small woods or copses connected by hedgerows. Prominent areas of woodland are north of Selby Canal on the higher ground such as that at Brayton Barff. Areas of scattered scrub are also located to the south of the study area within a Site of Interest to Nature Conservation (SINC). The only notable areas of woodland within the study area are a group of mature poplars to the rear of residential houses in Burn Village itself (Camalot, Camesley House and Kelburn), and mixed semi mature species on the boundary of the Gliding Club off Park Lane.

Tree Preservation Orders

6.14 There are no Tree Preservation Orders along the line of either of the proposed routes, but three individual trees and one group are subject to preservation orders adjacent to Park Lane within the residential properties at 'Forty Nine Steps' and 'Clary Mead', (Details are contained within appendix 2).

Nature Conservation

6.15 There are two statutory sites of nature conservation value. A Site of Interest to Nature Conservation (SINC) is located approximately 180m from the southern end of the proposed routes, adjacent to Burn disused airfield. The second is a section of Burn canal to the north of the study area, which stretches from Burn Bridge to Burton Bridge, (Details are contained within the ecology section of this stage 2 assessment)

LANDSCAPE CHARACTER

Regional

6.16 The Countryside Commission character map of England shows Burn to be within the flat, low lying intensively farmed agricultural land of the Humberhead Levels (Character Area No.39).

6.17 The key characteristics of the area surrounding Burn are:

- A flat landscape occupying the area of former pro glacial Lake Humber.
- Broad floodplains of major navigable rivers draining to the Humber Estuary with extensive areas of wash lands and some alluvial flood meadows.
- Rich, high quality land which, is Intensively farmed and includes substantial areas of warp land.

- Essentially flat, very open character with occasional rising ground formed by ridges of sand and outcrops of Mercia Mudstone.
- Very large open fields divided by dykes, with relatively few hedgerows or field trees.
- Modern motorways on embankments and large installations notably power stations, which are often prominent in the flat landscape.

District

6.18 The Landscape Character Assessment of Selby District (January 1999) places the study area in the River Aire Corridor Landscape Character Area. This area has been split further to take account of local variations within the area character area. Key characteristics of the area include:

- Flat low lying arable farmland of varying types.
- Open heavily drained arable farmland on the valley floor.
- Lack of woodland away from the immediate river corridor and villages.
- Large scale infrastructure e.g. motorway and power stations.

6.19 The northern part of the study area has been identified as Flat Open Farmland within the River Aire Corridor and the southern part of the study area Semi Enclosed Farmland within the River Aire corridor highlighting local differences within the character area.

6.20 Changes in the landscape are related to drainage, flood defence and farming. Pressure for the intensification of infrastructure within the corridor is also considered a potential source of landscape change.

Landscape Quality and Classification

6.21 Based on the five point scale given in the design manual for roads and bridges, the quality of the landscape character of the study area is assessed to be good to ordinary.

Landscape Quality has been measured using the following criteria:

1. High Quality	Landscapes that are nationally recognised with National Park or Area of Outstanding Natural Beauty Status
2. Very attractive	Attractive, diverse landscapes with few visual detractors, often designated locally as Special Landscape Areas or similar for their quality.
3. Good	Pleasant landscapes with some distinctive qualities.

4. Ordinary	Average landscapes with no particulariy distinctive features and occasional visual detractors.
5. Poor	Unattractive landscapes with many visual detractors.

PREDICTED LANDSCAPE IMPACTS

Main Features of the Scheme

6.22 The main features and alignment of the two scheme options (A and B) are listed in Section 3 of this report, shown in Figure 2 and summarised below.

- A new single carriageway approximately 1.4km in length constructed to the east of Burn Village. For option A the proposed bypass runs closer to the village.
- The road would be a single 7.3m wide carriageway.
- A central roundabout would be constructed within the middle section of the scheme to the south of Burn Village. The location of the roundabout varies slightly for the two options with option A bringing the roundabout closest to the village edge.
- A balancing pond would be located to the south end of the scheme in the vicinity of the roundabout to regulate the discharge of surface water run off.
- The route of the existing A19 through Burn would be stopped off at either end to prevent through traffic and access to the village would be from the new roundabout.
- The scheme would not be lit except for the roundabout, which would be illuminated with high pressure sodium lights mounted on 10m high columns. The columns would extend along the main approaches to the roundabouts. The lighting will be a significant factor when assessing the visual impacts of the junction.

Landscape Impacts

6.23 The main landscape impacts that have been identified are:

- The prominence of the proposed bypass within, the flat landscape of the Humber Head levels. The road would cut through an area of arable farmland.
- The prominence of the proposed lit roundabout junction to the south of Burn village would result in the slight urbanisation of the rural character of that area.

The proposals to illuminate the roundabout and along each main approach to the junction would affect landscape character especially at dusk and night time.

- Both route options would result in the vegetation loss of approximately 1km of hedgerow, primarily from the northern and southern ends of the scheme, where it joins to the existing A19 and at Brick Kiln Lane and the area of the proposed roundabout.

- For route option A trees would be lost between the Burn Gliding Club and the village and an area of the mature poplar plantation east of 'Camelot' at the northern end of the village would also be lost. These trees have a impact on the landscape character and so, should be retained and protected to provide an effective screen from the above properties to the proposed bypass route.

- Route option B passes to the east of these areas of existing trees and woodland. The route would also pass to the east of an area of dense scrub adjacent to the disused air field.

- Both options would avoid the Gliding Club buildings. Option A would avoid the west effectively severing them from the village. Option B would be east of the Gliding Club which would enable the club building to maintain links with the village but would effectively cut the club off from the airfield.

- There are no Tree Preservation Orders (TPOs) directly affected by the proposals, although there are 3 individual trees and 1 tree group with TPO's approximately 125m from the nearest point of the proposals situated at the residential properties of 'the Thirty Nine Steps', Clary Mead' and 'Chatsworth' adjacent to Park Lane.

- The amount of traffic through Burn Village would be reduced resulting in the improvement in the environment for the houses along the existing A19.

- Bypassing the village would reduce the severance of the village community that results from the currently busy road.

- Effects on public rights of way within the area will be minimal, only one path (Public Right of Way No.6) running across the disused airfield will be affected directly. It would be dissected by both proposed routes as it crosses the Burn disused airfield towards 'Sefton Cottage' on Brick Kiln Lane.

- This is a flat and open landscape with extensive views to the power stations in the east. Few elements that contribute to the good to ordinary landscape character of the area will be adversely affected by the scheme and there would be benefits to the character of Burn village. Therefore, overall landscape impacts for both options have been assessed as slight adverse.

VISUAL ASSESSMENT

6.24 A visual assessment was carried out in May 2004. On the day of the survey weather conditions were cloudy with sunny spells and mild. Deciduous vegetation was in leaf and therefore the views of the proposed route were commensurate with those of the summer season.

6.25 Figures 13a and 13b, The Visual Assessment for each of the options, shows in diagrammatic form the photograph points and depicts the visual envelope (the approximate area from which the proposals would be visible).

Predicted Visual Impacts

6.26 Visual impact is the result of a change in view either from residential property, public rights of way, land with public access, roads and offices. Residential properties are considered the most sensitive receptors to changes in view where as road users are the least sensitive as their experience is transient. The magnitude of impact is assessed according to the scale of the effect which will depend largely upon the size and type of the development and the distance of the receptor from the site. The significance of visual impact depends upon the sensitivity of the receptor and the magnitude and duration of the effect. Therefore, the significance of the visual impact is higher for sensitive receptors where there are large-scale effects on a view for a long period of time.

6.27 The following is a guide to how the visual impact of the proposed development has been assessed in this report.

Substantial	Views from highly sensitive receptors where the scale of effect is so large that it dominates the view. Where the receptor is highly sensitive reduced scale of the effect may still result in a substantial effect.
Moderate	Views from moderately sensitive receptors where the scale of the effect on the view is noticeable but not dominant.

Slight	Views from less sensitive receptors where scale of effect low but still discernable.
Neutral	The development cannot be seen or it not of significant scale to be noticed from the receptor.

A Residential Properties on existing A19 – 'Maris' to 'Cobwebs'

6.28 Nine properties located at the northern end of the village on the east side of the existing A19 currently have views to the west over the existing busy A19 as it passes through the village. To the east are views over open flat farmland and the disused airfield to the prominent skyline features of Drax and Eggborough power stations. A belt of poplars restricts views eastwards for four properties in particular ('Maris' to 'Woodfield'). The trees provide a valuable source of vegetation/screening in an area devoid of major wooded areas.

6.29 For both route options the busy A19 would move to the east of the properties resulting in an improvement to views west over the existing A19. Both options also take the road further from the properties than the existing route. Route option A would cut through the belt of mature poplars and pass approximately 40m at its nearest point from the properties. There would be views of the road from the rear of these properties resulting in adverse visual impact that would be partly offset by the reduction in traffic on the existing A19. The impact for option A has been assessed as 'moderate adverse'.

6.30 For route Option B the proposed road would pass approximately 86m from the properties at its closest point. The bypass would pass behind the mature belt of poplars which would provide partial screening during the summer months but would not be as effective during winter. The existing A19 would become quieter and traffic moved further from the properties. Visual impact has been assessed as 'slight to moderate adverse'.

B Residential Properties – 'Birch Tree House' to 'Chatsworth'

6.31 These properties have similar views to the east to those mentioned above. To the west they are set back from the A19 and overlook a quiet back lane in Burn village. At its closest point the existing A19 is approximately 60m from 'Birch Tree House'. Views to the south and east are restricted by a belt of vegetation running from Park Lane to the disused airfield along a field boundary between the village and the Burn Gliding Club.

6.32 For route option A the proposed road would pass within approximately 60m of the residential houses cutting though the belt of mixed vegetation on the access road to the

glider club and caravan park, behind 'Chatsworth'. The predicted visual impact has been assessed as 'substantial adverse'.

6.35 Route option B passes approximately 170m east of the properties at its nearest point. Existing vegetation on the access road and to the field boundary would restrict views of the proposed road during the summer months. During winter this would be less effective. The gliding club buildings would also restrict views. Overall the visual impact is assessed as 'slight to moderate adverse'.

C Residential Properties Nos. 16 & 18 on Park Lane

6.36 Views from No.16&18 Park Lane are restricted to the north by the neighbouring properties and to the north/east, east by a thin belt of mature vegetation that runs along the edge of Park Lane towards the disused airfield. This planting provides a good screen within the summer months but would allow filtered views during winter. To the rear of the properties there are open views across flat farmland and scrub areas with Brick Kiln Lane in the background. There are also views towards the existing busy A19.

6.37 Both route options would bring the busy A19 closer to the properties. Route option A would run approximately 40m from the properties at its nearest point. Views to the east would be partially screened by a belt of mixed vegetation during summer. There would be views of the southern end of the bypass from the rear of the properties, some existing tree and scrub vegetation provides screening to views but the overall visual impact would be adverse due to the proposed roundabout and associated lighting columns. Impact has been assessed as 'substantial adverse'.

6.38 Option B would pass approximately 160m from numbers 16 and 18 Park Lane at its nearest point. To the northeast and east views of the proposed bypass would be screened by existing vegetation particularly during the summer months. The Gliding club buildings would also restrict views to the east. Views of the proposed bypass from the rear of the properties to the south would be partially screened areas of scrub and trees adjacent to the airfield. Lighting required for the proposed roundabout junction would create an adverse impact not only at night but also during the day due to the height of the lighting columns. Therefore the predicted visual impact is assessed to be 'moderate adverse'.

D Residential Properties Nos. 2-12 on Park Lane

6.39 The properties have views over grass and arable fields to the rear (south) with views in other directions restricted by neighbouring properties. Brick Kiln Lane and the busy A19 are visible.

6.40 Option A would be visible from the rear of these properties. In particular the proposed roundabout with associated lighting would be a prominent feature approximately 230m to the south from its centre. Areas of existing vegetation, provide some screening. Predicted visual impact is 'substantial adverse'.

6.41 For route Option B the properties would be further from the new road with views across grazing and arable land to the bypass. Some screening is provided by areas of trees, scrub and garden planting. As stated previously, lighting, of the junction would have an adverse visual impact not only due to the lighting of a previously semi rural area at night but also the structure themselves during daylight hours. The centre of the roundabout would be located approximately 340m south of the nearest property. Visual impact has been assessed as 'moderate adverse'

E&F Residential Properties 'Roseberry House to Sefton Cottages'

6.42 Views to the rear(east) of the properties look out on to open grazing land and scrub leading to the disused airfield with areas of arable farmland beyond. On the horizon the Eggborough and Drax power stations can be seen. To the south of the properties runs Brick Kiln Lane, with the existing busy A19 to the front.

6.43 For route option A all three properties would have rear facing views east towards the proposed bypass and roundabout approximately 145m away at the nearest point. Sefton Cottages would benefit with the proposed stopping up of Brick Kiln Lane reducing traffic to access only, but would be outweighed by the impact of the bypass. Lighting of the junction would have an adverse impact, especially when in use. Therefore impact has been assessed as 'moderate adverse'.

6.44 The properties are approximately 260m from the proposed bypass at its nearest point. All properties have rear facing views towards the proposed bypass to the east with restricted views of the roundabout to the south. With the stopping up of Brick Kiln Lane due to the proposed junction, residents at 'Sefton Cottages' will benefit from less traffic movement along the lane by restricting access to the village by the former A19. Despite this benefit, impact has been assessed as 'slight to moderate adverse'

G Residential Properties on existing A19 junction with Brick Kiln Lane– 'Crossroads' & 'Hail Bower Cottage'

6.45 The properties of 'Crossroads' and 'Hall Bower Cottage' are located at the junction of busy A19 with Brick Kiln Lane and West Lane. All three properties face on to the A19. Views to the front are to existing residential properties and the junction as previously described. Views to the south look on to grazing and arable farmland but with the A19 and to a lesser extent Brick Kiln Lane dominating views. Within the background the A19 rises in height from grade at Blossom Hill to cross the railway line.

6.46 For option A the proposed access road to Burn Village would be seen in rear views south from the properties. This would run approximately 90m from the nearest point of the properties. The centre of the roundabout would be approximately 200m to the southeast of the properties at its nearest point. Although some benefit will be gained from the bypass the overall impact would be adverse, and therefore impact has been assessed as 'moderate adverse'.

6.47 For option B views to the rear of the properties look southeastwards towards the proposed roundabout approximately 300m from the properties. The is no existing substantial vegetation cover to screen views. Although residents would benefit from the reduction in traffic adjacent to their properties the impact of the junction and associated lighting would be adverse. Impact has been assessed as 'moderate adverse'.

H Residential Properties Nos. 9-12 Barff View

6.48 The four properties run parallel to the A19, fronting directly on to the busy road with views beyond that of arable farmland and the disused air field. Eggborough and Drax power stations can be seen an the skyline.

6.49 For route option A the busy A19 would be moved approximately 20m further from the existing alignment. This would provide some benefit as the existing A19 would become a local access road. The bypass at its nearest point would be 57m from the properties, little vegetation, apart from a hedge that runs parallel to the existing A19 road will provide screening. The realignment of the A19 to bypass the village centre will prove beneficial to these properties, reducing the traffic flow outside the properties. The impact has been assessed as 'slight beneficial'.

6.50 Option B At their closest point the properties of 9-12 Barff View are approximately 64m from the proposed bypass. These properties currently front on to the existing A19 (which is approximately 20m away, at its nearest point), the bypass would allow the existing A19 to only to be used for access, reducing traffic past these properties and creating a beneficial impact. The existing hedgerow along the A19 provides some screening to views from the properties. Overall the impact has been assessed as 'slight beneficial'

I Residential Properties Nos. 2-8 On existing A19

6.51 Similar views are afforded to these properties as those previously described above, but with views east being screened by properties on the opposite side of the A19 and the mature belt of poplar trees behind 'Lamesley House' and 'Camolot'.

