

3.14. A69 Haltwhistle Bypass

3.14.1 INTRODUCTION

3.14.1.1 Nature of the Plan

The A69 Haltwhistle bypass is a 3.3km wide single carriageway road that entered the Trunk Road preparation pool in 1975 and was opened to the public in May 1997.

3.14.1.2 Role of the SEA

Assessments for project routing alternatives are regarded as project level EIA in the UK, since the decision has previously been taken that a road is the solution. In the UK, a SEA would be applied to the decision as to whether a road or another solution was appropriate. For the purposes of this exercise it is understood such assessments may be considered as SEA in Japan.

This type of assessment is termed a Stage 2 Assessment in accordance with the Design Manual for Roads and Bridges – Volume 11 Environmental Assessment and as such follows a relatively standardised approach. However, given the age of this proposal, the guidance at that time was the Manual for Environmental Appraisal and the key report to be produced was termed a Technical Appraisal Report. This was then subject to public consultation to inform the Minister of Transport on the preferred route.

3.14.1.3 Focus of this Case Study

The focus of this study is to illustrate how highway routing alignment issues are assessed in the UK.

3.14.2 BACKGROUND: CONTEXT AND ISSUES

3.14.2.1 Social and Environmental Setting

The settlement of Haltwhistle is situated on the main trunk road from Newcastle on the east coast of England to Carlisle on the west coast and is one of the few cross-country routes in the north of England. The road through the town is about 5.5 m wide making it extremely difficult for Heavy Goods Vehicles (HGV) traffic to pass. The footpaths are very narrow and properties abut directly without gardens. Traffic flows are about 10,000 AADT of which 2,200 are HGVs.

Haltwhistle is situated on the north side of the south Tyne Valley. To the west of the town is a wide glaciated valley with a stream that then joins the South Tyne in a floodplain. The embankment of a former railway and the Alston Arches Viaduct divides the South Tyne Valley at Haltwhistle. To the east the floodplain is dominated by post-war industrial development, while to the west it is primarily rural with isolated dwellings amongst which are historic buildings and protected land. The river, prone to flooding is a fishery, while the floodplain experiences elevated metal concentrations due to historic lead mining further up the valley.

3.14.2.2 SEA/Decision Making Process

Although historically, environmental issues played only a minor role in the engineering led process, the 1990 studies involved more environmental input in accordance with the Manual of Environmental Appraisal. As a result, the relationship between the assessment and the transport planning process was very close. Not only was the same consultancy company responsible for the assessment, transport planning and engineering design, but the guidance manual also required the exchange of information between engineers and those responsible for environmental issues.

The environmental manager was generally in attendance at internal management meetings and frequently involved in meetings with external organisations and the client.

3.14.2.3 Issues Material to the Case

Following a Technical Appraisal Report (TAR) prepared by Northumberland County Council in 1975, a public consultation was held in April 1978. In February 1982, the Minister announced that the outer southern route (the Green Route) was the preferred option. The Minister, however, indicated that no further work would be undertaken in view of the scheme's 'poor value for money'.

In 1987 a study was published that reviewed and updated the 1977 TAR, and to developed and appraised a further route (Orange) identified by the Department of Transport considered to be the only economic scheme. The public consultation exercise in 1988 exhibited a scheme that made use of land next to the railway, however, the rejected Green route received majority public support.

Following a topographic survey and ground investigation on the Orange route, engineering difficulties were identified and a new TAR was published in February 1989. Following publication of revised National Road Traffic Forecasts in 1989, these three routes were reviewed and after further public consultation early in 1990, the TAR was revised and re-published. The new TAR stated a preference for the Green south of Haltwhistle, which again received public support. The Green route was selected despite not being the economic choice to reflect the environmental benefits of traffic relief.

In 1992 the scheme design and environmental impact assessment was undertaken with the Environmental Statement being published in March 1993. A public exhibition was then held into the proposals and a public inquiry held in October 1994 under the Highways Act. The scheme was authorised in 1995 and construction commenced in April 1996.

The key issues associated with the project were:

- a) to provide environmental improvements to the residents of Haltwhistle without compromising the environmental qualities of the South Tyne Valley or its residents;
- b) to avoid increasing flood risk;
- c) to minimise visual intrusion; and
- d) to deal with areas of contaminated land.

One key constraint was an area of land that had been assigned to the National Trust as inalienable land and could not be acquired for the scheme in the ordinary way. The National Trust objected and generated an alternative alignment (the brown route) that was rejected at the public inquiry.

3.14.3 APPROACH AND METHODS USED

3.14.3.1 Information Assembly

At this stage detailed field surveys were not undertaken and readily available data sets were collected and reconnaissance surveys were undertaken. Using traffic data initial estimates of noise and air quality and public amenity issues were explored. During this period, no great attention was given to mitigation, although no such opportunities along with opportunities for enhancements are generally considered in the preferred route selection stage.

3.14.3.2 Development of Alternatives

Seven different alternative corridors were developed over the period from 1977 to 1989 (see A69 Alternatives.pdf). These were developed from an engineering perspective. Once the public view was accepted and the EIA commenced a further alternative within the same corridor was developed. Other

technical alternatives were developed to deal with the manner in which the bridges would increase the risk of flooding risk and affect the ecology of the river.

The alternatives explored during the several attempts at this project were generated by highway engineers without environmental input. This was not surprising during this period. Also unsurprising was the adverse public reaction such engineering led alternatives generated. During the actual EIA for the project, which followed the public's preference, the environmental team suggested making the scheme slightly longer to minimise the visual impact and minimise net environmental disturbance. This had the advantage of lowering scheme costs as it resulted in cheaper bridges. Even then at the public inquiry, a further alternative was generated by an objector to protect their interest, but it was straightforward to show that it was unacceptable on engineering, cost and environmental grounds.

3.13.3.3 Impact Analysis

The environmental impact assessment was undertaken in accordance with the Department of Transport's Manual on Environmental Assessment which was applicable at that time and addressed the following topics:

- | | |
|-------------------------|--|
| a) Policy framework; | h) Agricultural impact; |
| b) Traffic appraisal; | i) Cultural heritage; |
| c) Landscape impact; | j) Recreation and amenity; |
| d) Aquatic environment; | k) Contaminated land and waste disposal; |
| e) Noise; | l) Interaction and cumulative impacts. |
| f) Air quality; | |
| g) Nature conservation; | |

While some of the assessment topics are broadly examined in the same manner, the current Design Manual for Roads and Bridges Volume 11 provides a more streamlined structure to the application of different assessment tools and their data needs.

The EIA resulted in a realignment of the road in order to reduce visual intrusion by cutting through the former railway embankment at an angle and to exploit a river terrace. This resulted in the scheme being slightly longer but at a lower cost as the two bridges were then set at a less of an acute angle to the river. Various mitigation measures to deal with heritage, flood risk, visual intrusion and noise were also incorporated into the scheme.

The assessment of the alternative alignments was based upon readily available environmental information. This included the location of designated sites of recognised interest. Field reconnaissance surveys were undertaken. Table 33 provides a summary of the data that is collected at this stage in highway delivery.

Table 33 Typical Stage 2 Design Agent Consultations

Typical Stage 2 Design Agent Consultations ****		
Stage 2 Topics	Issue	DMRB Reference
Air Quality	No consultations	Volume 11 Part 1
Heritage	Confirm no new sites and whether further studies are needed	Volume 11 Part 2: 8.15
	Obtain English Heritage/CADW 'in confidence' views	Volume 11 Part 2:8.15&8.25
	Confirm no new listed buildings or designated areas and obtain 'in confidence' views of statutory bodies	Volume 11 Part 2: 13.9
	Discuss with Local Planning Authority the need to avoid archaeological or historic landscapes	Volume 11 Part 3: 3.5
Construction	Inform WRA*** about borrow and surplus fill and discuss with Local Planning Authority removal or treatment of toxic wastes	Volume 11 Part 3: 3.5
Nature Conservation	Check designation of new sites	Volume 11 Part 4: 7.7
	Confirmation absence of need for survey from relevant statutory body	Volume 11 Part 4: 7.7

	Report in-confidence views of the officers from statutory body on implications of route options on sites, areas or species of interest	Volume 11 Part 4: 7.8
Landscape	Confirm any new designations with Local Planning Authority	Volume 11 Part 5: 9.7
	Where Countryside Commission or CADW have an interest it is essential that they are consulted at the earliest stage	Volume 11 Part 5: Annex II 2
Land Use	Obtain information on the number of users of sites affected by land take	Volume 11 Part 6: 4.5
	Identify potential land take from areas designated by LPAs for future development and obtain in-confidence officer views	Volume 11 Part 6: 5.8
Agriculture	Obtain MAFF\WOAD views at early stage	Volume 11 Part 6: 10.7
Noise & Vibration	No consultations	Volume 11 Part 7:
Pedestrians etc	No consultations	Volume 11 Part 8:
Driver Stress	No consultations	Volume 11 Part 9:
Water Quality & Drainage	Confirm Stage 1 assessment with WRA* and identify most sensitive locations	Volume 11 Part 10: 6.7
	Consider views of River Authority** on design flood return period	Volume 4: Part 10:2.8
	Acceptable afflux should be decided in consultation with River Authority**	Volume 4: Part 10:2.12
	Consult British Waterways on canal navigation rights	Volume 11 Part 10: 2.5
Geology & Soils	Check with relevant body and LPA that they are not now designated sites or areas of contamination have been identified and confirm no further work needed with statutory body	Volume 11 Part 11: 7.7
Plans & Policies	Obtain LPs, UDPs Part II, Minerals and Waste Plans	Volume 11 Part 11: 4.8
	Obtain in confidence views of LPA officers	Volume 11 Part 11: 4.9

Note: * WRA - Water Regulatory Authority - The Environment Agency

** River Authority - The Environment Agency

*** WRA - Waste Regulatory Authority - The Environment Agency

**** Based on 1997 DMRB Volume 11

During the work for the EIA, extensive environmental surveys were undertaken on the ecological habitats, noise and landscape. Traffic data was used to forecast noise and air quality. That is related to the Stage 3 assessment activities in which the EIS is prepared. The word extensive was taken to imply that a wide range of survey were undertaken, including archaeological desk studies and detailed soil surveys and vegetation surveys.

