Appendix A – Appraisal Summary Table (AST)

<table>
<tr><th colspan="4">Proposal Details</th></tr>
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(Also provide name of any subsidiary organisations also involved in promoting the proposal)</td><td colspan="2">SWestrans
Council Buildings
English Street
Dumfries</td></tr>
<tr><td>Proposal Name:</td><td>Dumfries and Galloway – Fast links to the Motorway Network – A75 Option</td><td>Name of Planner:</td><td>John Nelson – Service Manager, Policy and Project Development Manager, Strategic Transportation</td></tr>
<tr><td rowspan="3">Proposal Description:</td><td rowspan="3">A previous study identified two potential improvements to the road system linking Dumfries to the national motorway network, dualling the A75, and building a purpose built route to the south of the current A709. These options would serve to improve connectivity to the rest of Scotland and the UK, as well as improving the TEN route to Northern Ireland.
We have now undertaken a more detailed appraisal, following the recently refreshed STAG guidance, with a view to determining whether either (or both) options were worth pursuing. The appraisal is set against the established STAG Criteria and locally-determined Transport Planning Objectives, and has to include an examination of the Benefit Cost Ratios for both proposed road links; consideration of the Wider Economic Benefits; and careful evaluation of the environmental disbenefits.</td><td rowspan="3">Total Public Sector Funding Requirement:</td><td>Capital costs/grant - £167 million (2002 prices)</td></tr>
<tr><td>Annual revenue support – n/a</td></tr>
<tr><td>Present Value of Cost to Govt - £157 million</td></tr>
<tr><td>Funding Sought From:
(if applicable)</td><td></td><td>Amount of Application:</td><td></td></tr>
</table>

Background Information	
Geographic Context:	The A75(T) corridor, which is 32km long, departs from the A74(M) north west of Gretna (3150) and follows the line of the existing A75(T) to Dumfries. The corridor passes to the north of Rigg and Eastriggs (1943), around the Annan Bypass to the north of the town (8930), to the south of Carrutherstown (110) and Collin (440) to connect with the Dumfries Bypass at the Annan Road junction on the eastern edge of the town. The upgrading envisaged is principally online or close to the existing A75(T), through primarily rural areas with isolated small settlements, but an area with an established land-use as a major road transport corridor not only linking southern Galloway with the M6 motorway but also providing a key transport link between Britain and Ireland.
Social Context:	The social make up along the corridor comprises of a mix of rural communities interspersed with the establishment of small settlements, with Annan being the main service centre for the southern area. A Social Inclusion Partnership (SIP) area has been established in north west Dumfries.
Economic Context:	The Solway Coast is noted for high quality agricultural land which is devoted to predominantly dairy farms with large herds of Friesian, Ayrshire and Holstein cattle. In the corridor, 47% of agricultural units are dairy, 30% mixed beef/beef and sheep and 23% arable. The key processing unit is The Cheese Company's creamery located to the east of Lochmaben. The dairy, beef and sheep industries operate through livestock markets at Lockerbie, Carlisle, Annan and Dumfries. Arable farms mainly concentrate on cereals with the occasional specialism in oil seed rape or potatoes on the Solway Coast. Major employers within the route corridor are the Chapelcross Nuclear Powerstation, now closed and in the process of a lengthy decommissioning, and the Ministry of Defence's explosives store at Broomhills nearly Eastriggs. The economy of the area is dependent on a few key industries and employment sectors with agriculture, manufacturing and service employment. These are unlikely to provide new employment opportunities for future generations. There are new markets opening up along the motorway corridor with Steven's Croft timber processing plant and expansion of Glanbia dairy products near Lockerbie.

Planning Objectives	
Objective:	**Performance against planning objective:**
To improve safety for all road users by reducing total road traffic accidents by 25% on the routes linking Dumfries to the A74(M).	The A75 improvements option will provide significant safety benefits. A dualled A75 will improve reliability and negate need for motorists to consider dangerous overtaking of slow moving freight traffic – seen as a key reason behind many accidents. Both options will impact positively on future accident rates; however, the poor record of the A75(T) between Gretna and Dumfries gives the greatest scope for improvement. There are no direct implications in terms of security
To increase the reliability of journey times by 50% for all vehicles travelling between Dumfries and the A74(M).	Journey time reliability will be improved by either option. A key factor in journey time reliability between Dumfries and the motorway network is slow moving freight vehicles travelling between the Loch Ryan ports and the motorway. Improvements to the A75 will allow faster traffic to pass, whilst a new route built would allow more scope for travel between Dumfries and the motorway network.
To aid economic prosperity and area regeneration by improving accessibility and reducing travel costs by 25% between Dumfries and the A74(M).	The proposal will help to support/stimulate the regional economy, and improves both local and national accessibility. Travel costs are reduced through faster, more reliable journey times, although this is to a fairly limited extent.
To safeguard the environment and heritage of the study area.	Route improvements to the A75 will have negligible effects on the environment and heritage of the study area.
To reduce the impacts of traffic on local communities	The A75 currently bypasses local communities, the improvement option will have no effect against this planning objective.
Rationale for Selection or Rejection of Proposal:	**Given the significant transport economic efficiency benefits and other associated improvements, we recommend progressing with discussions about how best to deliver upgrading of the A75(T) between Dumfries and Gretna**