6.52 Option A moves the A19 to the other side of the houses on the opposite side of the road and cuts through the existing belt of trees which may impact on views. Overall potential visual impact has been assessed as 'slight beneficial" due to the loss of trees.

6.53 Option B moves the A19 further from the existing alignment and would not result in the loss of trees at this point. Overall the impact would be improved; therefore the impact has been assessed as 'slight beneficial'.

J Residential Properties 'Holly House' to 'Poplar cottages' on existing A19

6.54 These properties run parallel along the A19 within Burn village itself with views from the front looking directly on to the busy A19 and adjacent properties. Some residential properties are set back from the road with well -vegetated gardens to the front, views from these properties are restricted. Glimpsed views can be seen through gaps in between the housing to rear gardens with arable, grazing and the disused airfield beyond that. Poplar cottages has views down Park Lane to the airfield, views are screened by areas of existing vegetation at the end of Park Lane, views will be more prevalent in the winter months.

6.55 For option A these properties would benefit from the realignment of the road. Views from these properties are well screen by existing garden vegetation and the adjacent properties along the A19. Therefore the overall impact has been assessed as 'moderate beneficial'.

6.56 Option B would benefit also benefit views from these properties as a result of reduced traffic through the village along with the screened views of the proposed bypass. The impact has been assessed as 'moderate beneficial'.

K Residential Properties 'Cosa Mia & 'Fairview' along West Lane

6.57 The bungalows of 'Cosa Mia' and 'Fairview' off West Lane are located on slightly rising land to the west of the A19. Open views to the east of the properties, are partially screened by a hedgerow running along the adjacent track and public right of way, this is more effective during the summer months. Available views to the east look towards grazing and arable land with the cricket ground in the foreground. Views then continue to the busy A19 and airfield, surrounded by arable and grazing farmland. In the distance views of the power stations and main east coast rail link can be seen.

6.58 For option A views of the proposed bypass would from the bungalows would be screened by the mature hedge. Views of the lighting columns will create an adverse

visual impact to the properties, especially when in use. Therefore impact has been assessed as 'moderate adverse'.

6.59 For option B views from the bungalows would also be partially screened by a hedgerow running parallel to the access track particularly during summer. Established trees along the existing road also provide some screening. Although views include the Eggborough and Drax power stations and the numerous telegraph/electric poles, the proposed junction and the associated lighting structures (as stated previously) would impact upon views within the existing semi rural area. Therefore impact has been assessed as 'moderate adverse'.

L Residential Properties 'Oak Tree Cottage' – 'Hollins Farm' along West Lane

6.60 Views from 'Oak Tree Cottage' to 'Hollins Farm' along West Lane are afforded the same views as described previously, with open views from the rear of the properties looking south eastwards over grazing and the cricket ground and the busy A19 to the airfield surrounded by arable farmland, with the east coast rail line and power stations in the background.

6.61 For option A there would be views of the bypass looking southeast. The proposed lit roundabout junction would be clearly visible, particularly from upper floor windows. Potential visual impact is 'moderate adverse'

6.62 For option B the roundabout junction would be located slightly further from the properties and but may be slightly better screened by the hedgerow on Brick Kiln Lane. Predicted visual impact is 'moderate adverse'

M Residential Properties 'Charnwood –'Meadow View' along West Lane

6.63 Properties enjoy open views to the south and east from the rear looking towards the existing A19, which rises at the Blossom Hill Bridge to cross the East Coast Rail Mainline. Surrounding land is arable/grazing with areas of scrub. Views of the disused airfield can be seen in the background.

6.64 For both options A and B views would be screened primarily by the adjacent properties, the landform and existing vegetation. Lighting of the junction would have a visual impact on these properties. Impacts have been assessed as 'slight adverse'.

N Residential Properties 'Burn Grange' - 'Burn Court' along Common Lane

6.65 Properties along Common Lane look on to arable farmland and the disused airfield and associated buildings to the south. The existing A19 running in to Burn village is major element in views from Burn Grange, as is Burn Village itself. An existing belt of mature

trees looking south provides a vital area of vegetation in an area devoid of areas of major vegetation.

6.66 Views from these properties would be similariy affected by both options although option A would result in the loss of mature trees that provide some screening of the village. However, the route of option A is closer to the existing alignment. Overall predicted visual impact is 'moderate adverse' for both options.

Residential properties east of the Railway Line (From Hag Bush House to Tranmore Cottages)

6.67 The these properties may have intermittent, filtered views west over the railway line and airfield towards Burn. Some views may be blocked by existing vegetation in gardens and round farmsteads.

6.68 The impact of both route options on views from these properties in the long term is considered to be negligible bearing in mind the railway in the foreground and the distance involved.

Public Right of Way No. 5 & 6 (From Common Lane to Brick Kiln Lane)

6.69 Footpath number 5 runs from Common Lane on to the disused airfield where it divides. One section (pathway No. 6) continues southwest long the airfield past the Burn Gliding Club House, turning to wards Park Lane behind the residential properties across grazing land and terminating at Brick Kiln Lane. The second section is part of the Trans Pennine Trail and skirts the edge of the airfield to the north and continues along the east boundary before skirting the southern edge of the airfield to terminate at Brick Kiln Lane adjacent to 'Stocking Green Farm' . Views across the proposed routes are available along the majority of the pathway, except for a small section near 'Stocking Green Farm', which is screened by existing vegetation.

6.70 Both options impact upon views from the public rights of way as well as the public right of way itself. Predicted impact is 'moderate adverse' as the busy A19 would come closer to the footpaths.

Public Right of Way No. 3 (West Lane to A19)

6.71 Footpath number 3 runs from West Lane at the residential property of 'Casa Mia' and runs past 'Fairview' in to open countryside through arable farmland south and terminates at the A19 adjacent to 'The Whitings'. The path has views across farmland

and the cricket pitch to the existing A19 which can be seen through gaps in the hedgerows.

6.72 Both options would have a similar impact on views from this footpath. Lighting at the roundabout would be visible. Existing vegetation would provide some screening particularly during summer. Visual impact is predicted to be 'slight adverse'.

Public Right of Way No. 6 & 15 Trans Pennine Trail (Burn Lane to Common Lane)

6.73 Footpath number 15 forms part of the Trans Pennine Trail and runs from Common Lane at Burn common southwards to the disused airfield where it joins to footpath number 6. It then divides at that point, heading south, running along the disused airfield runway, parallel with the adjacent rail line, before it turns west towards Burn Lane and then terminates adjacent to 'Stocking Green Farm'. The public rights of way enjoy open views west across the disused airfield and arable farmland towards Burn and the existing A19. Views west from the southern end of the pathway towards Burn Lane become screened by the landform by areas of scrub, trees and hedgerows.

6.74 Views of the proposed bypass would be distant for both options. Potential visual impact is 'slight adverse'

Public Right of Way No. 1 (West Lane to Gateforth New Road)

6.75 Pathway number 1 runs from West Lane adjacent to 'Top House' northwards through open arable farmland, with the landform gently rising to the highest point within the landscape at 'Brayton Barff'. There are open views across the landscape can be seen looking south eastwards towards Burn, with the Burn village itself and existing A19 a prominent feature within the landscape. The flat arable landscape runs across the disused airfield towards the railway line and continues in to the background towards the power stations of Eggborough and Drax.

6.76 Views of the bypass for both options are likely to be screened by the existing village properties, rising landform and existing vegetation. Visual Impact is predicted to be 'neutral'.

Comparison

6.77 The overall design and layout of the two options are quite similar, the main differences are the extent to which the bypass route runs in relation to the properties to the east of Burn, and the location of the proposed roundabout/junction.

6.78 Option B runs approximately 90m at its nearest point (Lamesley House) from the properties to the east of Burn. The route avoids the mature trees to the rear of these

properties and the mixed vegetation belt adjacent to Park Lane/airfield. There would be some vegetation loss due to the roundabout (adjacent to Brick Kiln Lane). The centre of the roundabout would be approximately 300m away from the residential property of Hall Bower Cottage. Option B would pass by the Gliding Club House to the east.

6.79 Option A would run approximately 40m (at its nearest point) to the residential properties cutting through the adjacent mature belt of trees. The bypass would also pass within approximately 45m of the properties to the end of Park Lane (compared to 121m along option B), this would also require areas of vegetation to be removed adjacent to the Glider Club and Caravan Park.

6.80 The proposed roundabout would be approximately 94m (at its nearest point) from the residential property of Hall Bower Cottage. The roundabout would be closer with the proposed access roads to Burn, being in close proximity to Oak Tree Cottage. The access road itself will create more of a visual impact due to its close proximity to residential properties with open views, particulariy after dark.

6.81 Therefore, overall, option B would result in the least visual impact to the properties on the eastern edge of Burn, by being further away and resulting in less of the existing screening vegetation being removed. The location of the roundabout would again, be a greater distance from neighbouring properties and access roads to Brick Kiln Lane and Burn village itself would create less of a visual impact to adjacent houses.

Mitigation Measures

6.82 The design of the two route options is insufficiently advanced at the present time to include detailed mitigation measures. Both route options would, however, provide some opportunities for landscape proposals that could integrate a new highway into the existing landscape and offer mitigation of specific impacts.

6.83 The overall objectives of the landscape mitigation are:

i) To aid the integration of the road and minimise the alteration of the existing pattern/character of the landscape.

ii) To minimise visual impacts on settlements and public areas.

iii) To minimise the loss and degradation of the existing landscape.

6.84 The following mitigation measures would be appropriate to achieve those objectives identified previously.

Hedgerow Planting

6.85 Hedgerow planting along the roads in, and surrounding Burn are a common feature of the area and are mainly hawthorn with some mixed species hedges. Therefore the use of hedgerow or linear shrub planting would be an important part of the integration of the proposed bypass in to the surrounding landscape. New hedgerows would link in to the existing network, notably along the existing A19, with new hedgerow along the length of the bypass and access roads to Brick Kiln Lane and in to Burn Village itself. This will help to maintain its visual continuity and also provide wildlife habitats.

Tree Planting

6.86 Due to the pattern of the landscape, tree planting along the line of the bypass would be restricted to groups rather than following the proposed route. In particular planting in the area between the village and the proposed route would help to screen the development.

6.87 Tree planting would be established around junction and access roads to the south of the scheme to soften the impact from surrounding views and help integrate the road in to the landscape.

6.88 Areas of woodland planting could also be planted where there are severed areas of land to filter views of the bypass. The would also help to integrate the bypass in to the landscape and provide natural habitats for wildlife. All species would comprise native species appropriate to the locality.

Grass/Wildflower Seeding

6.89 Along the verges of the bypass and at the junctions it is proposed to establish low maintenance wildflower swards, to provide seasonal interest and create an ecologically diverse habitat. Species choice would include naturally appearing species to the area and be of local provenance, where appropriate.

Off Site Planting

6.90 Where adequate mitigation is difficult to achieve by on line measures, it is often more effective to consider off site planting implemented on privately owned land, outside the highway boundary. This would be carried out with the individual landowners agreement. It would be offered to those properties that would be adversely affected by the proposals.

6.91 Properties on the eastern edge of the village with existing views east across the airfield and farmland are likely potential beneficiaries of off site works. Planting may take the

form of tree/shrub planting within gardens, new/infilling of boundary hedgerows or planting adjacent to the bypass.

6.92 Other properties that would have views of the proposed bypass, particularly those at the southern and northern ends of the proposed scheme may also benefit from off site planting.

Lighting

6.93 The lighting of the proposed junction and 100m along each of the access roads linking to the junction will be a major factor in the visual impact of the scheme. Although lighting is required for safety reasons the impact of lighting within the semi rural area could be reduced with the use of full 'cut off' lighting at the roundabout, which would help to minimise light spill to the surrounding properties during the hours of darkness.

Conclusions

6.94 The proposed bypass would inevitably have some impact on the visual quality and landscape character of Burn and the surrounding area. Approximately forty four properties would experience moderate or substantial adverse visual impacts from the scheme. This is offset against the beneficial impact to properties not only adjacent to the existing A19 (approximately forty five), but also to the village as a whole by the reduction of heavy through traffic and the severing of the village by the existing road. It also should be noted that several of the properties that will experience either moderate or substantial adverse visual impacts would also benefit from the affects of the realignment of the busy A19.

6.95 Approximately 1km of hedgerow and 3,260 square metres of vegetation would be lost to option A, with approximately 1km of hedgerow and 2,200 square metres of vegetation lost to option B.

6.96 Overall there is little to choose between the route options. However, Option B would take the bypass further from the village and would result in fewer trees being lost. As a result this scheme has a greater potential benefit to properties in the village and slightly less adverse impact than option A. However, this is not deemed to be considerable and overall the landscape and visual impacts of both route options has been assessed as follows;

Landscape Impacts – slight adverse

Visual Impact – moderate adverse

7 LAND USE AND AGRICULTURE

INTRODUCTION

7.1 The assessment of the potential effects of each of the scheme options on land use has been carried out in accordance with DMRB Volume 11 Section 3, Part 6. The purpose of the Stage 2 Assessment is to undertake sufficient assessment to determine the effects of the proposed scheme on private property, land used by the local community, development land and agriculture.

7.2 The dominant land use is for agriculture. However, there are several private properties and businesses in the study area to consider.

Private Property and Associated Land take

7.3 Burn Gliding Club would be affected by both scheme options in different ways. The Club House is avoided by both route options. For option A the clubhouse would be severed from the village and new access arrangement would be required. The caravan park associated with the gliding club between the village and the club house would be affected directly. Option B would avoid the caravan area but would sever the club house and hangers from the airfield.

7.4 No other properties would be directly affected based on current information available.

Land used by the community

7.5 No public parks, Public Open Spaces, Common Land, Town or Village Greens or allotments would be affected by the proposed route options. However, a public footpath would be directly affected and the impact of this is assessed in Chapter 10, Pedestrians, Cyclists, Equestrians and Community Effects.

Effects on development land

7.6 There are no planning designations for development areas in the study corridor and no known planning permissions that would be affected by either of the proposed route options at present. However, this may change and should continue to be assessed as detailed scheme design progresses.

Agriculture

7.7 An assessment of the impact on agriculture in the area of the two proposed route alignments for the A19 bypass at Burn was carried out in June and July 2004 in accordance with DMRB Volume 11, Section 3 Part 6 Land use.

7.8 Information has been obtained from the following sources :

- Site visit 15th June walking the footpaths and roads.
- Farm interviews carried out on the 13th and 20th July.
- Land ownership details provided on plan 340974/007.
- Alignment details provided on plans Opt-03.
- Land classification details on the published 1 inch 1 mile soil survey of England and Wales.
- Nix farm management pocket book.
- Askham Bryan College Farming in Yorkshire.

7.9 Standard figures and details provided during the farm interviews were used to estimate the impact of land take and severance on agriculture in the area.

7.10 There are two route alternatives (Options A and B) described in section 3 of this report.

General Agricultural Conditions

7.11 The proposed routes cross flat agricultural land. The affected land is currently in winter wheat, spring oilseed rape and grass. The predominant farming in the vicinity is arable with a wide range of root and vegetable crops forming part of the rotation.

Climatic Conditions

7.12 The average annual rainfall for the area is approximately 640mm and the height at AOD is 7m south of Burn. Drawings provided by Mouchel Parkman show the route being between 8.45m at the southern end and 5.76m immediately to the south of the village for option B and 8.45m and 5.26m for option A. There would be no climatic or physical restriction to the land quality in this area.