3.14.3.4 Comparison of Alternatives

An evaluative framework was prepared to summarise the significant effects of the brown route. At the time of the assessment, the guidance required that reporting be set out in terms of the following topics:

- a) **Group 1: Travellers:** Time savings, vehicle operating costs, accident savings, driver stress, maintenance costs, pedestrian amenity, severance and safety.
- b) **Group 2: Local People and Their Communities:** Residential or commercial properties, farming, amenity space, demolished, noise, visual impact, severance, construction disturbance.
- c) **Group 3: Cultural and Natural Environment:** Heritage, nature conservation.
- d) **Group 4: Users of Facilities:** Retail, tourists, sports and recreation.
- e) **Group 5: Policies and Plans:** National, regional and local policies.
- f) **Group 6: Finance:** Scheme costs and benefits.

Hence the assessment of alternatives was undertaken in line with a structure defined in Highways Agency guidance (see attached file – HaltFram.doc).

Not being able to insert a table that presents the data for each alternative here, but it is prepared to support the public inquiry following preparation of the EIA. The structure of the table was defined by the government guidance and was a product of its time.

The analysis revealed a trade-off between the effects upon people from a noise, air quality and landscape perspective and the main advantage on heritage considerations of the brown route. This was considered a fine balance given the 60 properties involved affected by the brown route and the potential requirement for noise insulation measures on many of these.

The key trade-off was between alignments that increased the risk of noise, air quality and visual intrusion upon the residents of Haltwhistle as such alignments were closer to the settlement, and those that were more distant but which encroached into the river valley causing impacts associated with landscape, heritage, flood risk and pollution. As there was strong public support for a scheme that minimised noise and as the other impacts, could, to a degree be mitigated, there were no problems in making such trade-offs. The exception was that the preferred route required the acquisition of land that had been given to the nation and held by the National Trust. This conflict was a principal reason for the public inquiry that followed the EIS.

3.14.3.5 Public Participation

Extensive public involvement was involved with four separate public exhibitions and consultations periods on the alternative alignments.

3.14.3.6 Monitoring, Uncertainty and Cumulative Effects

Monitoring, uncertainty and cumulative effects were not addressed at this stage., but later in stage 3 of the highway planning process in which the Environmental Impact Statement and alignment details are examined. While the EIS provided such information, issues of implementation were not commonly considered at that time. Cumulative effects were considered through a matrix of environmental topics and locations experiencing multiple environmental impacts. Uncertainty was explicitly considered by the means of the residual effects tables which commented upon the probability of the anticipated impact arising.

3.14.4 RESULTS AND LESSONS

3.14.4.1 Contribution to Decision-Making

Accepting that in UK terminology this was not a SEA, the environmental assessment nevertheless provided crucial elements to inform public debate on the selection of the route. The key items of information at this point were the noise, air quality and landscape assessments.

3.14.4.2 Outcome

Even with an extensive examination of alternatives extending over many years, this did not prevent an alternative route being proposed during the public inquiry that required a rapid appraisal. Public opinion and environmental input was subsequently crucial in delivering the eventual scheme and were ultimately responsible for the adoption of a scheme that was more environmentally acceptable than the original proposal.

3.14.4.3 Conclusions for SEA Good Practice

This case study reveals the following key issues were responsible for the 22 years taken to deliver the scheme from the time that it entered the programme:

- a) Scheme economics conflicting with public aspirations;
- b) Repeated public participation exercises;

- c) Engineering constraints being investigated late;
- d) Changes to traffic forecasts affecting scheme economics.

A factor that contributed towards the eventual success of this project was the close involvement of environmental team within the engineering design team and recognition that the community desired a bypass rather than a cost-effecting online solution.

3.14.5 OTHER INFORMATION

Supporting files provide an aerial photograph of the area and the alternative alignments that were examined.

3.15. M6 WIDENING JUNCTIONS 11-16

3.15.1 INTRODUCTION

3.15.1.1 Nature of the Plan

This case study sets out the approach adopted to determine how to widen the existing 3-lane motorway to 4 or 5 lanes over a 52 km section passing through urban and rural areas between Birmingham and Manchester. The SEA was undertaken as an integral part of the transport study.

3.15.1.2 Role of the SEA

In England this form of assessment is not considered a Strategic Environmental Assessment, but a Stage 2 Environmental Assessment which is required on policy grounds to help assist the Minister of Transport in determining the best highway option to be subject to detailed design and a formal EIA.

3.15.1.3 Focus of this Case Study

The focus of the study is to show how the environmental assessment was instrumental in determining the preferred widening strategy for the motorway.

3.15.2 BACKGROUND: CONTEXT AND ISSUES

3.15.2.1 Social and Environmental Setting

The M6 between Junction 11-16 was constructed in the early to mid-1960's and is the strategic motorway route up the western side of England connecting Scotland, the North West to the Midlands, and then to London and the South East. The motorway currently carries between 90,000 and 100,000 vehicles per day. About 28% of that traffic is heavy goods vehicles and over half of all traffic is long distance traffic passing between Junction 11 and 16. Staffordshire Police receive 6,000 to 7,000 notifications of abnormal loads per year on M6, 20% of which receive police escorts. At peak hours, congestion occurs causing delay and increasing the risk of accidents.

Most of the land through which the M6 passes is improved agricultural land and is of low ecological value. Eighty ecological sites of county importance occur within 500m of the M6, but only 29 are within 10m of the motorway. Over half of the sites occur in five separate areas. Three sections of the motorway, equal to about 19 km, are devoid of recognised sites. Several protected species of animals and plants, as well as deer herds occur within the vicinity of the M6. Areas of archaeological, heritage, community value and of landscape interest are all represented along the motorway corridor.

3.15.2.2 SEA/Decision Making Process

In normal circumstances a Technical Appraisal Report (TAR) is prepared in which different corridors are evaluated. This exercise essentially focused upon differences within one corridor. The depth of the study needed to determine environmental differences between widening options is, therefore, at a resolution of tens of metres rather than hundreds of metres. This inevitably makes the task of environmental appraisal more complex.

The assessment followed a revised approach to that presented in the Design Manual for Roads and Bridges Volume 11, in order to determine the relative performance of the different options essentially occurring within the same corridor. As a result, a more detailed level of assessment was undertaken than normally the case for a Stage 2 Assessment.

The environmental assessment was an integral part of the decision-making process, particularly as transport economics and to a degree construction costs were not able to inform the choice of which side to widen. Hence environmental factors were crucial in determining how to widen the motorway.

3.15.2.3 Issues Material to the Case

None.

3.15.3 APPROACH AND METHODS USED

3.15.3.1 Information Assembly

In order to conduct this assessment, a corridor 500m either side of the motorway was selected in which information on environmental constraints were identified through consultations with the local authorities and statutory environmental bodies. While no detailed surveys were undertaken, reconnaissance surveys were performed to appreciate the environmental context of the M6 corridor.

3.15.3.2 Development of Alternatives

Widening of the motorway could be undertaken only by a limited number of means and hence to undertake the assessment the following assumptions were made regarding the land take required for each:

- a) Narrow Lanes: No land take;
- b) Symmetrical: No land take;
- c) Symmetrical: With land take up to 10-15m on each side;
- d) Asymmetrical: Up to 20m on one side or the other;
- e) Parallel: Up to 50m;
- f) Collector/distributor: Up to 50m on both sides, but with greater flexibility;
- g) Off line corridors: When parallel to the motorway, with a distance of 100m.

In order to examine the implications of the various options, the following assumptions were made:

- a) The narrow lanes option would have few effects on structures, earthworks, junctions or planting, as no extra land is required. It is assumed that extra land would be available for landscape treatments, restricting works to the corridor and off-site planting by agreement. As a result, the full benefits of an integrated design solution would not be achieved.
- b) The symmetrical with no land take option requires no additional land, but it has the disadvantage of removing existing screening vegetation on both sides of the motorway. It has been assumed that this option would result in retaining structures or steeper batter slopes.
- c) The symmetrical with extra land take option has the disadvantage of removing existing screening vegetation, but extra land take could provide opportunities for ameliorating the effect.
- d) Widening options involving land take on one or other side of the motorway, such as asymmetrical or parallel options, offer opportunities for the retention of environmental features and protection of important landscape elements or areas of high landscape value and adjacent settlements. The widened side of the motorway would offer opportunities for extensive landscape treatment and acoustic screening. In addition, surplus land arising from these options could provide opportunities for landscape and acoustic improvement, as well as the introduction of appropriate creative conservation measures. In some locations, however, increased land take could be a disadvantage, due to the increased scale of associated earthworks.