Quality of Land

7.13 Government Policy Guidelines for the countryside and the rural economy attaches considerable weight to conserving the most versatile and best agricultural land. The various grounds of land classification are as follows :

Definitions of Land Classification Grades

7.13.1 Grade 1 – Excellent Quality Agricultural Land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

7.13.2 Grade 2 – Very Good Quality Agricultural Land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

7.13.3 Grade 3 – Good to Moderate Quality Agricultural Land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yield are generally lower or more variable than on land in Grades 1 and 2.

7.13.4 Subgrade 3a – Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

7.13.5 Subgrade 3b – Moderate Quality Agricultural Land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

7.13.6 Grade 4 – Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable

crops, the yields of which are variable. The grade includes very droughty arable land.

7.13.7 Grade 5 – Very Poor Quality Agricultural Land
Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

7.14 As previously stated there are no physical or climatic restrictions to the classification of land in the area. The published 1 inch to 1 mile soil survey of England and Wales, sheet 97, classifies all the land within the route footprint as grade 2 or 3. It is not possible without a detailed soil survey to assess what percentage is of the higher grade soils. However, farm interviews and visual inspection of the area would indicate that the majority if not all the affected land which supports a wide range of crops, would be of either grades 1, 2 or 3a. As such this should be taken into account during the detailed design phase aiming to minimise land take where possible.

Quantity of Land Take

7.15 No detailed design plans are currently available so land take estimates have been made using the route options shown on Figure 2. Land take figures have been made assuming a 15m road requirement.

7.16 No account has been taken of balancing ponds, mitigation measures or areas of land severed and deemed unfarmable.

7.17 The estimated land take for Option A would be 2.60ha of which 0.45ha would be non-agricultural. The estimated total land take for Option B would be 2.96ha of which approximately 0.25ha would be non-agricultural.

7.18 Approximately 2.71ha of high quality agricultural land would be directly required for route Option B and 2.15ha for route Option A. Additional land may be required for mitigation works, balancing ponds and areas deemed unfarmable. Detailed design may therefore alter the above figures.

Number of Holdings Affected

7.19 Depending on the detailed design both proposals would affect five landowners. Two of these would have little or no land loss but potential access alterations.

Effect of Land Take on Individual Farm Economies

7.20 The most important financial measure of the performance of a farm to assess the effect of land loss is the Management and Investment Income (M.I.I.). The M.I.I., is

calculated by subtracting total inputs (including an allowance for the farmer's own labour) from the total farm output. The Management and Investment Income of a farm, however, is not necessarily reduced in proportion of the area of land which may be lost from it.

7.21 The calculation of the reduced output is relatively simple, as production from the land lost will cease and the variable costs associated with that production e.g., seeds, fertilisers etc., will be saved.

7.22 The fixed costs of the farm, however, will, initially at least, be the same for the smaller unit as they were for the original one, and so the proportionate loss of M.I.I., will usually be greater than the proportional loss of land. In time opportunities may arise for a reduction of the fixed costs and so the initial reduction in M.I.I., due to land loss is likely to be the maximum experienced.

7.23 A farm is considered viable when a positive Management and Investment Income results from the farming system being carried out. If the estimated reduction in M.I.I., is greater than 100% the farming business cannot provide a return on the capital invested in it nor can it fully remunerate the farmer for his labour. Such a situation would mean that the capital base of the business would need to be depleted to pay recurrent costs and therefore the business would be unviable.

7.24 On some of the agricultural holdings the farmers may live on a small income surplus below that of an agricultural worker's wage. These units, although technically viable, cannot be regarded as giving a fair reward to the farmer and as such are not commercially viable.

7.25 An estimate of economic loss has been done for the affected holding using details from Askham Bryan farming in Yorkshire 2002/2003 and details of average size mixed arable holdings or details provided at interview.

OPTION B

Farm	Estimated Land Loss Ha	Estimated Impact on M.I.I.%
*Hollins Farm	1.20	11.50
Staynor Farms Limited	0.61	1.54
Fair Oak	0.90	2.28
Vine Cottage	Negligible	Negligible
Total	2.71	

OPTION A

Farm	Estimated Land Loss Ha	Estimated Impact on M.I.%
*Hollins Farm	0.90	7.60
Staynor Farms Limited	0.76	1.94
Fair Oak	0.49	1.24
Vine Cottage	Negligible	Negligible
Total	2.15	

* Hollins Farm was visited but the owner had commenced harvest and was unavailable for comment. The farm has been assessed using standard data from the Askham Bryan farm survey and is only for guideline purposes.
Burn Lane Farm was visited and the owner indicated that the affected land was currently farmed by Hollins Farm.

Summary

7.26 Using the details provided and standard data as supplied in the Nix Farm Management pocketbook and Askham Bryan Farming in Yorkshire 2002/2003 details show that none of the affected holdings would have their viability threatened by the proposals.

7.27 It must be noted that in 2005 the European Unions agricultural subsidy policy is going to change. This is likely to have a significant effect on farming in the UK. Any development which affects farm areas, will impact on farm subsidy entitlements. The compensation procedure should encompass these issues as part of the overall package, however, this may affect individual farmers and their wish to either retain land have land re-instated.

Severance

7.28 Severance which adversely affects farm structure occurs when any part of a farm is physically separated from the remainder. When an alternative access route to the severed land is available the effect of the severance may be relatively slight but where no alternative access is possible land is lost from the farm.

7.29 The main cost due to severance is the additional expense associated with increased distance to be travelled by machinery or animals with herdsmen to reach the severed land. The source of these travel costs is directly related to :

(i) The amount of land severed.

(ii) The number of return trips to perform the normal tasks of husbandry.

(iii) The speed of travel.

Any increase caused by these will lead to an increase in fixed costs and a reduction in M.I.I.

Severance and Access Arrangements

7.30 It has been assumed that where the proposed improvement removes field access alternatives will be provided in consultation with the farmers and landowners.

7.31 Hollins Farm

Hollins Farm is situated off West Lane in the village of Burn. Access to the owned and tenanted land is via West Lane and the A19 further to the north. The tenanted land would require access to be maintained and this could be achieved by utilising the proposed roundabout south of the village. The location of the roundabout in the grass field immediately south of the village, for both proposals, would mean that remaining areas would be difficult to farm with modern agricultural machinery. Information provided at interview by Burn Lane Farm would indicate that the majority of the land is on full agricultural tenancy and access would have to be retained.

7.32 Staynor Farms Limited

The major severance and access issues are likely to be on this block of affected land. Option A would create two parcels of severed land which would retain access off the existing road network. Option B would create three parcels of land approximately 3ha, 2ha and 1.8ha. Existing access will still be available to the 3ha block. The other two would become severed and although inconvenient in shape and size would remain farmable. Further changes in European agricultural policy also means that there are likely to be some advantages in retaining these areas. All produce is transported to and from the land via the existing A19. During detailed design the landowner should be contacted to discuss access arrangements.

7.33 Fair Oak

Fair Oak farm is situated south-east of the proposal. There would be a block of 2.8ha severed west of the proposal with option B. Providing access was maintained this would not be a significant issue. Option A would severe a block of 0.9ha. This would prove more difficult to farm with modern agricultural machinery. Some 3.07ha is situated south of the Burn village adjacent to the A19. All produce to and from this land is via Common Lane. Common Lane is the preferred route for all farm vehicle movement on to the trunk road network.

7.34 Vine Cottage

The main issue for Vine Cottage would be any alteration to the existing arrangement due to the road realignment and safety. The current access is directly opposite Common Lane and would need retaining as all produce will be moved to the main holding near Goole.

Drainage

7.35 Much of the Selby area is covered by Internal Drainage Boards. Any issue with regard to drainage will have to include consultation with the relevant Board. Farmers and landowners should be consulted on existing drainage schemes to enable suitable pre and post drainage reinstatement.

Conclusions

7.36 Without detailed design drawings it is not possible to assess the exact impact on agriculture of the proposed road improvement. However, using standard data, visual inspection and details obtained during farm interviews, it is possible to provide an overview of the likely impact of the two proposals.

7.37 The location of the southern roundabout will lead to the greatest physical impact on agriculture causing the most severance and access issues.

7.38 The other significant factor will be changes in the European Union Agricultural Support Payments. This removes the link between production and subsidy. Future payment will be attached to land occupied as opposed to crop grown. This could mean that farmers will attempt to retain the maximum area of land wishing to reclaim derelict land or retain areas previously deemed too small to farm

7.39 Land of the higher grades with the greatest flexibility of production will be increasingly valuable in agricultural terms. Efforts must be made to minimise the land take and reduce severance issues.

7.40 It is not possible to assess what the future impact of the proposal will be with all the changes in agricultural support. However, the overall farm sizes and the relatively small land take figures would indicate that neither proposal is likely to have a significant impact on agriculture.

7.41 The reduced land take of Option A and slightly reduced severance issues would mean that this option has the least impact on agriculture based on information currently available.

8 NATURE CONSERVATION AND ECOLOGY

Introduction

8.1 The assessment of the potential nature conservation and ecological impacts of the two proposed route options for the A19 Burn Bypass has been undertaken in accordance with the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 4 Ecology and Nature Conservation (Highways Agency, 1995).

8.2 The assessment forms part of the Stage 2 Environmental Assessment for the scheme and is supplementary to an earlier Stage 1 Nature Conservation and Ecology report. (See Appendix 3)

8.3 The objectives of the assessment were as follows:

- to identify habitats / features of nature conservation value within the study area;
- to determine the presence of and potential for protected species within the study area;
- to assess the potential impact of the proposed scheme on habitats of ecological importance and protected species;
- to determine appropriate mitigation measures which could be taken to ameliorate any negative impacts on habitats and species of conservation interest as a result of the proposed scheme;

8.5 Field surveys were undertaken during the summer of 2004. A breeding birds survey shall be conducted in the spring of 2005.

Survey Method

Desk Study

8.6 A desk survey was undertaken as part of the initial Stage 1 report. Details of any designated sites, protected species or other features of nature conservation interest within 2km of the study corridor were requested from English Nature and the North & East Yorkshire Ecological Data Centre

8.7 The Selby District Biodiversity Action Plan (Megson, 2004) was used to determine conservation priorities and direct mitigation strategies.

Phase 1 Habitat survey

8.8 A Phase 1 Habitat Survey of the road corridor (approximately 500 m either side of the proposed scheme) was undertaken on 7 July 2004 in accordance with the standard methodology set out by the JNCC (1993). The results of the Phase 1 survey can be seen in Figure 14 whilst target notes are included in Appendix . Nomenclature for plant species names is taken from Stace (1991).

Hedgerow Survey

8.9 Hedgerows were surveyed in accordance with the Hedgerow Regulations, 1997, using the standard procedure set out in the Hedgerow Survey Handbook (DEFRA, 2002). This entailed the survey of thirty-metre sections of all hedgerows directly affected by the scheme. This was carried out on 5 July 2004.

Badger Survey

8.10 A badger survey was conducted over a three-day period from 13 - 21 July 2004. This involved searching for signs of activity within the 500m corridor either side of the proposed development.

8.11 Areas of suitable habitat, especially woodland, pasture and all field boundaries formed the focus of this search. The aim was to detect key field signs including setts, latrines, paw prints, snuffle holes (created when foraging) track-ways and hairs.

Reptile Survey

8.12 Reptiles were surveyed in accordance with the standard survey methodology set out in the Froglife Advice Sheet 10: Reptile Survey (Froglife, 1999). This involved direct observation and the use of 35 artificial refuges (tins) in appropriate habitat along the 500m corridor either side of the proposed development.

8.13 In accordance with the recommended guidelines (Froglife, 1999), the survey was carried out over seven separate sampling events, from 7 July 2004 to 10 August 2004.

Bat Survey

8.14 An assessment of the study area's potential for bats was made by evaluating possible roosting sites in trees and buildings and assessing potential foraging habitat.

8.15 An area of 500m, either side of the proposed development was searched on 13 and 19 July 2004.

Site Overview

8.16 The study area lies within the Humberhead Levels Natural Area. This low-lying area of glacial till is characterised by an open, flat topography and network of arable fields, hedgerows and drains.

8.17 Both proposed routes of the bypass begin near Burn Grange at the north of Burn. They pass to the east of the village as far as the edge of the disused airfield (Option A to the west of the hanger and gliding Club House and Option B to the east of the hanger and Gliding Club House), and rejoin the A19 at the junction of Burn Lane to the south.

8.18 Option A involves the siting of a roundabout on semi-improved pasture to the east of Brick Kiln Lane. There are three spurs: one leading onto the disused airfield to the east, one leading back onto Brick Kiln Lane to the south, and one leading into the village to the west. Option B places the roundabout in the same field approximately 100m south of the roundabout for option A with spurs leading through an arable field back onto Brick Kiln Lane (south) and into the village (west).

8.19 Hedgerows are well established along the route of this section of the A19 and along the roads to the south east of the village. They provide good nesting habitat for birds. The ditches are periodically wateriogged, especially in the winter.

8.20 Several poplar *Populus* sp. plantations are located to the east of the village, representing the most significant populations of mature trees in the area.

8.21 The desk study produced no records of protected species within the study area. However, suitable habitat is present within the area that might support badgers, bats and breeding birds.

DESIGNATED SITES OF NATURE CONSERVATION IMPORTANCE

Statutory sites

8.22 None were identified within 2km of the proposed development.

Non-statutory sites

8.23 A Site of Importance for Nature Conservation (SINC) – Burn Disused Airfield - was identified within the 500m corridor of the proposed development. The SINC citation and map are provided in Appendix 4..

8.24 Burn Disused Airfield SINC is located to the south east of Burn and at its closest point is well within 50m of the proposed scheme (notably the tie into Brick Kiln Lane from the roundabout). Comprising approximately 18.5 hectares, the site consists of a mosaic of habitats including arable fields and margins, scrub and semi-mature / mature trees, marshy grassland and unimproved neutral grassland. The more diverse areas of neutral grassland contain a representative assemblage of species including common knapweed Centaurea nigra, bird's-foot trefoil Lotus corniculatus and red fescue Festuca rubra.

8.25 A further four SINCs were located within 2km of the proposed development. These include woodland on Bariow Pasture, Botany Bay Farm; scrub at Henwick Hall Lane, Brayton; the Selby Canal and towpath; and Brayton Barff.

Habitat Descriptions

8.26 The following habitat descriptions are based upon the habitats identified during the Phase 1 Habitat Survey (see Appendix 5). Reference should be made to Figure 14 for the exact location of the habitat types.

Arable

8.27 Arable fields of oilseed rape and cereal crops feature prominently throughout the study area. These are species-poor, although the margins support a diversity of arable weeds including common fumitory *Fumaria officinalis*, scented mayweed *Matricaria recutita*, scentless mayweed *Tripleurospermum inoderatum*, knotgrass *Polygonum aviculare* agg., white dead nettle *Lamium album*, borage *Borago officinalis* and common fiddleneck *Amsinckia micrantha*. Arable fields are of value for a number of farmland birds, most notably tree sparrow *Passer montanus*, house sparrow *Passer domesticus*, grey partridge *Perdix perdix* and yellowhammer *Emberiza citrinella*.

8.28 Field ditches running along the perimeter of a number of the arable fields are seasonally inundated. Several ditches are permanently waterlogged. Bank side vegetation of the ditches consists primarily of grasses, which is cut during mid-summer to prevent drainage problems.

8.29 The arable fringes of the disused airfield are of interest for their assemblages of short ruderal species that have developed on the concrete surface. These include stonecrop species (Sedum spp.), plantains (*Plantago* spp.) and mouse-ear hawkweed *Pilosella officinarum*.

Semi-natural grassland and scrub

8.30 Towards the south of the disused airfield a mosaic of habitat types has developed including neutral and marshy grassland, scrub, broadleaved woodland and arable field margins. Most of this area is encompassed in the 'Burn Disused Airfield' SINC. Similarly, a smaller area of scrub and neutral grassland is located immediately south of Burn Gliding Club.

8.31 Areas of neutral grassland have developed into rank tussocky swards as a consequence of lack of maintenance. The farmer cuts some strips periodically, possibly as a hay crop or perhaps to prevent scrub invasion. The neutral grassland is characterised by false oat grass *Arrhenatherum elatius*, red fescue, black knapweed, bird's-foot-trefoil, hairy tare *Vicia hirsuta* and meadow vetchling *Lathyrus pratensis*. Other plants of interest include black horehound *Ballota nigra*, common centaury *Centaurium erythraea*, crosswort *Galium cruciate*, goat's beard *Trapopogon pratensis*, perforate St-John's wort *Hypericum perforatum* and wild parsnip *Pastinaca sativa*.

8.32 Selective grazing by the abundant brown hare *Lepus capensis* and rabbit *Oryctolagus cuniculus* has created a varied grassland structure, from tall rank grassland to short cropped turf. This provides a range of niches for a wide diversity of invertebrates such as nesting and foraging areas for bumble bees Bombus *spp.*. Scrapes made by foraging and burrowing activities are also important for burrowing and ground-dwelling invertebrates. Numerous butterflies have been recorded; some of which have large populations. These include: small tortoiseshell *Aglais urticae*, painted lady *Vanessa cardui*, peacock *Inachis io*, small skipper *Thymelicus sylvestris*, green-veined white *Artogeia napi*, small white *Artogeia rapae*, large white *Pieris brassicae*, speckled wood *Pararge aegeria*, gatekeeper *Pyronia tithonus*, ringlet *Aphantopus hyperantus*, small heath *Coenonympha pamphilus*, meadow brown *Maniola jurtina* and common blue *Polyommatus icarus*.

8.33 Patches of marshy grassland are found in the wetter parts of this area. They have a typical assemblage of rush *Juncus spp.*, common sedge *Carex nigra*, mint *Mentha sp.* and marsh woundwort *Stachys palustris*.

8.34 Extensive patches of scrub and tall ruderal habitat are interspersed amongst the grassland. Tall ruderal patches are dominated by nettle *Urtica dioica*, creeping thistle *Cirsium arvense*, rosebay willowherb *Chamaenerion angustifolium* and cleavers *Galium aparine*, whilst scrub comprises of hawthorn *Crataegus monogyna*, bramble *Rubus fruticosus* and willow *Salix sp.*. Small fragments of semi-mature woodland have developed with a canopy of willow, poplar *Populus sp.* oak *Quercus sp.* and Birch *betula sp.*

8.35 The mosaic of semi-natural grassland and scrub is well suited for a variety of ground and scrub nesting birds. In particular skylarks *Alauda arvensis* have been recorded on the more open areas and reed bunting have been observed amongst the scrub.

Hedgerows

8.36 Most of the hedgerows along the route of the schemes are species-poor, consisting of hawthorn and blackthorn *Prunus spinosa*. These species-poor hedgerows are perforated with large gaps and have degraded as a result of neglect and severe mechanical trimming.

8.37 A single stretch of mature, species-rich hedgerow is located on the eastern side of Brick Kiln Lane. This hedgerow, measuring approximately 500m in length is more or less intact and is especially wide (up to 4m) on the section bordered by sheep-grazed pasture. The typical composition of woody species includes abundant blackthorn and hawthorn as well as frequent to occasional oak, bramble, honeysuckle Lonicera *periclymenum*, hazel Co*ryl*us ave*ll*ana, elder Sambucus n*igra*, black bryony *T*amus commun*is* and dog rose Rosa can*ina*

8.38 The road margin that abuts this hedgerow has a well established flora including false oat grass, black knapweed, yarrow *Achillea millefolium*, cow parsley *Anthriscus sylvestris*, meadowsweet *Filipendula ulmaria* and white dead nettle.

8.39 At the southern end of the proposed scheme a diverse planting of native and non-native shrubs has produced a wide thicket / hedgerow along both sides of the A19. This extends from the junction of Burn Lane to the railway line.

8.40 The Hedgerows Regulations 1997 confers a certain amount of protection to hedges through the planning system and provides criteria for the identification of 'important' hedges based on species diversity, associated features such as ditches and banks, and historical significance. None of the hedgerows surveyed are worthy of protection under the Hedgerows Regulations, 1997. This is based upon a general lack of interest features such as: standard trees, low frequency of woody species, and absence of archaeological or structural features.

Species-poor grassland

8.41 Several areas of species-poor grassland (semi-improved and improved) are scattered along the study area.

8.42 Two fields of neutral grassland (possibly set-aside) – one directly to the north west of the Gliding Club and the other between the runways, to the north of the SINC – were

cut this summer. These are species-poor - dominated by false oat grass and creeping thistle – although skylarks were observed in flight above these fields.

8.43 Two species-poor grazed pastures - one immediately north of West Lane and the other east of Brick Kiln Lane - are dominated by perennial rye-grass Lolium perenne.

Built environment

8.44 The village of Burn is in itself a valuable wildlife reservoir. Starlings Sturnus vulgaris, house sparrows and house martens Delichon urbica were recorded near gardens and roadsides. Garden hedges and eaves provide potential nesting habitat for birds and roosts for bats.

8.45 Burn Gliding Club is an area of amenity grassland, concrete and tarmaced road surface and aircraft hangers. The eaves of the buildings may support breeding birds.

8.46 A significant poplar plantation, south east of Barff View, provides suitable foraging opportunities for bats. Four common pipistrelles *Pipistrellus pipistrellus* were recorded feeding around this plantation, which measures approximately 0.2 ha.

8.47 The concrete and tarmaced surfaces of the disused runway provide good basking hot-spots for reptiles.

FAUNA

Badgers

8.48 No evidence of badger activity within the study corridor was found during the survey. Consultation with English Nature revealed that the closest records of badgers are from the 'Selby Canal and Towpath' SINC, approximately 500m to the north west of Burn village.

8.49 A number of large rabbit warrens were discovered in or near to the 'Burn Disused Airfield' SINC. These warrens were built into mounds of soil and probably represented the most variable topography for sett construction.

Bats

8.50 The bat survey revealed four species of bat, notably: common pipistrelle and probably whiskered / Brandt's *Myotis mystacinus / Myotis brandtii*, brown long-eared *Plecotus auritus* and Leisler's *Nyctalus leisleri*.

8.51 The poplar plantation described in 8.46 and the hedgerow described in 8.37 are important foraging areas. Bats also forage near buildings at the southern end of the scheme, near the junction of the A19 and Burn Road.

Reptiles

8.52 Much of the habitat around the disused airfield has potential for reptiles, especially grass snake *Natrix natrix*, slow worm *Anguis fragilis* and common lizard *Lacerta vivipara*. This habitat affords excellent tussocky grassland and basking spots for foraging reptiles.

8.53 The reptile survey found evidence of grass snake and slow worm principally in the area covered by the 'Burn Disused Airfield' SINC. These species were sighted following direct observation. The use of 'tins' only produced incidental records of bank voles *Clethrionomys glareolus*.

Breeding Birds

8.54 A breeding bird survey has been postponed until spring 2005. However, a number of noteworthy species were recorded as incidentals whilst undertaking related field surveys. Birds of particular interest include barn owl *Tyto alba*, skylark, starling, house sparrow, tree sparrow, yellowhammer, reed bunting *Emeriza schoeniclus* and song thrush *Turdus philomelos*. The majority of these records were for the southern part of the disused airfield (described in 8.30) and the hedgerow and adjoining arable margins along Brick Kiln Lane (described in 8.37).

ECOLOGICAL EVALUATION

Assessment criteria

8.55 The principal assessment of ecological value was by professional judgment based on criteria defined in *A Nature Conservation Review* (Ratcliffe, 1977), namely size, diversity, naturalness, rarity, fragility and typicalness. Application of these criteria follows the principles described by the Nature Conservancy Council (1989), that includes the quality of "non-recreatability" as a general integrating measure of nature conservation value.

8.56 The above criteria were used to assess the nature conservation value of habitats within the study area, ranked on the following scale:

Low value: Areas which have been heavily managed and commonly support only monoculture stands of vegetation such as arable farmland, rye grass leys and amenity grassland.

Local value: Areas which are small with a low floristic diversity such as conifer plantations and hawthorn dominated hedges. Such features are readily recreatable.

Parish value: Areas which can be small but which have a higher floristic diversity and habitat quality. These areas are often only recreatable in the long term. Features such as species-rich ancient hedgerows are also of historical value.

District value: Areas which are often relatively large (but including comparatively small linear wildlife corridors which can link up otherwise isolated habitats) with a reasonable floristic diversity and / or habitat quality. These areas are only recreatable in the long term, if at all.

County value: Areas with a high floristic and / or faunal interest. These would include for example ancient woodland or the location of a badger sett and the surrounding territory. These areas are generally not recreatable.

8.57 The study corridor is dominated by ecologically poor arable land. The main features of ecological importance are situated towards the south of the disused airfield and the mature hedgerow along Brick Kiln Lane.

8.58 Arable land within the study corridor is of low ecological value. This is a consequence of intensive management with regular disturbance and the widespread application of pesticides, herbicides and mineral fertilisers. However arable land in the study corridor does provide habitat for regionally important and red-listed bird species including yellowhammer, starling, house sparrow and skylark (Megson, 2004, and RSPB, 2002). Brown hare, a species of regional importance, is also associated with this habitat.

8.59 The extensive networks of field ditches within the study corridor are species-poor both in terms of flora and fauna. The ditch habitat is of low ecological value predominantly as a result of fluctuating water levels, input of agrochemical run-off and the constant dredging to maintain them in working order.

8.60 The main area of semi-natural grassland and scrub to the south of Burn Gliding Club is of District value. A diverse mosaic of habitat types and species-rich flora associated

with the neutral and marshy grassland and arable margins supports this conservation status. Unimproved (neutral) grassland and arable farmland are recognised as being regionally important habitats in the regional Biodiversity Audit (Headley et al., 2003) and similariy in the Local BAP (Megson, 2004). This area has significant faunal appeal, with local BAP species including abundant hare populations, and considerable bird interest with regards to barn owl, yellowhammer, skylark, reed bunting, song thrush, tree sparrow and house sparrow. The recording of grass snake and slow worm demonstrates the sites suitability for reptiles and provides an indication of an abundant prey fauna, probably of small mammals and amphibians. The invertebrate fauna of this area is also likely to be noteworthy. Large numbers of butterflies and bumble bees were observed feeding on the variety of foodplants including clovers, black knapweed and bird's-foot trefoil. All species of bumble bee are listed on the Selby BAP as a result of a rapid decline inflicted by loss of herb-rich grasslands.

8.61 Although not part of the 'Burn Disused Airfield' SINC, a spur of neutral and marshy grassland just south of the sheep grazed pasture and north of the SINC boundary also merits consideration for its district status. This is for the same reasons provided in 8.60. The short distance between the larger SINC and the connectivity afforded by the abandoned runway is conducive for movement of fauna between the two.

8.62 The area of scrub and neutral grassland south of Burn Gliding Club is ecologically valuable for the reasons stated in 8.60. However, its smaller size and the longer distance between this piece of semi-natural vegetation and the SINC make it of parish rather than of district value.

8.63 Hedgerows within the study corridor are generally of low ecological value owing to their lack of structure and low diversity of woody plants and herbs. As such they are not considered to fulfill the criteria to be classified as important under the Hedgerow Regulations, 1997. The recent hedgerow / thicket at the south end of the proposed scheme is equally of limited value due to the ratio of non-native shrubs and cultivars. However, it is likely to be of some importance for foraging bats, which were recorded in the vicinity.

8.64 The hedgerow along the route of Brick Kiln Lane is certainly the most species-rich and well-maintained hedgerow in the study corridor. Its antiquity, size (height and width) and reasonably diverse hedge banks are such that it should be considered to be of parish value. Furthermore, the hedgerow supports a number of significant species of vertebrate. These include tree sparrow, house sparrow, hare and three species of bat (all of which are locally and regionally important BAP species). Additionally, mature species-rich hedgerows such as these are listed as locally important habitats in the Selby Local BAP (Megson, 2004).

8.65 The improved and poor semi-improved grasslands described in 8.41 to 8.43 are of low to local ecological value. The main features of interest for these grasslands are the provision of nesting and foraging habitat for lapwings, skylarks, stariings and other birds of conservation importance. The shorter sward height is beneficial for feeding barn owls.

8.66 The typically species-poor amenity grassland at Burn Gliding Club is of low ecological value. The hangers and various buildings whilst being unfavourable for roosting bats may support breeding birds.

8.67 There is considerable bat foraging territory around the plantation north of Burn Gliding Club. Despite its rather limited floral value, this habitat is of Local / Parish importance for its bat interest.

ECOLOGICAL IMPACTS

8.68 Both routes of the proposed scheme would impact primarily on arable land and species-poor grassland. Direct loss of approximately 1.03ha. of arable field (including ditch habitat) and 1.34 ha. of species-poor grassland would be incurred by Option A. In contrast, Option B would result in the loss of approximately 1.86ha. of arable field (including ditch habitat) and 0.86 ha. of species-poor grassland. This would impact on habitat for foraging and nesting birds such as stariing, tree sparrow, lapwing and skylark. Brown hare populations would also be adversely affected. The major threats to these species would be direct loss of habitat and also disturbance to potential nesting and foraging habitat on the periphery of the schemes. The impact on potential bird nesting habitat is difficult to mitigate. However, arable land is especially abundant in the general study area providing alternative habitat for these vertebrate species, therefore the significance of impact of the two options on this habitat is likely to be negligible.

8.69 Both options are likely to result in the loss of sections of the mature species-rich hedgerow located along Brick Kiln Lane as a result of the roundabout and the widening the road so that it can take 2-way traffic. The significance of this impact is considered to be moderate. The loss of this hedgerow should be mitigated against to compensate for the loss of a regionally important habitat and a foraging corridor for bats and birds of conservation value.

8.70 Other hedgerows that would be directly affected include a 170m section (approx.) on the southern stretch of the A19, and a 140m section on the northern stretch of the A19. Additionally, Option A will directly destroy and sever a 18m section immediately north west of Burn Gliding Club. All of these hedgerows are species-poor, lacking the equivalent structure and diversity of the Brick Kiln Lane counterpart. Therefore the significance of their loss is only deemed to be slight.

8.71 Option A runs through an area of scrub and semi-natural grassland of Parish value. Large proportions of this habitat would be destroyed (0.25 ha. and 0.12 ha. respectively) having a moderate, adverse ecological impact. Furthermore, any remaining fragmented habitat will reduced in size and become more susceptible to noise disturbance given its proximity to the roundabout. Option B avoids this area, only impacting upon it through noise disturbance on the eastern fringe.

8.72 The route of Option A extends along the west of Burn Gliding Club. The amenity grassland that would be lost is of low conservation importance. Again, amenity grassland would be lost with Option B, as it passes the gliding club to the east. As with option A, this will have a negligible ecological impact in the specific area.

8.73 Two tree-lined areas will be directly affected by Option A. This includes a narrow band of trees between Burn Gliding Club and Park Lane, and the western part of the poplar plantation south east of Barff View. Despite having only a slight adverse impact on the flora of these habitats, the bat fauna, especially that using the plantation will be adversely affected. This would cause the severance of foraging habitat for pipistrelles suspected of roosting in the village and should therefore be strictly avoided. Option B skirts this plantation and is therefore a more suitable option.