- e) The collector/distributor option would affect both sides of the motorway, and would not retain existing screen planting or avoid environmental constraints.
- f) Off line options away from the existing motorway would affect a new area which could have the disadvantage of disrupting the physical and visual environment. With careful design these effects could be minimised, but the effect on a high quality landscape would not be desirable. An off line route closely aligned to the existing motorway may have the disadvantage of isolating parcels of land and severing communities.

In addition to the decision on the type of widening, a decision was to be taken as to which side of the existing motorway widening should take place where parallel or asymmetrical options were proposed.

3.15.3.3 Selection of Issues and Indicators

The environmental characteristics examined during preparation of the TAR reflect only those aspects considered of importance to the selection of the widening options. A wider and more detailed examination of these and other issues was required during preparation of the Environmental Statement.

During the appraisal of the environmental effects of different widening options, the objective was to ensure that each topic was addressed in isolation in order to avoid double counting. The importance of individual topics also varied from one part of the M6 corridor to another.

The topics that were examined in accordance with Highways Agency guidance were:

- a) Planning and development policy framework;
- b) Land take from settlements and residential properties;
- c) Community and recreational facilities;
- d) Industrial and commercial properties;
- e) Landscape;
- f) Traffic noise;
- g) Nature conservation;
- h) Cultural heritage;
- i) Agriculture and forestry;
- j) Mineral resources and contaminated land;
- k) Aquatic resources;
- l) Environmental enhancement opportunities.

3.15.3.4 Impact Analysis

The assessment method employed a checklist of issues by which to structure the information assembly process. This assembly process was undertaken for a 500m zone either side of the motorway. Initially, details of protected sites, such as Sites of Special Scientific Interest (SSSI) were identified and an initial preference for widening was prepared. Following discussions with the consultees, further information on sites of local significance and a comprehension of the strategic development and environmental situation was gained. Site visits were also undertaken.

Using a defined set of significance criteria, the consequences of the different widening options upon individual sites and issues were assigned appropriate levels of significance. For example, the loss or partial loss of a SSSI was regarded as a severe effect, i.e. it is likely to threaten the viability of the widening options. Where doubt regarding the boundaries of sites existed, as in the case of archaeological resources, a buffer zone was employed. Further site surveys are under way to aid the detailed design process and preparation of the Environmental Statement.

The significance criteria adopted to assess the relative constraints to widening posed by landscape considerations was based on a measure of the change in physical and visual characteristics resulting from the different widening options. These criteria are presented in Table 34.

For each of the widening options the potential impacts were described and the significance assigned for sections of the corridor that were essentially defined by environmental and highway characteristics. Table 35 presents the manner in which the different impacts were reported.

Table 34 Landscape Significance Criteria

Significance	Criteria	
	Visual Effect	Physical Effect
None	No change to visual amenity envisaged.	No loss of vegetation or disruption of landscape topography
Minor	Some views of the M6, but no significant change to current level of intrusion.	Small loss of screening vegetation. Slight disruption of landform or increase in scale of earthworks. Level of visual intrusion or obstruction not increased.
Moderate	M6 constitutes an important landscape feature and widening options would result in increased intrusion.	Notable loss of screening vegetation, disturbance of hedgerows and woodland. Notable increase in disruption of landform and scale of earthworks, small diversions of major watercourses required. Increase in intrusion or obstruction. Some downgrading of the character of important landscape features.
Major	M6 constitutes a prominent landscape feature.	Notable loss of screening vegetation and disturbance of vegetation adjacent to motorway exposing areas of settlement and recreation to visual intrusion or obstruction. Significant disruption of landform, field pattern and townscape. Increase in scale of earthworks to form prominent landscape features. Long diversions of major watercourse required. General downgrading to character of important landscape features. Large increase in intrusion or obstruction in surrounding landscape.
Severe	Change in the landscape character of an area.	Introduction of major new landforms into the landscape. Irreversible downgrading or damage to character of important landscape features.

3.15.3.5 Comparison of Alternatives

Following an examination of the various environmental issues, a preferred widening option was identified for each topic based on the relative performance of the different widening options, although in some cases, there is little to choose between options. Through this exercise it was possible to identify conflicting environmental objectives. The relative trade-offs between such conflicting objectives were then explored.

Apart from providing a view on the preferred type of widening at particular locations, the environmental output also included a map illustrating the preference for the side on which widening should take place. Figure 7 illustrates the strength of preference for either southbound or northbound widening for each of the topics. From this figure it is evident that trade-offs were needed between different environmental topics.

As each environmental feature of importance that risked being affected had been identified and the significance of the likely effect judged according to a pre-defined set of significance criteria, the exercise of

evaluating the options was undertaken at two levels. The first was to split the 53km section of motorway under consideration into a series of sections that were broadly homogeneous from an environmental point of view. Motorway junctions were also locations where the motorway was broken into sections. Then for each environmental topic for each section each alternative was ranked in order of environmental performance. This essentially was the basis of the map illustrated in Figure 7. This map was then used as the basis for discussion amongst environmental and highway engineering experts. Other experts challenged each preference for a particular topic for an individual section, particularly where their preference differed. Through this process of challenge, the robustness of the preference could be explored and a decision at that location was made as to the type of widening.

Through this process we were able to arrive at a trade-off among environmental issues for individual sections, however, other trade-offs were needed across several adjacent sections as it was not possible for the engineer to accept frequent changes to the widening strategy due to issues of cost and road safety. To make these trade-offs, it was often necessary for those environmental experts responsible for particular topics to make difficult decisions in which they had to choose between protecting one feature within one section or another elsewhere. In difficult situations these decisions were made following discussions with the government environmental agencies.

3.15.3.6 Public Participation

The collection of information on environmental issues associated with the M6 widening has involved consultation with a wide variety of statutory consultees. Once the technical process of evaluation was completed, then public exhibitions were held at venues throughout the corridor at which the public could ask questions and express a preference for the type of widening.

3.15.3.7 Monitoring, Uncertainty and Cumulative Effects

There was no monitoring as the Minister for Transport was to determine which form of widening should be pursued with an EIA then being undertaken along with the design of the project.

Uncertainty was addressed by adopting various land take assumptions and through the use of buffer zones such as in the case of archaeology.

The cumulative effects upon a resource along sections of the motorway were examined in order to assist in determining which side gave rise to the least overall impacts, although in some cases this necessitated affecting a greater number of sites in order to protect others of greater value. At this stage of assessment, the cumulative effects simply noted the number of features, primarily ecological and heritage features that were affected along the length of the project. This analysis was considerably extended during the EIA for the preferred alternative.

3.15.4 RESULTS AND LESSONS

3.15.4.1 Contribution to Decision-Making

The environmental assessment was essential to the decision-making process in that it contributed to the selection of the overall preferred widening option (although traffic delay costs were a major factor). The environmental assessment was, however fundamental to the identification of those areas where parallel widening should not be undertaken and to the identification of the locations where widening should cross from northbound to southbound or visa versa. The results of the assessment were also made public and contributed to the support for the proposed approach to widening.

3.15.4.2 Outcome

In considering how to widen the motorway, a detailed assessment was made of the engineering and environmental constraints. Alternative methods of widening were then compared in terms of design standards, environmental effects, traffic disruption during construction and cost.

In August 1993, the Secretary of State announced his decision to widen the motorway to 4 lanes by parallel widening. Following extensive investigations, parallel widening was selected providing a dual 4-lane motorway by constructing a new and separate carriageway alongside the existing motorway. One of the existing carriageways is then modified to provide the second new carriageway. All existing overbridges would be demolished and replaced and underbridges widened, strengthened or replaced. Disruption and associated traffic delays are reduced to a minimum. Additional land would generally be required on one side of the motorway only and the choice of the widened side takes account of important engineering and environmental features, while providing for extensive landscape treatment and noise screens.

The main advantages of parallel widening are that the new 4 lane carriageways are moved away from large areas of housing and other sensitive sites creating space to provide new earthmounds, noise barriers and landscape planting to protect adjacent areas. It can also be constructed with minimal disruption to traffic, and greater safety to both motorway user and construction workers, although it needs more land than other options. Parallel widening also provides for part of the existing motorway to be kept as a service road for use by maintenance and emergency vehicles.

3.15.4.3 Conclusions for SEA Good Practice

The main conclusions to draw from this case study is the need to make environmental trade-offs that are robust and ultimately defensible at a public inquiry even though detailed design information is not available. Making assumptions explicit and adopting buffer zones where uncertainty was high, as in the case of archaeology is also a key conclusion.