8.74 The ecologically valuable area of semi-natural grassland and scrub is unlikely to be affected by the scheme provided the selected routes remain unchanged. It should be made clear that this habitat is particulariy sensitive to adverse development. Consequently, deviations to the route or unforeseen disturbance (e.g. inappropriate location of storage compounds) south east of Brick Kiln Lane may impact upon migratory and foraging behaviour of breeding vertebrate species including reptiles, amphibians, birds and bats.

8.75 The Burn Disused Airfield SINC boundary is approximately 10m from the boundary of the Brick Lane tie in at the southern end of the proposed route for route option B. For option A the tie in is slightly further away. Detailed design should seek to avoid impacting on the SINC.

MITIGATION

8.76 The principal objectives of the ecological mitigation are:

- To minimise the impact of the proposals on the existing nature conservation value of the study corridor during the construction phase and when the road is operational.

- To enhance the overall nature conservation value of the study corridor through the creation of new habitats appropriate to the locality.

8.77 The construction area should be enclosed using appropriate fencing so that incursion on habitats outside this area is avoided. The location of plant and materials storage compounds should be determined so as not to impact on aquatic habitats such as the ditch network and marshy grassland habitat.

8.78 Vegetation clearance works should be undertaken during October – February, outside the bird nesting season.

8.79 Prior to vegetation clearance and construction works, surveys for protected species including bat, badger and water vole should be repeated to ensure that no new colonisation has taken place in the interim period.

8.80 A breeding bird survey along the line of the chosen option will be required. Particular emphasis should be placed on the territory of barn owls. The barn owl is protected under Schedule 1 of the Wildlife and Countryside Act, 1981 (as amended by the CROW Act, 2000). This affords special protection to barn owls, making it an offence to intentionally or recklessly disturb birds whilst nesting. These birds are particulariy vulnerable to collisions with motor vehicles when hunting alongside roads. Therefore, appropriate mitigation will be necessary as instructed by the bird survey.

8.81 All supplementary surveys should be carried out during the optimal survey season, employing current survey methodologies. If additional protected species are found in the study corridor appropriate mitigation measures will be required.

8.82 The loss of hedgerows would be offset by the planting of new hedges along the highway boundary using a range of native shrubs appropriate to the locality. Suitable species would include hawthorn, blackthorn, hazel, holly and field maple. Planting stock would be of local / regional provenance if available. To increase the structural diversity of the new hedges tree species including sessile oak *Quercus petrea*, English oak *Quercus robur* and ash *Fraxinus excelsior* would be planted at irregular intervals and would be allowed to grow to maturity.

8.83 Option A will involve the destruction and fragmentation of sections of mature, species-rich hedgerow at Brick Kiln Lane. Selecting Option B may reduce the length of hedgerow to be destroyed. Mitigation for this particular area can be provided through protection of remaining hedgerow during construction and appropriate planting of hedgerows, as specified in 8.82, and also by allowing for a wide margins on road sections subject to lower volumes of traffic (i.e. Brick Kiln Lane). Establishment of a species-rich verge can be encouraged through seeding with an NVC grassland mix,

loosely based around an MG1 – black knapweed sub-community (see Rodwell, 1992). All wildflower seed would be of local or regional provenance if available.

8.84 Extreme care should be taken near the hedgerow of Brick Kiln Lane, so as to minimise the effects of off-site storage compounds and disturbance. Equally, land south east of this becomes increasingly valuable for wildlife and should accordingly remain undisturbed throughout the construction.

8.85 The plantation south east of Barff Lane should also be avoided by the scheme to prevent severance of bat foraging territory. This can be achieved by selecting Option B. The use of lighting along the course of the scheme should be minimised since this is detrimental feeding behaviour of some bat species. This would be strongly recommended in the vicinity of the plantation and also along Brick Kiln Lane.

8.86 Under Option A, a significant portion of semi-natural grassland and scrub will be lost to the scheme. Such loss can be averted through the selection of Option B, which results in negligible loss of semi-natural grassland. Nonetheless, the opportunity exists to create a substantial area of wildflower grasslands throughout the road corridor, on embankments alongside hedgerows and near to balancing ponds and small land-holdings. Infertile sub-soils would be used to create areas of wildflower grassland with topsoil removed or buried beneath the sub-soil. Wildflower grasslands would consist of predominantly neutral grassland based on the NVC MG5 community (Rodwell, 1992). All wildflower seed would be of local provenance if available and could be obtained from suitable sites in the locality subject to the necessary consents. The creation of semi-natural neutral grassland would contribute to the Selby Biodiversity Action Plan target for this regionally important habitat and would also favour a number of BAP species, most notably bumble bees, brown hare, skylark, barn owl and song thrush.

8.87 The creation of a balancing pond at the southern end of the scheme along the length of the scheme would minimise the risk of polluted run-off from the new road entering the ditch system. Such ponds would also provide wetland habitat, which could be used by water voles, amphibians, Odonata and other aquatic invertebrates. Wildfowl, waders and reed nesting birds would also benefit. Opportunities to link the pond with the Burn Disused Airfield SINC should be explored. The balancing ponds would be designed according to recognised ecological principles and would be planted with common reed Phragmites *australis* to maximise water treatment function and also to provide habitat for water voles and reed nesting birds. Land-take permitting, land surrounding the balancing pond would incorporate areas of marshy grassland, together with areas of willow and alder carr woodland where appropriate.

CONCLUSIONS

8.88 The study corridor comprises a range of habitats of low to district nature conservation value. There are no statutory sites of nature conservation interest within the study area. A large part of the 'Burn Disused Airfield' SINC is located within the study corridor. This is a non-statutory site of conservation value. Bats were encountered foraging along the route of the scheme, predominantly along the hedgerow of Brick Kiln Lane, and the plantation south east of Barff View. No bat roosting sites were identified along the route of the scheme. Barn owls were observed quartering the fields east of Brick Kiln Lane and south of Burn Gliding Club. No other protected species were recorded during the field surveys.

8.89 The proposed scheme would impact mostly on habitats of low - local nature conservation interest, principally arable land and improved pasture, in addition to hedgerows and ditches having both direct and indirect effects. An area of semi-natural grassland and scrub of parish value and a poplar plantation of importance for its foraging bats will be adversely affected by Option A. Both options will have a direct impact on the mature, species-rich hedgerow of Brick Kiln Lane – a habitat of parish value – that is also an important wildlife corridor for birds, bats and brown hare. Option A however, involves the destruction and fragmentation of a greater length of hedgerow.

8.90 Option B would be the preferred route of the bypass in ecological terms as the route would have a lower impact on features of ecological importance. In particular, an area of semi-natural grassland and scrub; plantation used by foraging bats; and extensive length of hedgerow will all be adversely affected by Option A. The significance of these impacts is considered to be moderate. For Option B, the only adverse impact of moderate significance will be that concerning the hedgerow on Brick Kiln Lane. The remaining impacts are considered to be of slight to negligible significance.

8.91 Through the selecting Option B, the ecological impacts would be offset by a series of mitigation measures that both minimise the impacts and potentially enhance the overall nature conservation value of the study area.

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9 CULTURAL HERITAGE

INTRODUCTION

9.1 A Stage 1 Cultural Heritage Appraisal of the proposed A19 Burn Bypass in North Yorkshire was undertaken in May 2004 in accordance with the DMRB Volume 11 Section 3 Part 2, Cultural Heritage.

9.2 The proposal involves the construction of a new section of road which runs around the east side of the existing village of Burn. The new road will leave the existing A19 just to the south of the A19/Common Lane junction, near Burn Grange (NGR SE59702900), to run between the village and former airfield, and crossing Brick Kiln Lane before rejoining the A19 to the south of the village cricket pitch (NGR SE59252810). The proposed route is c.1km in length, and is indicated on Figure 2. Two options are currently being considered, Option A runs just to the west of the former airfield and has a roundabout on the east side of Brick Kiln Lane, while Option B runs a little further to the east but still has a roundabout on the east side of Brick Kiln Lane.

9.3 A study area 1km wide, centred on the proposed new road alignments, was chosen for the assessment, but it should be noted that only data held by the North Yorkshire County Sites and Monuments Record (NYSMR) and English Heritage's National Monuments Record (NMR) was collected for the purpose of this study. An initial site visit was also made, along the line of the proposed route utilising public rights of way. This work constitutes an archaeological appraisal as defined by PPG 16 "Archaeology and Planning" (Department of the Environment 1990, paragraph 19) and a Stage 1 Assessment as defined by DMRB volume 11, section 3 (Department of Transport 1994, 8/1-8/3). This level of work is typically used for scoping studies; more detailed research and investigative work is then normally carried out once a final route option and initial designs have been considered.

9.4 It should be noted that the very definition of an appraisal means that the various grades given to site importance, as well as the impacts of the proposals, will change (either up or down) as more data is collected and design options are progressed.

EXISTING SITUATION

9.5 A total of 13 cultural heritage sites were identified within the defined study area. These sites are shown on Figure 15 while details of each site can be found in Table 9.1 below.

TABLE 9.1: CULTURAL HERITAGE SITES

Site no	Site name and description	NGR	Concordance	Status/ Importance	Notes
1	Burn village	SE592285 (C)	NYSMR 9995 NYSMR 17071	R	General SMR entry for village only. Mentioned in documents from 11th century onwards.
2	Chapel / Church, west side of A19	SE59412859 (C)	NYSMR 9996	D	
3	Possible brick kilns (place name), Brick Kiln Lane	SE594284 (C)	NYSMR 10023	L	Place-name only – no specific site known.
4	Possible monastic grange (place name), Burn Grange	SE59742904 (C)	NYSMR 10011	L	Place-name only – no specific site known.
5	Burn airfield	SE602281 (C)	NYSMR 10063 EH NMR SE62NW18	D	2WW airfield, used by the RAF between 1942 and 1946. Few structures left.
6	Possible pits (cropmarks), north-west of Burn Grange	SE59312921 (C)	EH NMR SE52NE15	D	Possibly medieval in date, of irregular size and shape.
7	Possible enclosures (cropmarks), north-west of Burn Grange	SE59432932 (C)	EH NMR SE52NE16	D	Possibly not archaeological in origin.
8	Bomb and other explosive stores (sites of), Burn airfield	SE603293 (C)	EH NMR SE62NW31	D	Some structures possibly still extant.
9	Unclassified earthworks, east of Sefton Cottage	SE59452845 (C)		D	
10	Bulk POL Point, Burn airfield	SE59482838 (C)		D	Some structures possibly still extant.
11	Maintenance and Technical Block (sites of), Burn airfield	SE59642850 (C)		L	Site now occupied by glider club.
12	Main offices and other buildings (sites of), Burn airfield	SE598277 (C)		L	Some structures possibly still extant.
13	Military complex, Blossom Hill	SE59122785 (C)		D	Some buildings still extant.

Abbreviations:
NGR: (A) = approximate; (C) = centred; (E) = exact; (L) = linear (for study area only)
Concordance: LB = Listed Building; EH IDE = English Heritage Images of England; NYSMR = North Yorkshire Sites and Monuments Record; EH NMR = English Heritage National Monuments Record; A1 D/L = A1 Dishforth to north of Leeming road scheme
Importance: (N) = National; (R/C) = Regional/County; (D) = District; (L) = Local; (NG) = No grade

Previous Archaeological Work

9.6 There has not, to date, been any systematic archaeological research or data collection carried out within the majority of the study area. A programme of archaeological work was undertaken in the general area in 1980, as part of the proposed British Rail East Coast Main Line Diversion (Turnbull 1980), but all the investigated sites lie beyond the study area for the current bypass scheme. The cropmarks of the region have also been subject to detailed study and analysis, as part of the RCHME's (now English Heritage) Vale of York Project, while the palaeo-environmental resource has recently been considered (Van de Noort & Ellis 1999). The former Second World War airfield at Burn has also been the subject of a number of recent studies (eg. Cawdron 1995; Hutchinson 1998; Otter 1998, 28-38; Willis & Holliss 1987, 36).

Archaeological Sites

9.7 Evidence for any prehistoric activity within the study area is generally absent, although this is probably due to a lack of research and investigation rather than a real absence of material. Studies within the region as a whole have shown there to be a background scatter of prehistoric occupation and settlement (eg. Turnbull 1980; Chapman 1999). Cropmarks of enclosures have been noted on aerial photographs to the north-west of Burn Grange (Site 7) and, if archaeological in origin, they may indicate some occupation of the area during the Iron Age/Romano-British periods. Other cropmarks possibly representing pit-like features have also been recorded nearby (Site 6). However, it is important to note that cropmarks only become visible when ground conditions are suitable, and so their presence cannot be taken as a true reflection of the density of archaeological sites in a given area.

9.8 Burn village lies within the core of the study area (Site 1). This settlement is recorded from the 11th century onwards although much of the evidence for the eariy settlement has since been destroyed. The NYCC SMR records the chapel or church on the west side of the A19 as a specific site (Site 2). A significant place name might also suggest that Burn Grange represents the site of a monastic holding (Site 4), although the "grange" name does have a common 19th century usage. Of more potential is the name "Brick Kiln Lane" (Site 3), which runs from the east side of the A19 through a part of the study area; this name may indicate the presence of former brick kilns or brick works in the vicinity.

9.9 The largest site within, and extending beyond, the study area is the former Second World War Burn airfield. This airfield (Site 5) covered some 600 acres (c.240 hectares) between the A19, the Selby Canal and the main railway line; the south-west sides of the airfield were marked by Brick Kiln Lane and Burn Lane. This temporary airfield opened as a bomber station in November 1942, for Wellington and Halifax bombers of

the RAF's 4 Group, Bomber Command, 578 Squadron. The base had three concrete runways and 36 heavy bomber hard standings, together with a number of hangers. Personnel were initially housed in tents, but permanent buildings were soon erected, and by January 1944 there were 230 buildings on 12 separate sites around the airfield, providing accommodation for just over 2,000 service men and women. With the abandonment of the resident squadron after the war, Burn was closed to flying in September 1946. From 1945 to 1958 the airfield was utilised by the army as a tank park, with heavy use during the Korean War and the Suez crises.

Built Environment

9.10 Although the village of Burn contains a number of buildings of local interest, such as the Chapel/Church (Site 2), some of the older houses on the street frontages, the outlying farm complexes, and some of the military buildings associated with the airfield (Sites 8, 10 and 13), there are no Listed Buildings within the study area.

Other Areas of Cultural Heritage Value

9.11 There are no registered Historic Parks and Gardens, Historic Battlefields, Conservation Areas or areas of National Trust inalienable land within the survey area.

Assessment of Importance

9.12 Using the albeit limited data gathered by this Stage 1 Appraisal, an initial assessment of the grade of importance of each cultural heritage site identified within the study area can be made. For archaeological sites, this assessment is based on a combination of professional judgement, the criteria used by the Secretary of State for Culture, Media and Sport for scheduling Ancient Monuments, and the criteria developed by English Heritage in their Monuments Protection Programme. For the built environment, the assessment is based on a combination of professional judgement and the Secretary of State for Culture, Media and Sport's criteria for listing buildings of Special Architectural or Historic Interest.

9.13 Although almost all the buildings associated with the airfield have now been demolished, the site retains its pattern of runways, and part of the former airfield is still in use as the Burn Glider Club. The former bomb and other explosive stores lay to the north of the present Common Lane (Site 8), and it is reported that at least one of the structures still survives in this area. Three buildings representing the former Standby Operations Block survive on Burn Lane just outside the study area, while the main offices and other buildings lay just to the north-east; this area is now predominantly scrub ground and it is not known whether any structures survive here (Site 12). The site of the Maintenance and Technical Block (Site 11) is now occupied by the glider

club on the west side of the airfield, but few historic features appear to survive above ground. A number of former military buildings lie at the junction of Brick Kiln Lane and the A19 (Site 13), north of Blossom Hill. These represent one of the outlying satellite camps for the airfield which contained the communal site and chapel.

9.14 An area of scrub ground on or close to the line of both proposed new road alignments represents the site of the former Bulk POL (Petrol, Oil and Lubricants) Point (Site 10). A small brick-built structure depicted on the modern Ordnance Survey maps survives on the south side of this site, but it was heavily overgrown at the time of the initial walkover survey and little detail could be identified; it appeared to be a partially roofless structure with walls 2m high with a doorway in the north side - it may be a shelter or similar type of building. The remains of a concrete road leading from Brick Kiln Lane also survives, representing the main access into the POL Point. The rest of the former Bulk POL Point area is heavily overgrown, and it is not possible to determine whether it contains any above-ground remains.

9.15 A pasture field on the north side of a concrete roadway leading from Brick Kiln Lane to the former Bulk POL Point also contains a number of as yet unidentified earthworks (Site 9), east of Sefton Cottage, including what appears to be a ditched enclosure with the remains of a boundary shown on the 1990s Ordnance Survey map; this pasture field has also been disturbed by various underground pipelines. The pasture field further to the south does not appear to contain any surface earthworks.

9.16 Guidance given by the Highways Agency suggests that a four tier importance grading system can be applied to archaeological sites, namely National, Regional or County, District or Local, and sites which are so badly damaged that little now remains to justify their inclusion in a higher grade (Department of Transport 1994, 3/1; Department of Transport 1995, 4/7). This importance grading scheme is also used here, although the District and Local grade is sub-divided to differentiate between sites at the lower end of the scale.

9.17 The built environment can be graded according to whether the structures are listed or not. The various grades for Listed Buildings are also hierarchical, Grade I buildings being of exceptional interest, Grade II* buildings being particularly important buildings of more than special interest, and Grade II buildings of special interest (Department of Transport 1994, 9/1). However, all Listed Buildings are considered to be of National Importance. Non-listed buildings are considered to be of Regional, District or Local grade importance as appropriate.

9.18 The 13 cultural heritage sites identified within the study area can be graded in importance as follows:

National Importance (N)
None

Regional or County Importance (R/C)

Site 1	Burn village

District Importance (D)

Site 2	Chapel / church, west side of A19
Site 5	Burn airfield
Site 6	Possible pits (cropmarks), north-west of Burn Grange
Site 7	Possible enclosures (cropmarks), north-west of Burn Grange
Site 8	Bomb and other explosive stores (sites of), Burn airfield
Site 9	Unclassified earthworks, east of Sefton Cottage
Site 10	Former Bulk POL Point, Burn airfield
Site 13	Unidentified military complex, north of Blossom Hill

Local Importance (L)

Site 3	Possible brick kilns (place name), Brick Kiln Lane
Site 4	Possible monastic grange (place name), Burn Grange
Site 11	Maintenance and Technical Block (sites of), Burn airfield
Site 12	Main offices and other buildings (site of), Burn airfield

No Grade (NG)
None

Archaeological potential

9.19 As the study area has not been subject to either a detailed walkover survey or any systematic data collection, the distribution of sites identified by this Stage 1 Appraisal should not be regarded as representing a comprehensive picture of the cultural heritage resource. The presently depicted distribution of sites (see figure 15) should therefore be treated with caution, and it is almost certain to be refined as more detailed research and field investigation takes place.

9.20 It is considered that additional documentary and cartographic research will reveal further information on the type and range of medieval and post-medieval sites within the study area, particularly in and around Burn, while non-intrusive fieldwork such as geophysical survey, earthwork survey and archaeological field walking (as appropriate) is likely to identify sites and features of all periods. The presence of two possible

cropmark sites and the general background of prehistoric and Romano-British material that has been recovered over recent years points to some occupation of the study area during these periods, and it is considered that the present distribution of these sites represents a severe under-representation of archaeological resource. However, recent study has determined that the study area lies outside the main areas of palaeo-environmental interest and potential (Van de Noort & Ellis 1999).

ASSESSMENT OF THE EFFECT OF THE PROPOSALS

9.21 The proposed A19 Burn bypass is still at the design stage, and so it is not possible to assess the detailed effects of the proposals. As implied above, the base-line cultural heritage data is also lacking in many areas, and further work will be needed to address this. However, the approximate proposed alignments of both current scheme options are indicated on figure **, and their relationships to the identified Cultural Heritage sites can be seen.

9.22 In order to assess the likely impact of the various proposed route options, a simple three tier impact grading system has been devised, namely:

Major impact:	Major disturbance (i.e. more than 75% of the area of known or estimated deposits or features).
Significant impact:	Significant disturbance (i.e. between 25% and 75% of the area of known or estimated deposits or features).
Small-scale impact:	Minor disturbance (i.e. less than 25% of the area of known or estimated deposits or features).

9.23 A combination of these impacts and the grade of importance of each site produces an assessment of overall impact, defined as being substantial, moderate or slight, which may be positive or negative (adverse).

Option A

9.24 As noted above, this option leaves the present A19 to the north of Burn village, at the junction of the A19 and Common Lane. It runs south through an arable field, a belt of woodland and a semi-improved pasture field, and then to the west of the present airfield buildings through a caravan park. It passes through two areas of rough ground and clips the edge of a pasture field. A large roundabout is proposed just to the south of here, in a currently pasture field on the east side of Brick Kiln Lane. The main alignment then crosses Brick Kiln Lane to rejoin the east side of the A19 just to the north of its junction with Brick Kiln Lane. Slip roads run south and west to provide additional junctions with the A19 and Brick Kiln Lane.

9.25 Based on the information available to date, only three of the identified sites will be affected by the proposals.

9.26 The proposed new roundabout lies in close proximity to, and the new road will cross a section of, Brick Kiln Lane, the name being suggestive of brick kilns in the area (Site 3). Although no kilns or related sites have been discovered to date, it is possible that some features may lie below ground within the proposed road corridor.

9.27 The proposed new alignment will also pass through a part of a pasture field to the south-east of Sefton Cottage, and this is also the location of the proposed roundabout, although no surface earthworks are visible here (part of site 9). The route will also affect outlying areas of the former Burn airfield, specifically that part formeriy occupied by the Bulk POL Point (Site 10) and close to the Maintenance and Technical Block (Site 11); as noted above, the former site is now heavily overgrown and, apart from one small brick-built structure, it is not known to what extent any historic structures might survive in these areas, either above or below ground.

9.28 The effects of the proposals can currently be summarised as follows.

Site no	Site name	Grade of site	Impact of proposals	Overall impact (adverse)
3	Possible brick kilns (place name), Brick Kiln Lane	L	Significant	Slight
10	Bulk POL Point, Burn airfield	D	Major	Moderate
11	Maintenance and Technical Block (sites of), Burn airfield	D	Slight?	Slight?

9.29 As can be seen from the table above, based on current knowledge, the proposed scheme is likely to affect three identified archaeological sites, two of District importance and one of Local importance. The overall adverse impacts (determined by a combination of impacts and grade of importance) can be assessed as being slight in two cases and moderate in one case.

9.30 No Listed Buildings will be directly affected by the proposed scheme and, notwithstanding the comments above regarding presently obscured structures associated with Site 10, no non-listed buildings will be demolished.

Option B

9.31 This option also leaves the present A19 to the north of Burn village, at the junction of the A19 and Common Lane. It runs through an arable field and just to the east of the belt of woodland, and through the areas of tarmac and just to the east of the present gliding clubhouse located on the west side of the perimeter runway of the former airfield. The route then passes close to the ruined structure within the former Bulk POL point (Site 10) through a pasture field. A large roundabout is proposed just south of here, on the east side of Brick Kiln Lane. The main alignment then crosses Brick Kiln Lane to rejoin the east side of the A19 just north of its junction with Burn Lane.Slip roads run south and west to provide additional junctions with the A19 and Brick Kiln Lane. Based on the information available to date, only two of the identified sites will be affected by the proposals.

9.32 The proposed new roundabout lies in close proximity to, and the new road will cross a section of, Brick Kiln Lane, the name being suggestive of brick kilns in the area (Site 3). Although no kilns or related sites have been discovered to date, it is possible that some features may lie below ground within the proposed road corridor.

9.33 The proposed new alignment will also pass through a part of a pasture field to the south-east of Sefton Cottage, although no surface earthworks are visible here (part of site 9). The route does not appear to affect the area formeriy occupied by the Bulk POL Point (Site 10) although there will be peripheral impact on the former Maintenance and Technical Block (Site 11). The latter site is now occupied by the Burn Gliding Club and various areas of concrete roadways and tarmaced runways of the former airfield complex.

9.34 The effects of the proposals can currently be summarised as follows.

Site no	Site name	Grade of site	Impact of proposals	Overall impact (adverse)
3	Possible brick kilns (place name), Brick Kiln Lane	L	Significant	Slight
11	Maintenance and Technical Block (sites of), Burn airfield	D	Significant	Slight

9.35 As can be seen from the table above, based on current knowledge, the proposed scheme is likely to affect two identified archaeological sites, one of District importance and one of Local importance. The overall adverse impacts (determined by a combination of impacts and grade of importance) can be assessed as being slight in two cases and moderate in one case.

9.36 No Listed Buildings will be directly affected by the proposed scheme and, notwithstanding the comments above regarding presently obscured structures associated with Site 11, no non-listed buildings will be demolished.

Comparisons of Options

9.37 As can be seen from the above, both Options A and B are likely to have similar impacts.. Based on current information, both impacts are considered to have a slight adverse (negative) overall assessment score, although more detailed data is required.

9.38 Option A lies closer to Burn village, and the alignment would have a major impact on the former Bulk POL Point (Site 10); as yet, the full extent and survival of features within this site has not yet been determined. The new roundabout associated with the scheme also lies within the area of the former airfield, as does the northern part of the route, and although no structures are shown on the maps of the complex in these areas, there is some potential for below-ground wartime structures.

9.39 Option B lies further away from the village, but this will have a slight impact on the former Maintenance and Technical Block (Site 11); although few historic structures appear to survive at this site, the extent of any below ground remains has yet to be determined. The new roundabout associated with the scheme also lies within the area of the former airfield, as does the northern part of the route, and although no structures are shown on the maps of the complex in these areas, there is some potential for below ground wartime structures.

9.40 Overall, there is little to choose between the two options from the Cultural Heritage point of view, although option B is slightly favoured as this will not affect the Bulk POL Point (Site 10). It is therefore assumed that other considerations will be brought to bear when deciding which option should be progressed. However, as noted above, it is important to appreciate that the various grades given to site importance, as well as the impacts of the proposals, will change (either up or down) as more data is collected, particularly field investigation.

MITIGATION MEASURES

9.41 In order to fully assess the impacts of any preferred road option or options, it would be standard practise to carry out a *detailed desk-top survey* of an appropriate option corridor, usually 1km wide. This work would conform to a Stage 2 Assessment as defined by DMRB volume 11. An initial walkover survey of the whole route alignment would also be undertaken, and there should be an appropriate level of cartographic and

documentary research to allow the history and landscape development of study area to be determined.

9.42 However, in this instance, the length of the scheme, the nature of the alignments and their likely impacts suggest that a detailed Stage 2 Assessment would not significantly advance our understanding of the archaeological resource of the area. It is therefore recommended that work should progress immediately to a programme of DMRB Stage 3 *field investigations*.

9.43 These investigations should use techniques such as geophysical survey, earthwork survey, palaeo-environmental sampling and trial trenching (as necessary) to assess both the previously identified sites and the potential of otherwise "blank" areas. The area of the former Bulk POL Point (Site 10) and its environs should be examined in detail when vegetation growth is low, so that any significant above ground structures or earthworks can be identified and recorded. Geophysical surveys should be undertaken of the proposed roundabout locations and the northern part of the alignments to determine whether there are any below-ground deposits or features associated with either the former airfield or the possible brick kilns. Palaeo-environmental work should also confirm that the potential of the route corridor is low. Depending on the results of these surveys, further intrusive investigations in the form of limited trial trenching may be required.

9.44 The results of the Stage 3 work would then allow detailed impact and mitigation strategies to be proposed for any sites affected by the approved option(s). It is likely that these mitigation strategies would involve preservation *in situ* (achieved through detailed design) and/or preservation by record (achieved through archaeological investigation before and during construction works, followed by appropriate analysis and reporting), in accordance with national and regional planning guidelines (eg. Department of the Environment 1990).

CONCLUSIONS

9.45 Based on the limited assessment work completed to date, the two options proposed for the A19 Burn Bypass are likely to have an impact on two or three identified cultural heritage sites. The overall adverse impacts have been determined as being slight adverse (negative) for both options.

9.46 However, it should be noted that the proposed route options have some archaeological potential. This potential relates both to archaeological and more recent features, as well as possibly to palaeo-environmental deposits, and it is possible that new sites will be identified, and additional information will be significantly enhanced, as research and field investigation proceeds.

9.47 It is recommended that a programme of DMRB Stage 3 field investigations is undertaken to determine this potential and to confirm the impact of the identified sites. The results of these assessments would then allow detailed impacts to be determined, which could be used to propose appropriate levels of mitigation, if required.

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10 PEDESTRIANS, CYCLISTS, EQUESTRIANS AND COMMUNITY EFFECTS

10.1 This section studies the potential effect of the proposals on pedestrians, cyclists and equestrians and their movement and patterns in the local community.

Pedestrians

10.2 One public footpath would be directly affected by both proposed route options. Figure 3, Constraints Plan shows public right of way number 6 being severed by the new road. It appears that the route is well used by local residents and concerns were raised during the public consultation event on 1st and 2nd October 2004.

10.3 No pedestrian movements have been recorded to date and further study is required to determine the level of use of the public right of way. Mitigation would involved the creation of a convenient safe crossing point for pedestrians.

Cyclists

10.4 There are no cycleways directly affected by either of the scheme options but during the public consultation it was apparent that cyclists do use the area and further study is required to determine the type and level of use and appropriate mitigation measures.

Equestrians

10.5 No bridleways are affected by the scheme but it is likely that horse riders do use roads and tracks in the area. It is not thought that the proposal for a bypass would affect horse riders based on current information but further study and consultation is recommended as detailed design progresses.

Community facilities

10.6 The Gliding club would be affected by the scheme. The club house would be severed from the airfield with option B and from the village with option A.

Summary

10.7 Further study is required to determine the level of use of the public footpaths and the number of cyclists and horse riders in the area. Overall it is predicted that the impact on pedestrians, cyclists, equestrians and the community would be slight adverse as the scheme would involve moving traffic from the existing A19 through the village to the bypass resulting in a quieter road through the village that would be beneficial but a new road to the east that would potentially adversely impact on current use of the area.

11 VEHICLE TRAVELLERS

View from the Road

11.1 The proposed bypass would be constructed at or slightly above grade on what is essentially a flat landscape. Views from the bypass would consist mainly of countryside, some woodland and the village of Burn to the west of the proposed route.

11.2 Yorkshire Forward intends to develop the site bordering the eastern edge of the proposed bypass and as such this development would be visible from the road. A landscaping proposal would be incorporated into Yorkshire Forwards planning application to alleviate any visual impact that the development may have on the road and vehicle travelers.

11.3 Eggborough Power Station would be visible to drivers traveling south along the bypass. The entrance to the Power Station is located along the existing A19.