Table 35 Effects on Physical Landscape: Topography Junction 11 - 12

	NARROW LANES	SYMMETRICAL NO LAND TAKE	SYMMETRICAL WITH LAND TAKE	ASSYMETRICAL SOUTH BOUND	PARALLEL	COLLECTOR/ DISTRIBUTOR	OFF LINE CORRIDOR SOUTH BOUND
Saredon Hill	NO EFFECT	Increase in angle of side slopes/possible retaining structures on both sides or increase in angle of cut. MINOR EFFECT	Increase in angle of side slopes/ possible retaining structures on both sides or increase in angle of cut. MINOR EFFECT	Increase in angle of side slopes/possible retaining structure on one side or increase in angle of cut. MINOR EFFECT	Extension of cutting into eastern side of hill widening the cutting. MODERATE EFFECT	Extension of cutting on both sides, widening of cut. MAJOR EFFECT	New cutting into hill with significant scar. SEVERE EFFECT
General	NO EFFECT	Possible increase in embankments and introduction of retaining walls. MODERATE EFFECT	Possible increase in embankments along lower lying areas. MINOR EFFECT	Possible increase in embankments along lower lying areas. MINOR EFFECT	Possible increase in embankments along lower lying areas. MINOR EFFECT	Possible increase in embankments along lower lying areas. MINOR EFFECT	Introduction of earthworks where none at present. MAJOR/ SEVERE EFFECT

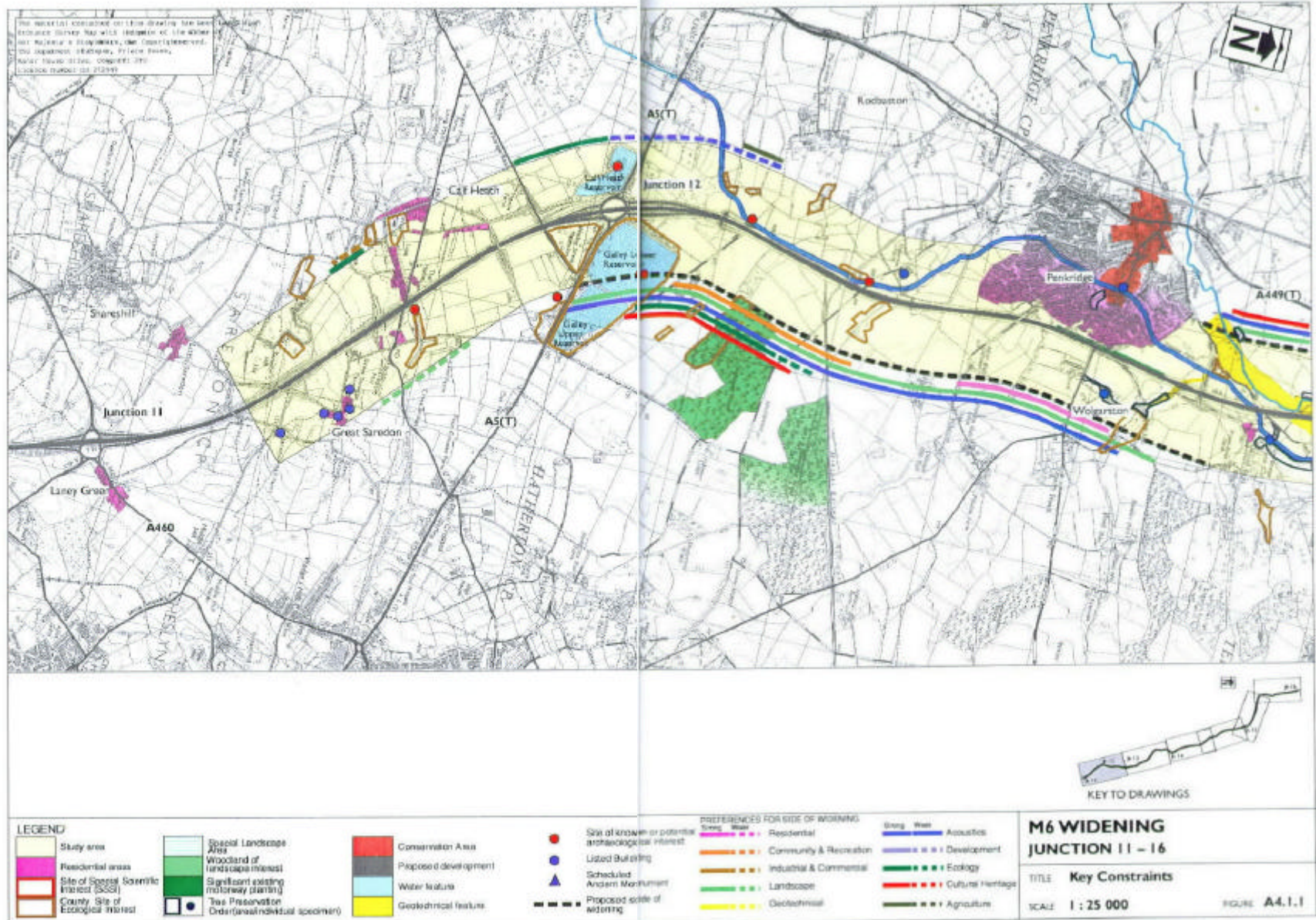


Figure 7 the strength of preference for either southbound or northbound widening

3.16. SOUTH WEST AREA MULTI-MODAL STUDY (SWARMMS)

3.16.1 INTRODUCTION

3.16.1.1 Nature of the Plan

In order to plan more effectively for the future of transport, the Government commissioned a series of major transport studies throughout England that examined current transport problems and issues, how these might change in the future, and what transport solutions might best address them. The largest of these studies is known as SWARMMS (London to the South West and South Wales Multi-Modal Study). Figure 8 shows the location of the plan area. It was commenced April 2000 and completed May 2002. And The SEA was integral to the plan making activity.

The overall aim of the study is to make recommendations for a long-term strategy to address passenger and freight transport needs within the M4/M5/A303/A30/A38 key transport corridors incorporating the parallel rail routes. This includes a plan of prioritised, specific interventions to address existing and predicted strategic transport problems in this area.

Figure 8 Location of the SWARMMS Plan Area (source: SWARMMS Newsletter)



3.16.1.2 Role of the SEA

A SEA process based on Government guidance (GOMMMS) was used throughout the study to:

- a) Assess four possible alternative strategies;
- b) Assess the emerging strategy and the final preferred strategy; and
- c) Assess detailed measures to deliver the strategy.

The SEA is part of an integrated approach that examines the traffic, economic, safety elements along with an integration theme that examines the extent to which interchange between transport modes is aided as well as the extent to which integration with other local and national objectives is achieved.

The SEA was essentially used to refine the alternative strategies and measures to ensure that the strategy selected would be the best in terms of solving the problems, meeting local objectives, reducing environmental impact and maximising economic opportunities in the area in a sustainable way.

3.16.1.3 Focus of this Case Study

The focus for this study is to show how a strategic transport study can be conducted in a large and environmentally complex study area. In particular, the study highlights a top-down approach to the formulation of transport solutions and their assessment. Other studies adopted a bottom-up approach.

3.16.2 BACKGROUND: CONTEXT AND ISSUES

3.16.2.1 Social and Environmental Setting

The study commences with an appreciation of the problems and issues facing transport in the study area. Some of the most important issues to emerge were:

- a) severance, noise and poor air quality caused by roads passing through or close to communities;
- b) The large designated areas of high environmental value and vulnerability;
- c) High accident rates on some single carriageway sections of the route corridors;
- d) Congestion on the trunk road network, particularly around the Greater Bristol area, Taunton, Exeter and Reading to M25 in the peak periods;
- e) Seasonal congestion on the main transport corridors to and from the South West;
- f) The peripherality of Devon and Cornwall;
- g) Unreliability of travel times, on both the road and rail networks;
- h) Lack of intermodal freight facilities;
- i) Low frequency of public transport services (away from the Bristol–London corridor).
- j) Difficulties in accessing main public transport networks particularly in rural areas;
- k) Poor levels of provision for walking and cycling, and for disabled people, in accessing the main transport corridors.
- l) Lack of connectivity between different travel modes, particularly bus/rail;
- m) Poor information and difficulties in achieving ‘seamless’ travel between different travel modes;
- n) That land use patterns accentuate dependence upon the car.

Geographically, the South West is the largest of the English regions, extending to almost 24,000 km² or approximately 15% of England’s land area. The region contains a rich diversity of both natural landscapes and those influenced by human activity, with some of the most beautiful and distinctive landscapes in the country. These range from high moorlands, heath and grasslands, and wooded valleys to limestone hills, deep gorges and rugged coastline. The area comprises:

- a) Two National Parks, Dartmoor and Exmoor, covering some 1,647 km² (7% of the region). The New Forest, a small part of which extends into the region, is also currently undergoing designation as a National Park.
- b) Twelve Areas of Outstanding Natural Beauty, and parts of two others, extend to 7,121 km² (30% of the region).
- c) 638 km of designated Heritage Coast, 61.3% of the total Heritage Coast in England.
- d) Four green belt areas covering some 1,056 km² (4% of the South West’s land area).

The South West also has a rich heritage of historic buildings, ancient monuments, boundary features and settlement patterns with two World Heritage sites, Stonehenge & Avebury and the historic spa city of Bath.

3.16.2.2 SEA/Decision Making Process

The study followed the guidance contained in GOMMMS (Guidance on Methodology for Multi Modal Studies, DETR, 2000). The overall SEA/decision making process is summarised in Figure 9.

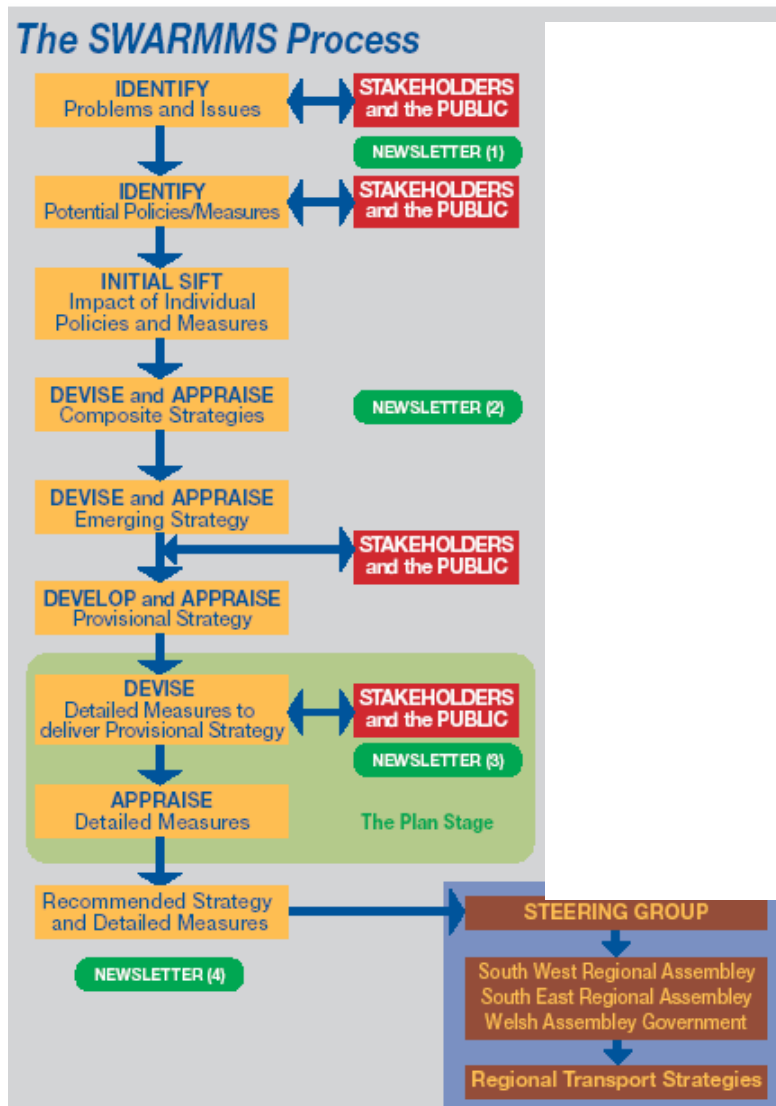


Figure 9 SWARMMS Assessment and Decision Making Process

(Source: SWARMMS Newsletter)

3.16.2.3 Issues Material to the Case

None.

3.16.3 APPROACH AND METHODS USED

3.16.3.1 Information Assembly

The SWARMMS consultants generally followed the guidance set out by the Department for Transport in the Guidance on Methodologies for Multi-Modal Studies with some adaptations to reflect the large size of the study area. Data was assembled primarily by bringing together existing data held by national and local government organisation. However, in relation to transport, it was necessary to obtain from transport operators and infrastructure providers details of the planned future operations. In addition, surveys were undertaken to update the data needed to construct the multi-modal transport model.

Environmental data was gathered from the local development plans which detailed areas of environmental protection and areas identified for future land use change. Information on nationally designated areas with environmental protection was obtained from the government environmental agencies, although many aspects of the information are also accessible from internet sites. For example flood risk maps are available on the Environment Agency web site.

(Details of the information assembly activities can be found in the following report CompositeStrategiesAppraisalTECHNOTE.pdf)

3.16.3.2 Development of Alternatives

The consultants choose to develop four Composite Strategies, each of which would be subject to assessment in order to aid the development of an the Emerging Strategy. Consequently the Composite Strategies were sufficiently different from one-another so that the relative merits of alternative approaches to addressing the study area's problems and issues could be examined. As each Composite Strategy needed to be a legitimate and holistic attempt at addressing the problems and issues, so each was multi-modal in approach, albeit with different elements.

The different Strategies are represented in Figure 10, while Table 36 provides a summary of the relative contribution of different measures to each strategy.

The study did not consider the no action alternative as the alternative strategies that were examined were generated as a result of consultations with stakeholders. The stakeholder identified the type of transport measures that they thought would contribute to the resolution of the problem, the task was to group these into various strategies. The consultants choose the themes that are presented in Figure 10, however it was possible for the consultants to characterise the strategies according to other criteria such as cost or in terms of whether they deliver a specific objective e.g. economic development or tourist development etc.

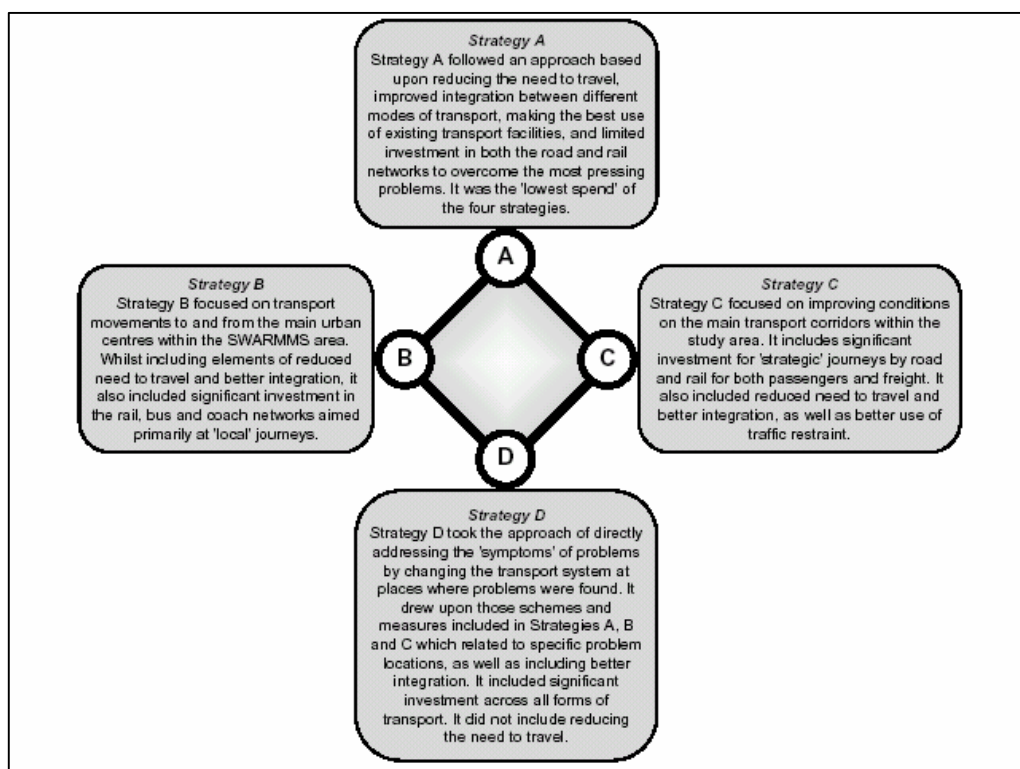


Figure 10 SWARMMS Composite Strategies (source: SWARMMS Newsletter)

Following comments a Preferred Strategy was constructed and then a series of detailed measures identified that would be needed to deliver the Preferred Strategy. This was termed the Plan Stage and involved the definition of the earlier assumptions used in the Composite Strategy appraisal, demonstrating feasibility, priorities as well the measures and policies to be recommended.

Table 36 Contributions of Different Measures to the Composite Strategies

Measures	Strategy A	Strategy B	Strategy C	Strategy D
Changing Travel Demand	***	**	**	-
Integration measures	***	**	**	**
Next Generation Developments	**	**	**	*
Local Action	**	***	*	**
Demand Management	**	*	**	**
PT Rail	*	**	***	***
PT Coach	**	*	***	***
Highway Schemes	*	*	**	***
Freight	*	*	***	***
Tourism measures	*	*	**	**
Airport and Air Services	*	*	**	**

Key

- *** Major component of strategy
- ** Significant supporting component of strategy
- * Minor component of strategy

The Preferred Strategy represented the consultant's recommendations on the structure and content of the transport measures based around the following themes:

- a) Reducing the need to travel;
- b) Better integration for public transport;
- c) Promote use of public transport to/from main urban areas;
- d) Traffic restraint within main urban areas;
- e) New road and rail infrastructure;
- f) Provide more opportunities to travel by rail;
- g) More opportunity for freight to use rail;
- h) Improve coach and express bus networks and facilities;
- i) Demand responsive public transport in rural areas;
- j) Smarter use of existing roads;
- k) Local road safety and other measures;
- l) Expand air and sea networks; and
- m) Specific measures to assist tourism.

3.16.3.3 Selection of Issues and Indicators

The issues and indicators used in the assessment were in the main derived from the guidance set out in GOMMMS, however, the consultants varied some of the indicators or the manner in which they were assembled in order to reflect the characteristics of the study area. The issues for which assessments were made comprised:

- | | |
|------------------------------------|--|
| a) Noise; | g) Biodiversity; |
| b) Local air quality; | h) Water environment; |
| c) Greenhouse gases; | i) Physical fitness; and |
| d) Landscape; | j) Journey ambience
(pleasantness). |
| e) Townscape; | |
| f) Heritage of historic resources; | |

As the studies were designed to identify the preferred strategy needed to address existing and emerging transport problems, neither the no action alternative or a business as usual alternative were acceptable as a way forward. Hence these alternatives did not feature in the SEA.

3.16.3.4 Impact Analysis

Some of the impacts are predicted in a quantitative manner while others are based more on descriptions and expert judgement. For example noise, air quality and greenhouse gases can be predicted in a numerical way using forecast changes in traffic flow. Others such as landscape, heritage and townscape are more subjective and are predicted in a more descriptive qualitative way by the relevant experts aided by consultation with the statutory environmental bodies.

In performing the impact analysis, a series of assumptions were made relating to specific schemes and measures (such as locations of new railway stations and associated train services). This was necessary to feed into the modelling tools and appraisal methodologies as a representation of the composite strategies that the technical processes can assimilate. The Composite Strategies Appraisal Technical Note makes available to the public details of the assessment techniques employed by the consultants. This not only presents an overview of the environmental assessment method, but also economic, safety, economy, accessibility and integration assessments.