11.4 Referring to DMRB11.3.2 the travelers' ability to see the surrounding landscape from the road would be classified as intermittent that is "road generally at ground level but with shallow cuttings or barriers at intervals".

Assessing Driver Stress

11.5 Driver stress is defined for the purposes of environmental assessment as the adverse mental and physiological effects experienced by a driver traversing a road network. Factors influencing the level of stress include road layout and geometry, surface riding characteristics, junction frequency, and speed and flow per lane.

11.6 The available research evidence does not permit the use of finely graded assessments of driver stress. A three point descriptive scale - Low, Moderate or High – is therefore used.

11.7 Driver stress has three main components: frustration, fear of potential accidents, and uncertainty relating to the route being followed. The existing single carriageway A19 route is considered to cause driver frustration due to the restricted sight distances causing slower speeds, lack of overtaking opportunities and the knock on effect of slow moving traffic.

11.8 Conversely, the proposed 7.3m bypass with 1m hardstrips and 60mph speed limit provides an easy and more comfortable journey, with higher traveling speeds and increased traffic capacity.

11.9 Driver fear on the existing A19 section is caused by poor visibility at junctions within the village of Burn and the constraints of parked vehicles and traffic calming measures through the village. It is considered that drivers have an element of fear of obscured vehicles / obstacles ahead with limited avoidance room, caused by the road corridor width. At night and / or in poor weather conditions these fears may be exacerbated. This fear may cause

some drivers to reduce their speeds to a level which causes frustration to those behind. The new alignment would bypass the village entirely and provide a high standard of visibility.

11.10 There is no evidence to show that Route uncertainty is a factor on the existing road. Signing is clear and consistent for the local and long distance driver, and this principle will therefore be transferred to the new routes with consideration to current signing standards.

11.11 Traffic flows in the design year 2022 are estimated at 13000 vehicles in an average day for both directions, which equates to less than 600 vehicles in the peak hour per lane. Referring to DMRB11.3.4 Table 3 gives a Driver Stress rating of **LOW.**

12 WATER QUALITY AND DRAINAGE

Introduction

12.1 BHWB (Golder) has been commissioned to carry out a Design Manual for Roads and Bridges (DMRB) Stage 1 Water Quality and Drainage Assessment on behalf of the Mouchel Parkman for the proposed A19 Burn Bypass, North Yorkshire.

12.2 The assessment of the proposed road bypass has been undertaken in accordance with the DMRB Volume 11, Section 3 Part 10 Water Quality and Drainage (Highways Agency, 1995).

12.3 The purpose of the assessment is to identify the key constraints and potential consequences of the proposed development on the water environment within the study area. Results will assist in the determination of whether to progress to Stage 2 Assessment.

12.4 It should be noted that findings presented in this report, particulariy those relating to potential environmental effects, are based only on the information obtained to date.

Legislative Background

12.5 The Environment Agency's ability to act as the authority on the improvement and maintenance of water quality in England and Wales is dictated by European Community (EU) legislation (Table 10.1) and National legislation (Table 10.2) as outlined below.

Table 10.1 Relevant EU legislation

LEGISLATION TITLE	WATER FEATURE	SUMMARY
Surface Water Abstraction Directive (75/440/EEC)	Surface water for abstraction of drinking water	Sets quality objectives for the surface water sources from which drinking water is taken.
Groundwater Directive (80/68/EEC)	Groundwater	Helps prevent pollution of groundwater by controlling discharges and disposals, including accidental loss of certain dangerous substances where they are not already covered by existing legislation.
Water Framework Directive (00/60/EC)	Integrated river basin management	Sets out environmental objectives for water status based on parameters of monitoring and assessment strategies. Sets a Programme of Measures in order to meet the objectives.

Dangerous Substances Directive 76/464/EEC and subsequent daughter directives	Receiving Waters	Sets limit values for discharges and Environmental Quality Objectives (EQOs) for receiving waters.
Freshwater Fisheries Directive (78/659/EEC)	Fisheries	Aimed at protecting the health of freshwater fish and shellfish populations, by designating waters in need of protection and setting quality standards for those waters.
UWWT Directive (91/271/EEC)	Surface Waters. (tidal and freshwater)	Sewage treatment to sea and f/w upgraded depending upon population equivalent.

Table 10.2 Relevant UK Legislation

LEGISLATION TITLE	WATER FEATURE	SUMMARY
Control of Pollution Act 1974	Surface waters and groundwater (freshwater and tidal)	Makes it an offence for anyone to cause or knowingly permit any poisonous, noxious or polluting matter to enter any stream or controlled waters or any specified underground waters. Consents system revised, new 3 mile limit on pollution control in g/w, f/w, tidal/w, included public participation, set up of registers; and various Regulations resulted covering pollution by specific chemicals.
UK Water Resources Act 1991	Main Rivers, Groundwater Abstraction	Repealed Water Act 1989. Consolidates previous water legislation in respect of both the quality and quantity of water resources. Sets statutory objectives, giving the Government and the EA a legal duty to ensure that they are achieved. Gives EA power to grant licences for groundwater abstraction.
Surface Waters (Dangerous Substances) Regs 1992, 1997 and 1998. Surface Water (Classification)	Surface Waters (freshwater and tidal)	A result of the EC Dangerous Substances Directive Addresses specific hazardous substances such as mercury, cadmium and chloroform that may be discharged into surface waters.

LEGISLATION TITLE	WATER FEATURE	SUMMARY
Regs1989; and Surface Water (River Ecosystem) Regulations 1994.		A result of the Water Resources Act 1991. Sets out River Ecosystem Classification system used as River Quality Objectives by the EA.
UK Environment Act 1995	Main Rivers	Established the EA, and introduced measures to enhance protection of the environment, including further powers for the prevention and remediation of water pollution.
UK Land Drainage Act 1991	Non-main Rivers	Local authorities have powers to undertake flood defence works on watercourses which have not been designated as "main" and which are not within internal drainage board areas.
UK Town and Country Planning Act 1990	Flood Protection	Enables local authorities to enter into agreements with developers about how their land and flood defences should be managed.
Salmon and Freshwater Fisheries Act 1975	Fisheries	In England and Wales, it aims to prevent the spread of fish diseases and to minimise damage to fisheries or their habitat.
Groundwater Regulations 1998	Groundwater	Gives the EA powers to issue notices to control activities other than disposal, where these are likely to result in an indirect discharge of a listed substance to groundwater.

12.6 Under the Water Resources Act 1991 (WRA) prior consent must be obtained for any structure in, over or under a main river (defined in the WRA). Under the Land Drainage Act 1991, consent is also required for the erection of mill dams, weirs, and similar obstructions and for culverts in 'ordinary' watercourses (defined by the Land Drainage Act 1991). These controls are supplemented by regional byelaws which regulate certain activities in or on and in the vicinity of main rivers. It is the developer's and contractor's responsibility to ensure all consents and licences must be in place before works commence.

12.7 All inland surface waters and groundwaters are 'Controlled Waters' as defined according to the Water Resources Act 1991 and therefore they are afforded statutory protected from pollution. It is considered that there is an extremely high potential for the works to generate site water and silt/materials which could enter watercourses. In addition formal consent is required for many discharges to controlled waters, including

both direct discharges and discharges to soakaways. Such consents are granted subject to conditions and are not granted automatically. The developer and contractor should ensure that all consents and licences must be in place before works commence.

Environment Agency Pollution Prevention Guidelines

12.8 Proposed developments are also required to comply with the Environment Agency's Pollution Prevention Guidelines (EA PPG) which aim to provide advice on statutory responsibilities and good environmental practice.

12.9 The following EA PPGs (Table 10.3) are considered to be essential in ensuring the scheme is designed with sensitivity to the receiving environment.

Table 10.3 EA PPGs Relevant to the Scheme

EA PPG	TITLE
1	Guidance On The Prevention Of Pollution
2	Above Ground Oil Storage Tanks
3	The Use And Design Of Oil Separators
4	Disposal Of Sewage Where No Mains Drainage Is Available
5	Works In, Near Or Liable To Affect Watercourses
6	Working At Construction Or Demolition Sites
8	Safe Storage And Disposal Of Oil
20	Dewatering Of Underground Ducts And Chambers
21	Pollution Incident Response Planning
22	Dealing With Spillages On Highways

UK Planning Policy Guidance

12.10 In addition, the Department of Environment, Transport and Regions (DETR) provide guidance in the form of Planning Policy Guidance Notes (PPG). PPG 25 Development and Flood Risk provide guidance on the protection of development to ensure public safety and prevent damage to property as a result of flooding.

Local Authority Control

12.11 The study area falls within the authority of North Yorkshire County Council with strategic planning policy being guided by The North Yorkshire Structure Plan. The local planning authority is Selby District Council. The Selby District Local Plan (1997) has not been formally adopted to date and therefore does not determine local planning policy.

12.12 Neither the North Yorkshire Structure Plan, or the unadopted Selby District Local Plan contain policies relevant to this assessment.

Assessment Method

Baseline Data Collection

12.13 The following sources were consulted on water related issues for this scheme:

- Environment Agency (Yorkshire office)
- North Yorkshire County Council
- Selby District Council
- Ordnance Survey Explorer 290 (1:25,000)

12.14 The methodology which has been employed to evaluate baseline conditions relating to the existing water environment of the site and surrounding area includes:

- Review of Selby District Local Plan, 1997 (not adopted), and the North Yorkshire County Structure plan, adopted 1995.
- Consultation response from Environment Agency (EA) including searches for water quality data on the EA website (www.environment-agency.gov.uk).
- Information from site reconnaissance.

Water Quality and Drainage Assessment

12.15 The methodology outlined in DMRB Volume 11, Section 3, Part 10 Water Quality and Drainage includes a quantitative assessment of the impacts from accidental spillage. However, an assessment of the effects of soluble pollutants in road run-off on receiving watercourses was not completed. This is because it is not considered that road run-off discharge from either route corridor would result in significant impacts to copper and zinc levels in Selby Canal.

STUDY AREA CHARACTERISTICS

Site Description

12.16 The study area is located to the southwest of Selby, North Yorkshire. It encloses both the proposed bypass and the existing A19 (see Figure 1). Within the study area is the rural village of Burn and surrounding agricultural land, with farms and cottages scattered throughout, some of them situated near the proposed route options.

Hydrogeology

12.17 The British Geological Survey sheet 79 (Goole) indicates that there are several different types of drift deposit within the study area, though drift is not present throughout the entire area. Deposits include Sand, Silt and Clay of the 25 foot Drift of Vale of York sequence, along with other glacial sands and gravels. The drift is

underlain by the Sherwood Sandstone, which is designated as a Major Aquifer by the Environment Agency (Policy and Practice for the protection of Groundwater, 1998).

12.18 The Agency did not supply any data on groundwater quality for the aquifer.

12.19 According to the EA the south east corner of the study area falls within Zone III (total catchment) of a Groundwater Source Protection Zone. Within a 1km radius of the study area Zones I, II and III are present for several public water supplies abstracting from the Sherwood Sandstone. A groundwater level of -0.09m above ordnance datum was recorded within the study area in June 2004. (Groundwater Level Network Borehole SE 5977 2782).

12.20 Table 10.4 shows licensed abstractions that occur within and adjacent to the study area for general industrial and commercial use.

Table 10.4 - Licensed Abstractions within 2km of NGR: SE 5950 2850

Licence No.	Licence Holder	NGR	Purpose	Source/Annual Quantity
	Gateforth Park Ltd.	SE 5740 2970	Industrial, commercial and public services	Groundwater 145,000m3
	Selby Golf Club	SE 5791 2969	Agriculture (spray irrigation – direct).	Groundwater 13,636m3
	DAS Green Energy	SE 5788 2613	Production Energy (cooling).	Surface water (R. Aire) 150,000m3
	Eggborough Power	SE 5800 2610	Production Energy (general cooling).	Surface water (R. Aire) 595,454,50m3

12.21 As the proposed development lies within a sensitive area, further investigation will be required to determine the risk posed by the proposed scheme to controlled waters.

Surface Water

12.22 Watercourses within the study area include Selby Canal and the River Aire. Selby Canal is located approximately 0.5km to the north of the proposed bypass and flows northeast into the River Ouse, whilst the River Aire runs east to west, approximately 1.5km southwest of the development. There are no large standing water bodies, but several small agricultural ponds are scattered within the study area.

12.23 There are no known land drainage problems in the surrounding low-lying land between Burn and either Selby Canal or the River Aire.

Flood Protection

12.24 According to the Environment Agency Flood Zone Map (June 2004), the River Aire floodplain lies outside and to the south and east of the proposed bypass and will not be crossed by either proposed route option. The floodplain lies approximately 500m southeast of proposed route option A, and approximately 400m southeast of route option B. Flood Zone information is shown on the Constraints Plan, Figure 3.

Fisheries

12.25 The Environment Agency reports that there are no significant river fisheries within the immediate area of the proposed bypass development. The nearest popular fishery is situated in Chappie Haddlesey on the River Aire, approximately 1.5km south west of the proposed route options. It should be noted that though the fishery is not within the study area, care should nevertheless be taken not to alter the hydrogeology of the surrounding region as this could lead to water level fluctuations in the fishery.

DESCRIPTION OF ROUTE OPTIONS

Route Alignment

12.26 Route options for the scheme are summarised in chapter 3 of this report.

12.27 No detailed design proposals have been submitted to date and therefore it has not been possible to undertake quantitative investigation regarding discharge locations, drained area, and receiving watercourses for each route option. Further investigation is recommended.

Discharges to Surface Waters

12.28 At this stage, no calculations predicting the approximate discharge of dissolved copper and zinc to each receiving watercourse have been completed. However, it is not considered that road run-off discharge from either route corridor would result in significant impacts to copper and zinc levels in Selby Canal or the River Aire.

Discharges to Groundwater

12.29 Due to the study site location within a groundwater sensitive area the Agency will expect a detailed study and investigation to determine the risk to controlled waters proposed by the scheme. The applicant will also need to ensure that the scheme does not allow any List I or II substances to be discharged to groundwater as defined by EC

Groundwater Directive (80/68/EEC). Therefore further assessments are recommended to determine the likely impacts of the Preferred Route on the surrounding groundwater.

POTENTIAL ENVIRONMENTAL EFFECTS

12.30 The potential effects on water quality and drainage from Option A and Option B are considered to be similar and therefore will be addressed together in the following section.

Construction Phase

12.31 There are many risks to the water environment that may be encountered during construction works. For example, site preparation and development has the potential to adversely impact on water quality due to generation and potential runoff of silty water and suspended solids during excavation, movement, storage and placement of spoil and general construction materials. Further potential for pollution exists from spillages of fuel or oil from construction vehicles and other chemicals that may be stored or handled on-site. These risks could have negative effects if contaminants enter surface waters or groundwater in the study area and surrounding region.

Operation Phase

Surface Waters

12.32 The most significant risk arising from the operation of the scheme is potential contamination to the watercourses from surface runoff or accidental spillage. Polluted discharge could deteriorate water quality and thereby impact local surface water abstractors, designated fisheries and other wildlife, and the recreational/economic value of the river / canal.

12.33 No discharge calculations have been undertaken for either route option as detailed design information was not available. Further investigation is recommended when detailed information becomes available.

Groundwater

12.34 Surface runoff contaminants, if they enter the local water regime, have the potential to leach into the substrata and impact groundwater quality, and in this scheme, affect the Yorkshire Water potable water supply and a number of local groundwater abstractors.

12.35 Calculation of the potential effects of the route discharge to groundwater has not been carried out at this stage. Further investigation is recommended.

Flood Protection

12.36 The study area does not lie within any major floodplains and so is unlikely to have any significant impact on flooding issues.