(The methods adopted in the impact analysis are detailed in the following report: CompositeStrategiesAppraisalTECHNOTE.pdf.)

3.16.3.5 Comparison of Alternatives

Following an assessment of the relative performance of the Composite Strategies, the relative performance of each strategy against the Government's objectives for transport was assessed from a technical perspective and then reported to the public and decision-makers for review (see: Emerging Strategy.pdf).

Reporting of the results was undertaken in accordance with the guidance presented in GOMMMS which comprises four elements:

- a) The **Appraisal Summary Table** (AST) - This analyses the degree to which the five Central Government objectives for transport (environment, safety, economy, accessibility and integration) would be achieved.

The Environment objective identified within GOMMMS is concerned with protecting the natural and built environment, by seeking to reduce the direct and indirect impacts of transport facilities and their use on the environment of both users and non-users. Ten sub objectives are considered, namely:

- Noise;
- Local Air Quality;
- Greenhouse Gases;
- Landscape;
- Townscape;
- Heritage of Historic Resources;
- Biodiversity;
- Water Environment;
- Physical Fitness; and
- Journey Ambience.

- b) An assessment of the degree to which the **local and regional objectives** would be achieved.
- c) An assessment of the extent to which the **problems** identified would be ameliorated.
- d) **Supporting analyses** of distribution and equity, affordability and financial sustainability, and practicality and public acceptability.

Appendix 1 shows the completed AST for the preferred strategy.

Each of the methods presented for the individual topics involved a series of steps. For example, in the case of noise, for each transport link within the multi-modal modal the difference in the average noise emission was calculated by a simplified calculation procedure based upon traffic characteristics. These changes were then related to the population likely to be exposed and hence the population likely to be annoyed was calculated for both rail and road transport. However, no attempt was made to explore the extent to which mitigation measures could be applied to reduce such impacts.

It is worth recognising that often the purpose of assessment within SEA is to compare alternative strategies and hence the focus of interest is in their relative performance rather than their absolute

performance against external factors. This makes the task of prediction and assessment considerably easier.

Weighting: The general approach is that weights are the domain of elected politicians rather than consultants, hence the results are presented without weighting. However, the consultants may employ sensitivity testing in which for confidential analysis, they seek to determine whether the answer would change if different weights were assigned. In this way it is possible to indicate to the decision makers which factors likely to be important in the decision. There is no evidence that factors were weighted in the SWARMMS report that are in the public domain.

Significance Score: The government guidance on methodologies for multi-modal studies requires that the magnitude of the impact be translated into a 7 or 8 point score to reflect the significance of the impact. The objective is then to ensure that there is some consistency in not only the assessment across the different topics, but also that there is a consistency across the multi-modal studies. Details of the significance criteria can be found in the guidance manual available on the Department of Transport web site (www.dft.gov.uk).

3.16.3.6 Public Participation

As indicated by Figure 10 above, the study was accompanied by extensive opportunities for public involvement. Not only were four newsletters produced, but also public questionnaires and exhibitions were held across the study area, all supported by a study website. In addition a series of topic based meetings and discussions with local authorities were also undertaken. A report detailing the consultation process associated with the problems and issues stage illustrates the approach adopted (*see [ConsultationReport.pdf](#)*).

3.16.3.7 Monitoring, Uncertainty and Cumulative Effects

There were no proposals made for the environmental monitoring of the predictions made in the SEA.

A series of “what if” tests were also undertaken to address issues associated with the key decisions to be taken by Ministers and the Regional Assemblies, but no other explicit approach was adopted to deal with uncertainty. As noted above, it is expected that sensitivity tests were applied to the transport model and to other quantified elements of the assessment. However, this is often an internal technical exercise rather than one made public. Details of the SWARMMS sensitivity testing are not readily available.

Cumulative effects were considered in a subjective manner in that a significance score was assigned to reflect the overall impact of the measures within each of the composite strategies as well as in the preferred strategy. No guidance was available to enable an assessment of the cumulative effects of different impacts occurring on at the same location or on particular social groups. No explicit consideration of cumulative effects was presented in the reporting of the assessment undertaken by the consultants. However given that it was necessary to report a single assessment score for each topic for individual transport measures that in reality would give rise to a wide range of impacts, there was at least some implicit view on the overall environmental performance of individual transport measures. It was also necessary too report the impact of each strategy which themselves were a summary of the impacts of their component transport measures. This aspect is one of the key areas where the SEA was not particularly transparent and improved guidance is needed.

3.16.4 RESULTS AND LESSONS

3.16.4.1 Contribution to Decision-Making

The SEA contributed throughout the process. It was used to appraise alternative strategies and also appraise the final strategy and proposals. This led to the emergence of several environmentally positive strands of the final strategy including:

- a) Reducing the need to travel;
- b) Integrating public transport;
- c) Promoting the use of public transport;
- d) More rail travel, better stations, services, rolling stock, etc;
- e) More freight facilities – less main road HGV traffic, but could be some concentrated HGV traffic around depots;
- f) Improved coach facilities – which could remove some car traffic;
- g) Demand responsive public transport in rural areas – which could have a very beneficial impact on rural communities; and
- h) Specific measures to assist tourism.

3.16.4.2 Outcome

The SWARMMS study was dealing with some particularly sensitive transport/environment problems none more than the proposed dualling of the A303 through the Blackdown Hills Area of Outstanding Natural Beauty. Among the statutory environmental bodies there was a view that despite consultation opportunities that were frequently tightly constrained, there was little evidence that their views had been taken onboard by the consultants, although they did propose a further study to address an alternative for the A303 problem.

As a result of the sensitive environmental conditions, the statutory environmental bodies commissioned consultants to review the SWARMMS reports and these were made available as additional evidence to the South West Regional Assembly. The key messages that the statutory environmental bodies presented included:

- a) A lack of linkage between the transport measures and other strategies and policies, particularly those associated with land use;
- b) Options are not adequately explored some being dismissed without supporting evidence;
- c) An inadequate assessment of environmental impacts with a questionable assumptions and assessment scores;
- d) Lack of consideration of the ability of mitigation measures to resolve existing problems and the impacts caused by the proposed measures;
- e) Lack of evidence to support the view that road improvements would deliver increased economic benefits, while the trade-off between real environmental resources and potential economic benefits are not explored;
- f) Lack of importance given to nationally important environmental resources.

Despite these comments and the existence of an alternative to the A303 problem, the South West Regional Assembly determined not to accept the consultants recommendations. Instead they

recommended to Government that two of the highway projects with major environmental constraints be dualled. A decision by the Government is awaited.

3.16.4.3 Conclusions for SEA Good Practice

The main positive points of the GOMMMS process as used by SWARMMS are:

- a) That problems and issues to be tackled by the strategy are clearly identified. The assessors then must report how the suggested strategy solves these problems;
- b) That local objectives taking account of the problems and issues and also the objectives of other plans and organisations;
- c) That an assessment of alternatives is delivered that assists with the selection of individual measures;
- d) That worksheets aid transparency;
- e) That the AST assists in the presentation of the issues; and
- f) Opportunities are provided for the involvement of the public and environmental bodies so that the study is aware of the variety of views that exist.

However, there are some elements of the process that could be strengthened.

- a) There was a lack of transparency as to how the problems, issues and the local objectives linked to the alternative strategies and how the alternative strategies were developed.
- b) Some of the problems and issues are presented in a very general way and little concrete evidence is given to highlight some of the problems.
- c) The allocation and aggregation of scores within topics is unclear. There has been improved government guidance on this issues since the production of SWARMMS (DTLR, 2002).

3.16.5 REFERENCES

- DETR (March 2000): Guidance on the Methodology for Multi Modal Studies.
<http://www.dft.gov.uk/itwp/mms/index.htm>
- DTLR (2002): GOMMMS Supplement - Accumulating Environmental Impacts.
<http://www.roads.dft.gov.uk/roadnetwork/heta/aeimpact/index.htm>
- All SWARMMS documents can be found on the internet at <http://www.swarmms.org.uk>

Option: Halcrow Interim Preferred Strategy (HIPS) - Sub-option 2: A303/A30 Dualling		Description: Balanced strategy initiatives covering the study area for SWARMMS (see Ch.1 Introduction to HIPS Appraisal Report)	Problems: see Ch.1 Introduction to HIPS Appraisal Report	Present Value Cost To Government £M
OBJECTIVE	SUB- OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE MEASURE	ASSESSMENT
ENVIRONMENT	Noise	In 15th year: 33 zones 'losers'; 37 zones 'winners' Indicates benefits and disbenefits are spread across the region	Change in estimated population annoyed in 15th year with Strategy compared with present Do Minimum: +10974	Change in estimated population annoyed in 15th year with Strategy compared with future Do Minimum: +8567
	Local Air Quality	With regard to NO2, 7 of the winning zones but 1 of the losing zones have existing air quality problems (indicated by declared Air Quality Management Area status). Thus the benefit of the strategy is more than suggested by the AST scores. With regard to PM10, 7 of the winning zones and none of the losing zones have existing air quality problems (Air Quality Management Area). Thus the benefit of the strategy is more than suggested by the AST scores. LAQ includes rail and road emissions.	NO2: 65 zones 'winners' NO2: 7 zones 'losers' NO2: 0 zone no change PM10: 66 zones 'winners' PM10: 4 zones 'losers' PM10: 2 zones no change	Emissions Estimate NO2: -22,762,400 Emissions Estimate PM10: -1,544,249
	Greenhouse Gases	Includes both rail and road emissions	68 zones with decrease 4 zones with increase 0 zones with no change	Reduction of 1,741,568 tonnes of CO2 per year (-9.3%)
	Landscape	The landscape of the Blackdown Hills AONB will be substantially damaged, and the AONBs of Cranbourne Chase and West Wiltshire Downs, and Bodmin Moor will also be damaged. Highway schemes along the A358 and A303 in Wiltshire and Somerset, the A30 in Cornwall, and the M5 around Exeter, would be visually intrusive and will adversely impact on the landscape.		Moderate Adverse (Negative) Impact
	Townscape	Minor negative impact on the parts of the townscape resource within the study corridor. Where a scheme would impact upon the setting of several conservation areas (e.g.A303 between Sparkford and Ilchester), it would result in a slight adverse impact. Certain elements of the strategy will have positive benefits on the townscape of villages, where new road alignments now bypass their location, for example to Chicklade.		Slight Adverse Impact
	Heritage of Historic Resources	Moderate negative impact on elements of the cultural heritage resource. The historic landscape of the Cranbourne Chase and West Wiltshire Downs, the Blackdown Hills, Bodmin Moor, and the mid Cornwall landscape. Potentially around 50 Scheduled Ancient Monuments(SAMs). Potentially direct and indirect impacts on heritage assets of county and local importance. County designated sites of High Archaeological Potential may be compromised between Ilminster and Marsh (A303), particularly between Marsh and Honiton. There are positive benefits to listed buildings, where new road alignments bypass their location, e.g. A303 Chicklade to Mere and A303 Monkton between Marsh and Honiton.		Large Negative Impact
	Biodiversity	Very serious negative impact on areas of biodiversity within the study corridor - potentially indirect impacts on two internationally important biodiversity sites. Newlyn Downs SAC and Exe Estuary SPA/Ramsar Site, from highway improvements on the A39 and the M5 Junction 30 to 31. At least ten Sites of Special Scientific Importance will be adversely affected by highway schemes. Impacts on approx 50 County Wildlife Sites. A303 Ilminster to Honiton will have direct impacts on County Wildlife Sites bordering the existing carriageway. Whilst not designated, there is an abundance of valuable hedgerows and woodland adjacent to road schemes, which would be destroyed by online improvements.		Very Serious Adverse (Negative) Impact
	Water Environment	Overall impacts generally remain localised with, in many cases, the opportunity for mitigation. Road and rail developments following existing routes may provide opportunities for benefits (positive impacts) through the introduction of, for example, modern drainage practices. Movement of freight from road to rail may reduce pollution potential from accidental spillage.		Insignificant Impact
	Physical Fitness	Aims to reduce growth of traffic and substantially improve public transport services which could either increase or decrease physical fitness depending on the activities which are substituted for car travel and replaced by public transport usage. If cycling, walking or other physical activity increases this could be positive but the effect of the Strategy on 'Physical Fitness' remains unclear.		Uncertain Impact
	Journey Ambience	Some benefits to journey ambience in terms of improving integration, implementation of next generation factors and local schemes. Greater improvements to public transport will improve 'Traveller Care'. The new roads (assuming well-designed) and traffic management will also reduce traveller stress. Reduction of HGV volumes will also reduce stress and fear of accidents.		Large Beneficial Impact
SAFETY	Accidents	Significant accident savings associated with reduced highway demand and new highway infrastructure (greater than sub-option 1).	Savings: Fatal 149 Serious 884 Slight 3510	PVB £157M
	Security	The provision of help points, lighting and CCTV at unstaffed interchanges will help to improve personal security. Easing of traffic congestion at key points in the study area as a result of the strategy will reduce the fear of crime and the vulnerability of car users.		Moderate Beneficial Impact
ECONOMY	Transport Economic Efficiency	Excludes impact of additional rail passenger fare revenue and potential public sector income arising from fiscal traffic restraint measures.		User Benefits: NPV £M Private Providers: NPV -£M Public Providers: NPV -£M Other Government: NPV -£M
	Reliability	Improvements to the strategic highway network, demand management proposals, measures to encourage a mode shift from car to public transport and social changes would enhance capacity and restrict demand, thus improving journey time reliability. Proposals for new rail services and stations matched by increase in track/signalling capacity to enable more robust rail operations.		Moderate Beneficial Impact
	Wider Economic Impacts	The strategy enhances the strategic rail and road links between the regeneration zones within the study area (Cornwall and parts of Devon) and the rest of the country, which assists with overcoming peripherality.		Positive Impact
ACCESSIBILITY	Option Values	Assumption of up to ten new rail stations provides strong beneficial effects at the local level for each station, and combined will provide overall study area wide opportunities, similarly for re-instatement of passenger rail services.		Moderate Beneficial Impact
	Severance	Provides direct relief from existing severance for around 950 people. Other places will experience increases in severance as a result of road upgrade to dual carriageway standard. However, these impacts are considered to be slight given that they pass through rural areas and pedestrian movement is likely to be low.		Moderate Beneficial Impact
	Access to the Transport System	Major effects associated with introduction of demand responsive public transport feeder services and new stations.	Do Min Access Index: 73 Strategy Access Index: 98	Large Beneficial Impact
INTEGRATION	Transport Interchange	The upgrading of existing interchanges, improved information for all travellers and coach network upgrades will provide a moderate beneficial impact to all interchanges in the study area. Similarly for freight facilities.		Moderate Beneficial Impact

	Land-Use Policy	Performs well against national and regional guidance, as well as LTPs and Structure Plans		Positive
	Other Government Policies	Consistent with policies relating to competitiveness, tourism and access to employment opportunity. Changing travel demand and modal shift to public transport & slower modes has positive implications for the protection of agricultural assets, air quality, and neighbourhood renewal.		Positive

PUBLIC INQUIRY FRAMEWORK: PREFERRED ROUTE AND DO-NOTHING

GROUP 1: TRAVELLERS			PREFERRED ROUTE		NATIONAL TRUST		COMMENTS
SUB GROUP	EFFECT	UNIT	High	Low	High	Low	
Car Users	Time savings	£m (PVB)	3.986	2.365	4.436	2.628	Present value of benefits (PVB) are for the period 1997-2028 and are discounted at 8% pa to 1988, at 1988 prices Figures based on 1993 traffic flows and 1988-1992 accident data
	Vehicle operating cost savings	£m (PVB)	0.099	0.084	-0.037	-0.054	
Users of Light Goods Vehicles	Time savings	£m (PVB)	1.077	0.588	1.199	0.654	
	Vehicle operating cost savings	£m (PVB)	0.025	0.018	-0.016	-0.020	
Users of other Goods Vehicles	Time savings	£m (PVB)	1.390	0.774	1.541	0.859	
	Vehicle operating cost savings	£m (PVB)	0.074	0.038	-0.152	-0.200	
Bus operators	Time savings	£m (PVB)	0.235	0.163	0.259	0.181	
	Vehicle operating cost savings	£m (PVB)	0.006	0.006	-0.003	-0.004	
All vehicle travellers	Value of accident savings	£m (PVB)	0.369	0.096	0.649	0.249	
	Reduction in casualties:-						
	Fatal	number	1	0	2	1	
	Serious	number	20	10	28	15	
	Slight	number	118	82	141	98	
Driver Stress			Low		Low		
View from the road			Agricultural/Commercial		Agricultural/Commercial/ Residential		
Maintenance	£m (PVB)		0	0	0	0	Figures assume typical durations for future maintenance activities

GROUP 1: (continued) TRAVELLERS			PREFERRED ROUTE		NATIONAL TRUST		COMMENTS
SUB GROUP	EFFECT	UNIT	High	Low	High	Low	
Pedestrians and Equestrians	Change in amenity	Reduction in Traffic on Tyne View Road	Substantial relief for approx 80 properties fronting Tyne View Road, and some relief for 30 further properties		Substantial relief for approx 80 properties fronting Tyne View Road, and some relief for 30 further properties		Both routes remove through traffic. National Trust route removes more local traffic
	Safety		Removal of heavy goods traffic and other vehicles will improve safety		Removal of heavy goods traffic and other vehicles will improve safety		Particular locations for accidents include Tyne View and the Station area. National Trust route removes more local traffic from Tyne View
	Severance (New)		Diversion on 3 Rights of Way and one informal footpath. One footpath (PF25) will cross the bypass. Bridleway severed and new created on other side of river		One right of way affected		

GROUP 2: LOCAL PEOPLE AND THEIR COMMUNITIES

SUB GROUP	EFFECT	UNITS	PREFERRED ROUTE	NATIONAL TRUST	COMMENTS
Residential	Properties demolished	Number	0	0	
	Noise dB(A) L10, 18hr	Number of properties experiencing an increase of more than 3 < 5 5 < 10 10 < 15 > 15	23 4 3 2		The changes in noise are the difference between the forecast for 2011 and the 1996 levels. The units are in dB(A)L10 18hr (6am - midnight)
		Number of properties experiencing a decrease of 3 < 5 5 < 10 10 < 15	150-200 122 0		
	Visual Impact	Number of properties subject to: High Medium Low	3 8 6	(1992 NT Alternative) 14 56	Main intrusion of the Preferred Route is to Bellister Lodge, Highfield and Wollen Mills Farm. NT route have severe impact on Bellister Haugh, Castle Glen and properties fronting the river, Tyne View and Eden Lawn
	Severance (a) Relief to existing severance (b) Imposition of new severance			Substantial Slight	
	Disruption during construction			Minor	Minor