MITIGATION MEASURES

Construction Phase

12.37 An environmental plan will be designed and implemented to avoid any adverse impacts to surface waters and groundwater during the construction phase. *Environmental Good Practice on Site,* by CIRIA, 2000, provides general guidance on how to liase with regulatory agents and develop and carry out an on-site water management plan.

12.38 Some general practices recommended during the construction phase include:

- managing surface water runoff;
- careful planning of the timing of construction works;
- careful delivery, storage and usage of materials;
- dampening down of silty soils;
- use of wheel washing facilities;
- construction of bunds around site compounds and management of site drainage including use of interceptors, settlement tanks, attenuation ponds or filters, and
- designated storage areas to be used to prevent leakage.

12.39 Further development of a construction programme and mitigation measures will be undertaken following the selection of the project contractor.

Operational Phase

Surface Waters and Groundwater

12.40 Measures to mitigate the effects of the increased volume and rate of surface water runoff from the new bypass should be developed and implemented. These cannot be determined until further quantitative study has been undertaken.

12.41 It is essential that the proposed bypass does not have any adverse impacts on the undertying major aquifer or any groundwater abstractions used for drinking. Provisions should be made to ensure that any contaminated drainage does not enter the water environment. These measures may take the form of a sealed drainage system discharging to a lined balancing pond/wetland. Again, further information is required in order to determine the potential impact of any infiltration system on the groundwater quality.

CONCLUSIONS AND RECOMMENDATIONS

12.42 This report has identified the likely impacts on water quality and drainage resulting from the two proposed route options for the Burn bypass scheme. Consultation has been carried out the Environment Agency, North Yorkshire County Council and Selby District Council

12.43 Some of the potential impacts to water features during construction include contaminated and/or silty runoff to groundwater and surface waters, accidental spillage of fuels, oils and other chemicals to water features, impacts to groundwater quality and levels from deep earthworks, and disruption to spawning fish populations.

12.44 Good practice measures should be carried out during the construction phase to mitigate these risks to the water environment. Measures should include careful fuel and chemical storage, containment measures for site drainage, dampening down of silty surfaces and appropriate timing of construction works in relation to fisheries.

12.45 Potential impacts resulting from the operation of the scheme include contamination of local surface waters and underlying groundwater from runoff discharge and accidental spillage, and potential affects on fish populations should the hydrology in the area be changed.

12.46 No quantitative assessment on surface water impacts has been carried out to date as no detailed design information was available.

12.47 Following selection of the preferred route, or when design information becomes available, the impacts to both water quality and drainage should be further investigated and appropriate mitigation schemes developed and implemented. It is also recommended that suitable groundwater quality data should be collected to enable predictions of impacts to be made using DMRB methodology.

13 GEOLOGY AND SOILS

Introduction

13.1 Ground conditions have been determined from the results of ground investigations for development of the airfield, other existing exploratory holes in the area and from the results of the Preliminary Sources Study (issued July 2004).

Description

13.2 At the southern end of the scheme the route will follow the existing A19 which lies on the Sherwood Sandstone outcrop. It is likely that thick deposits of residual sand overly the rock. Boreholes elsewhere in the area indicate that the sandstone is weathered to a significant depth. The Sherwood Sandstone is described as being red-brown, fine-medium grained and moderately weak. It dips gently to the east, beneath the airfield and the bypass route.

13.3 Between the A19 and the roundabout (CH 400m) the route will cross Upper Sand of the Vale of York 25 foot Drift. This is a loose, silty fine sand. It will be underlain by the Sherwood Sandstone. Similar conditions are anticipated at the northern end of the route between CH 1200m and the tie-in.

13.4 The remainder of the route is underiain by Laminated Clay of the Vale of York 25 foot Drift with Sherwood Sandstone present at depths of 4 to 8m. The laminated clay is characterised by thin partings of silt and more consistent sand layers. The clay is of soft to firm consistency, intermediate to high plasticity and will be slightly over consolidated. Undrained shear strengths of 50-75kPa are inferred from cone penetration tests with slightly lower values from the laboratory tests. The clay will be of medium to high compressibility and low rates of consolidation can be expected. The Middle Sand is extensive and has been identified in boreholes on the airfield. A basal sand layer is also present and is often indistinguishable from the weathered sandstone.

13.5 Groundwater strikes were recorded in the superficial deposits and in the Sherwood Sandstone during site investigation on the airfield. Water levels in the piezometers in the sandstone are at 4-6m below ground level. Where sand overiies the laminated clay downward percolation is prevented due to the impermeable nature of the clay, hence a shallow water table is detected. The upper sands do not drain readily due to a high fines content. A water level of 0.44m was recorded in a shallow piezometer on the airfield. Water pressures in the Middle sand are expected to be within 1-2m of ground level. The underiying Sherwood Sandstone is an important aquifer in this area.

14 DISRUPTION DUE TO CONSTRUCTION

14.1 Disruption due to construction covers the effects on people and on the natural environment occurring between the start of pre-construction works to the end of the schemes maintenance period. Typical construction impacts might include a localised increase in noise, vibration, dust and dirt, and a loss of amenity due to the presence of heavy construction traffic, with this traffic using roads adjacent to the site for access.

14.2 In accordance with the DMRB 11.3.3 there are a number of properties which lie within 100m of the proposed route options. One TRRL study demonstrated that further than 100m, less than 20% of people were 'seriously bothered' by the works compared to at least half the people living at 50m from the site.

14.3 It is not envisaged that any property would be eligible for noise insulation from traffic noise. However it is recognised that due to the proximity of properties to the site, some may become 'sensitive' as the works progress.

14.4 To manage nuisance on nearby properties contractual restrictions would be written. These would cover the control noise and vibration during construction via specification of exposure periods for differing ambient noise levels. This would be produced in consultation with the local authority. Additional requirements stated would be to maintain property access, the specification of suitable haul routes to limit disruption and nuisance including keeping the routes clean.

14.5 The route options may have various features of ecological / archaeological / historic value requiring protection from adverse impacts during construction. As above their protection would be specified using contractual restrictions and environmental legislation.

14.6 Earthworks material would be moved within the site via internal haul routes. The contract documentation would ensure that site nuisance caused by dust and mud would be controlled by watering down, wheel washing with attention paid to retaining contaminated run off.

14.7 It is not anticipated that construction would involve the significant removal of material from the site due to the nature and topography of the land near Burn. Any surplus material that did require removal from site would be taken via specified site egress points to designated haul routes.

14.8 The A19 is likely to be the only designated external haul route and therefore the construction site may cause some minimal delays to traffic while site vehicles egress the site. Due to the relatively low traffic volumes, it is not thought likely that the delays to traffic caused by site vehicles and also for the new carriageway tie-in works would cause drivers to divert to side roads during the construction period.

14.9 The location of the site compound including accommodation and plant would be subject to restrictions written into the contract documents, to ensure that the visual intrusion to surrounding receptors is kept to a minimum. This is also the case regarding the contractor storing borrow or surplus material in particular areas.

15 LAND USE AND OTHER GOVERNMENT POLICIES

15.1 This planning policy assessment report has been prepared in support of a Stage 1/2 environmental assessment, DMRB, Volume 11, for a preferred route option for an A19 bypass at Burn (described in section 3 of this report)

15.2 This report assesses relevant planning policy at the regional, county and local level together with a brief appraisal of land use issues pertaining to areas of public access in line with DMRB methodology.

15.3 The development plan for the area comprises:

- Regional Planning Guidance for Yorkshire and the Humber, 2001, (RPG12)
- The North Yorkshire County Structure Plan (1995)
- Selby District Local Plan (1997) (not adopted)

15.4 Chapter 7 of the Regional Planning Guidance for Yorkshire and the Humber, 2001, (RPG12) deals with transport. The proposed scheme accords in particular with policy T8 which presumes against increases in the physical capacity of the road network unless, among other things, localised improvements are essential to delivering environmental enhancement.

15.5 Policy T8 of RPG12 also states that major improvements to the Highway network must be appraised using the New Approach to Appraisal (NATA), as introduced in the Government White Paper *A New Deal for Transport* and developed under the principles set out in Guidance on *the Methodology for Multi-modal Studies* (GOMMMS), DETR March 2000, now incorporated in Transport Appraisal Guidance (TAG) available on the world wide web.

15.6 The main function of Regional Planning Guidance is to provide a framework for the preparation of structure plans, local plans and unitary development plans. The North Yorkshire County Structure Plan and the Selby District Local Plan are the two local development plans covering this area.

15.7 The North Yorkshire Structure Plan was first adopted in 1980 and has since incorporated several alterations the last of which was adopted in July 1995. The plan is currently under review but its policies remain the relevant policies against which to assess development proposals.

15.8 Policy T8 states:

TRAFFIC CONGESTION AND RELATED ENVIRONMENTAL PROBLEMS WILL BE RELIEVED BY THE CONSTRUCTION OF APPROPRIATE DIVERSIONARY ROUTES WHERE THROUGH AND/OR LOCAL TRAFFIC CREATES PROBLEMS

WHICH CANNOT BE OVERCOME BY THE TRAFFIC MANAGEMENT MEASURES SPECIFIED IN POLICY T6.

A list of schemes for which provision will be made is included. The A19, Burn Bypass scheme is not included in this list. However, the January 2003 pre deposit draft for consultation of the new Joint Structure Plan does make provision for the A19 Burn Bypass scheme in Policy T6: HIGHWAY IMPROVEMENT SCHEMES.

15.9 The North Yorkshire Structure Plan sets out the land use and transportation strategy upon which the Selby District Local Plan is based.

15.10 The Selby District Local Plan Deposit Draft 1997 is not adopted but is used as the main planning document by the authority. The local plan aims to promote sustainable development, protect and enhance the environment and plan for contemporary patterns of development. The main policies to be considered in relation to the proposed A19 Burn bypass are discussed in the following paragraphs.

15.11 Chapter 7 of the local plan contains policies related to transport. The A19 Burn Bypass is not identified in the local plan as a route to be safeguarded from development which would compromise the implementation of the scheme.

15.12 Policy T1 states that development should relate well to the existing road network and Policy T2 ensures that new access and the intensification of use of existing access will only be acceptable if certain criteria are met.

15.13 Chapter 4 of the local plan deals with the environment and contains policies to protect and enhance the environment.

15.14 The proposed route options for the scheme pass over countryside and do not affect any other policy areas identified in the local plan. Policy DL1 states:

OUTSIDE AREAS OF GREEN BELT, DEVELOPMENT WILL BE PERMITTED IN THE COUNTRYSIDE (OUTSIDE DEFINED DEVELOPMENT LIMITS) ONLY WHERE THE PROPOSAL:

1)WOULD BE APPROPRIATE IN A RURAL ARE; OR

2) INVOLVES THE REUSE, ADAPTATION OR EXTENSION OR AN EXISITNG BUILDING; OR

3) IS REQUIRED TO MEET THE SOCIAL OR ECONOMIC NEEDS OF A RURAL COMMUNITY; OR

4) INVOLVES SMALL SCALE DEVELOPMENT ON AN INDIVIDUAL SITE TO SECURE EMPLOYMENT USES WHICH BENEFIT THE RURAL ECONOMY.

WHERE DEVELOPMENT IS ONSIDERED APPROPRIATE IT MUST BE LOCATED AND DESIGNED SO AS NOT TO HAVE AN UNACCEPTABLY ADVERSE EFFECT ON THE CHARACTER AND APPEARANCE, GENERQAL AMENITY OR NATURE CONSERVATION INTEREST OF THE SURROUNDING AREA.

15.15 Policy ENV 1 states that in considering development proposals the authority will take account of, among other tings, the effect upon the landscape character of the area, the relationship of the proposal to the highway network, the standard of design, layout and materials in relation to the surroundings, the potential loss of significant buildings, related spaces, trees, wildlife habitats and archaeological or other features important to the character of the area.

15.16 Policy ENV 3 is concerned with lighting and sets out criteria where outdoor lighting may be acceptable.

15.17 Policy ENV 14 seeks to protect badgers and other species protected by schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 from the potential adverse effects of development.

15.18 Policy ENV19 seeks to protect hedgerows where the hedgerow:

1) IS ADJACENT TO A HIGHWAY OR PUBLIC RIGHT OF WAY BUT DOES NOT ADVERSELY AFFECT HIGHWAY SAFETY; OR

2) CONSTITUTES A SIGNIFICANT LANDSCAPE FEATURE; OR

3) CONSTITUTES A SIGNIFICANT WILDLIFE HABITAT; OR

4) HAS SOME HISTORICAL SIGNIFICANCE.

15.19 Policy ENV20 requires certain development to incorporate a substantial element of strategic landscaping as an integral part of the scheme.

15.20 Policy ENV21 requires a landscape scheme as an integral part of layout and design.

15.21 Policy T8 is concerned with protecting the public rights of way network in the district. Where public rights of way are adversely affected satisfactory appropriate alternative routes must be provided.

15.22 In summary there are no specific policies in the Selby District Local Plan that are directly related to the scheme proposal but there are a number of policies which should be taken into account when considering the detailed design of the scheme and mitigation measures.

15.23 The compliance of both route options with planning policy is similar and there is little to choose between them in planning terms.

16 SUMMARY

16.1 The environmental impacts of both route options have been predicted to be very similar and there is little to choose between them in environmental terms.

16.2 For noise and air quality it has been assessed that route option B is marginally better than route option A as it takes the road further from the village increasing the potential benefit to properties in the village. Potential mitigation measures may include acoustic fencing for several properties.

16.3 In landscape terms route option A would be more visually intrusive to properties on the eastern edge of the village due to its proximity and would result in a greater loss of mature vegetation. However, Option A does keep the road closer to the semi urban environment of the village restricting the extent of its urban influence in the countryside. Opportunities for mitigation are present for both options and the predicted potential moderate adverse visual impact may be reduced through mitigation.

16.4 Agriculture is the main land use in the area. It has been determined that there is little difference between the two schemes in terms of impact although it is likely that option A would be preferred as there is less land take with this option. More detailed design information is required before the full extent of the potential impact on farm business can be determined. Overall based on current information it is felt that for both options the impact would be a slight adverse.

16.5 The agricultural land quality in the area is high being grade 1, 2 and 3a. Therefore proposals should seek to minimise the loss of agricultural land.

16.6 The biodiversity and nature conservation value of the area is limited as the area is intensively farmed. Mature trees and hedgerows and ditches are important to wildlife in this intensively farmed area and their loss should be minimised. There is potential for increasing the biodiversity through mitigation measures in the long term through planting, wildflower seeding and the balancing pond. Option B is marginally preferable to option A as this option minimises the loss of semi natural habitat and unimproved grassland.

16.7 The Stage 1 Cultural Heritage report identified twelve cultural heritage sites in the study area. It has been predicted that three sites would be affected by Option A and two by Option B. Overall there is little to choose between the options from a cultural heritage point of view. A detailed Stage 2 Assessment would not significantly advance our understanding of the archaeological resource of the area and it is recommended that work should progress to Stage 3 field investigations.

16.8 A public right of way would be adversely affected by the proposals being severed by the bypass. Mitigation should make provision for this by enabling pedestrians to cross the bypass in relative safety.

16.9 The impact of the scheme on local plan designations and compliance with planning policy would depend on detailed design and compliance with environmental policies. With appropriate mitigation it is predicted that the scheme would comply with planning policy in general.

16.10 Overall there is little to choose between the environmental impacts of the two route options based on current information. Route option B would be marginally preferable as this option minimises the loss of existing vegetation and takes the road further from the village thus maximising the benefits to properties in the village in terms of noise, air quality and visual amenity. This route option also avoids the gliding clubhouse and potentially maintains its link with the village.

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