GROUP 2 Continued: LOCAL PEOPLE AND THEIR COMMUNITIES				
SUB GROUP	EFFECT	PREFERRED ROUTE	NATIONAL TRUST	COMMENTS
Commercial Premises	Properties Number demolished within 25m	0 Paint Works	Petrol Station 0	Loss of amenities for West bound traffic
	Number subject to noise increase of more than 5dB(A)L10	0	0	
	Number subject to noise decrease of more than 5dB(A)L10	0	0	
	Visual Impact: Number of properties within 300m of centreline subject to; High Medium Low	0 0 0	0 0 0	
	Severance a) Relief to existing severance b) Imposition of new severance	0 0		
	Disruption during construction	0	0	

GROUP 2 Continued: LOCAL PEOPLE AND THEIR COMMUNITIES					
SUB GROUP	EFFECT	PREFERRED ROUTE	NATIONAL TRUST	COMMENTS	
Farming	Number of farms affected by landtake	3	0		
	Hectares of land: Grade 1 Grade 2 Grade 3A Grade 3B Grade 4	0.0 2.8 2.9 0.2 13.2	0 1.1 5.3 3.3 5.0	Based on MAFF land classification	
Open Space a) Haltwhistle Football Ground	Hectares of land	0.7	No effect	Effect on users appears in Group 4 Pitch relocated	
	b) Haltwhistle Cricket Ground	Hectares of land	0.4	No effect	Effect on users appears in Group 4
	c) Allotments	Hectares of land	0	0.003	

GROUP 3: THE CULTURAL AND NATURAL ENVIRONMENT				
SUB GROUP	EFFECT	PREFERRED ROUTE	NATIONAL TRUST	COMMENTS
Heritage a) Bellister Castle	Noise	Increase of 5dB(A) at east facade	No change	For note on noise see Group 1
	Severance	No effect	No effect	
	Visual Impact	Intrusion on setting	Intrusion on setting Landscape measures including false embankment and drystone wall proposed	Preferred route passes within 200m, National Trust route within 300m
b) National Trust Land	Land take (hectares) Alienable Inalienable	7.9 0 7.9	2.8 2.3 0.5	National Trust land is designated as inalienable which implies that the National Trust is the sole occupier and user of that land
c) Alston Viaduct	Visual Impact	Intrusion on setting from cutting of embankment and new bridge	Intrusion to views to NW	Cutting of embankment undertaken in sensitive manner and new bridge as at a low level
d) Conservation Area	Visual Impact	0	1	Visual inspection
e) Known Archaeological Sites	Number affected within 50m	1	1	Required during topsoil stripping
Nature Conservation a) Loss of habitat	Landtake from locally important habitat	✂ 0.1ha of hay meadow lost at Cricket Ground	Adverse effect due to proximity to Tipalt Burn Loss of metal tolerant plants	Relocation of turves from hay meadow and translocation of plants proposed
		✂ 2.0ha of unimproved pasture lost at 4 other sites ✂ Individual metallophytes along line of route directly affected		
b) River South Tyne	Sedimentation of gravel areas used by sea trout and salmon	Low risk of disturbance to fisheries and release of contaminated sediments during construction	Low risk of disturbance to fisheries and release of contaminated sediments during construction	Construction works would be undertaken to satisfaction of NRA

GROUP 4: USERS OF FACILITIES			
SUB GROUP: Users of:-	PREFERRED ROUTE	NATIONAL TRUST	COMMENTS
a) Town Centre Shops	Reduction in volume of through traffic in town centre	Reduction in volume of through traffic in town centre	Passing trade may be reduced but improved amenity may increase attractiveness of town to tourists. National Trust route provides easier access via Lanty's Lonnen
b) Bellister Castle Number of visitors	Reduction in amenity of castle	No change	Access to Bellister Castle restricted Special arrangements required for entry
c) Haltwhistle Cricket Ground Number of users?	Encroachment on site causing reorganisation	No change	Possible extension to cricket field required
d) Haltwhistle Football Ground	Severance of part of ground	No change	Relocation of pitches required
e) Haltwhistle Cemetery	Noise levels at south will not exceed those at north site	Noise levels at south will not exceed those at north site	Planting proposed along southern boundary of cemetery National Trust route passes 50m closer
f) Caravan Park	No significant change anticipated	No change	
g) River South Tyne	Route crosses River twice	Route crosses River twice	Footpath No.46 and other informal footways diverted under river bridges
h) Allotments	Planting proposed along southern boundary of the allotments National Trust route affects setting and air quality	Land take ha Access unaltered	

GROUP 5: POLICIES AND PLANS					
POLICY	AUTHORITY	INTEREST	PREFERRED ROUTE	NATIONAL TRUST	COMMENTS
1. National Roads, England 1989	Department of Transport	To assist economic recovery	Complies with policy	Complies with policy	National Trust route has increased economic return
2. National Roads, England 1989	Department of Transport	To relieve towns and villages of unnecessary traffic	Complies with policy	Complies with policy	National Trust removes more traffic from west end of town
3. National Roads, England 1989	Department of Transport	To reduce accidents	Complies with policy		National Trust route has greater reduction
4. Structure Plan Policy number T3	Northumberland CC	Proposes the improvement of the A69 at Haltwhistle	Complies with Policy T3 and would result in significant improvement at Haltwhistle	Complies with Policy T3 and would result in significant improvement at Haltwhistle	
5. Structure Plan (consultative draft) Policy number T15	Northumberland CC	Urges upgrading of the A69 and recommends that a Bypass be constructed at an early date	Complies with Policy T15 and would result in significant improvement at Haltwhistle	Complies with Policy T15 and would result in significant improvement at Haltwhistle	Contract duration the same for both schemes. Preferred route design is further advanced
6. Structure Plan (consultative draft) Policy T7	Northumberland CC	Reduce adverse impact of large, heavy vehicles on the environment and on amenity, safety and convenience of pedestrians and residents	Complies with Policy T7 and would reduce the environmental, amenity and safety concerns associated with the existing road	Complies with Policy T7 and would reduce the environmental, amenity and safety concerns associated with the existing road	Both routes remove through traffic. National Trust favours local commercial traffic
7. Structure Plan (consultative draft) Policy EQ1	Northumberland CC	Proposals for development required to present measures to minimise the effect of development and where possible lead to demonstrable environmental benefits	Complies with Policy EQ1 and would result in environmental, benefits in terms of noise, air quality, amenity and safety	Complies with Policy EQ1 and would result in environmental, benefits in terms of noise, air quality, amenity and safety	Landscape proposals are incorporated into the scheme design in order to minimise the effect on the environment and to enhance the scheme. National Trust has a greater visual intrusion on residential areas.
8. Structure Plan (consultative draft) Policy EQ2	Northumberland CC	Pollution emissions from development	Improvements in air quality in areas adjacent to existing A69	Improvements in air quality in areas adjacent to existing A69	National Trust route gives greater improvement to properties on Tyne View Road

GROUP 5: POLICIES AND PLANS					
POLICY	AUTHORITY	INTEREST	PREFERRED ROUTE	NATIONAL TRUST	COMMENTS
9. Structure Plan (consultative draft) Policy A2	Northumberland CC	Sites of archaeological importance	Crosses 2 potential sites of archaeological importance		Futher survey work required to determine actual effect and any mitigation measures required
10. Structure Plan (consultative draft) Policy A4	Northumberland CC	Development within designated Conservation Areas	Setting of Conservation Area may be improved by removal of heavy traffic	Setting of Conservation Area affected by tie-in	Preferred route gives greater benefits
11. Structure Plan (consultative draft) Policy A5	Northumberland CC	Implications of development proposals for historical/Listed Buildings	Intrusion on setting of Bellister Castle and the Alston Arches Viaduct	Intrusion on setting of Bellister Castle and the Alston Arches Viaduct	Preferred route passes 100m closer to Bellister Castle

*There is no statutory local plan for the Haltwhistle area. Tynedale District Council are currently preparing a district wide local plan. They expect to take this plan to public consultation in Spring 1994.

GROUP 6: FINANCE				PUBLISHED SCHEME		
SUB GROUP	INTEREST	UNITS	NO NEW ROUTE	Low	High	COMMENTS
Department of Transport	Construction Costs	£M		9.368		Costs at 1991 Quarter 2 prices
	Land Costs	£M	0	0.125		
	Total Costs	£M		9.493		
	Construction costs	£M(PVC)		6.568		Costs are discounted from year of expected expenditure to 1988 at 1988 prices (PVC = Present Value of Costs) (PVB = Present Value of Benefits) (NPV = Nett Present Value)
	Land costs	£M(PVC)	0	0.063		
	Increased maintenance	£M(PVC)		0.026		
	Total costs	£M(PVC)		6.657		
	Link benefits	£M(PVB)		4.882	7.897	
	Junction benefits	£M(PVB)		-0.219	-0.024	
	Accident benefits	£M(PVB)		-0.445	-0.517	
	Future maintenance benefits	£M(PVB)	0	+1.235	+2.261	
	Bridge maintenance benefits	£M(PVB)		+0.204	+0.204	
	Total Benefits	£M(PVB)	0	5.657	9.821	Includes savings in time, vehicle operation and accidents (Taken from Group 1)
	Net Present Value (low growth)	£M(PVB)	0	-1.000		
	Net Present Value (high growth)	£M(PVB)		+3.164		