Implementability Appraisal	
Technical:	Option concentrates on improving the A75(T) and would feature some on-line enhancements and newly built roads in close proximity to the existing alignment. The construction involved would be well within the bounds of standard civil engineering experience for similar road schemes, and it is not anticipated that major technical issues would be presented by either option. Accordingly, any cost or time over-runs are likely to be within anticipated margins and will not present significant challenges to the scheme. The possible alignment has been chosen to take account of known geographical and topographical features and so navigate these with known engineering solutions.
Operational:	Involves improvement of a trunk road, responsibility for which currently rests with the Scottish Executive. In either case the new works would be the subject of the usual statutory procedures for road schemes in Scotland. In the case of this option 1 would be the Transport Scotland. Subject to following the correct procedures both the Scottish Government and Dumfries and Galloway Council have the necessary powers to promote the schemes. There are no known operational disbenefits associated with proposals for improving the A75. An improved A75 will produce particular benefits, improving the reliability problems caused by traffic from the Loch Ryan ports heading to the motorway network on the current single carriageway road, as well as local agricultural vehicles. Dualling the route will allow improved access to the A74 by providing bi-directional 2 lane capacity which will solve the majority of the current problems whilst enhancing safety. The route will continue to remain a European TENS route and retain its strategic importance, but function to a safer and more appropriate standard for the volume of traffic which uses the route. It is assumed that this option would remain the responsibility of Transport Scotland, but any increases in the cost of routine maintenance would be minimal compared to those currently associated with this section of the A75(T).
Financial:	The capital cost associated with the option will be high, and regardless of the responsibilities discussed in the previous section it is certain that central government funding would be required to secure either scheme. However, funding, subject to a sufficiently robust business case, is unlikely to pose any impediment to proceeding with the development. Avenues to explore include: • opportunities for developer contributions towards parts of the work; and • funding from SWestrans using finance secured from Transport Scotland/Scottish Executive or European sources. The ongoing maintenance costs have been discussed already, and are unlikely to be onerous subject to support for the scheme by the Executive.

Public:	Given the propensity for car ownership and use in the area, and the general preference of the travelling public for road-based transport improvements over those based on public transport, it seems reasonable to conclude that any option offering the prospect of faster and more reliable transport links from Dumfries and Galloway to the national motorway network will have the support of the majority of the general public. There will, of course, be isolated public objections to any adverse impacts of the option pursued, but this option concentrates any disbenefits within a corridor already perceived to some extent as "blighted" by the A75(T). There may also be dissent from the green lobby which may consider that any road-based improvements, however justified, should be opposed on principle, in favour of public transport-based solutions. Such a campaign may carry significant weight. Although there are no references in either Structure Plan or Local Plan to "green belts" as such, there is a general policy to constrain development within existing settlement boundaries if possible, and the public may well be expected to express concern if these boundaries are modified or eroded by transport developments such as the road improvements under consideration. Taking these factors into account, we anticipate the public would generally be in favour of any improvements linking Dumfries to the motorway network. The current routes have a history of traffic congestion and accident problems which would in part be relieved by any improvements, while capacity would be significantly improved. Any improvements to the A75 would directly improve the current safety problems noted on the route. Nevertheless it is entirely likely that there would be some form of environmental opposition as is common with any road building schemes in the country, and consequently the supporting appraisal – particularly of environmental impacts and their proposed mitigation – will be of crucial importance. The general public may have specific concerns regarding adverse impacts during construction. The A75(T) carries high traffic volumes, and as such any disruption caused will affect a greater number of travellers. It is also informative to widen the consideration of public issues to include the likelihood of political support for either option. Local councillors are likely to see the potential benefits as a positive point in favour of promoting the road-based improvements, and in general their approach can be expected to mirror that of the general public – ie generally supportive, but with some possible local issues that will require to be addressed. There has been strong cross-party support for improved transport links throughout the lobbying carried out since 1999. On a national level it will be necessary for Dumfries and Galloway Council to demonstrate the relative importance of the proposed improvements vis-à-vis other competing demands for funding across the whole of Scotland. National politicians will take a wider view than local councillors and will need to be assured that channelling scarce funds to either option will fit with established national policies and be an acceptable use of funds. They will also need to be reassured regarding possible cost over-runs and their ongoing commitments to operational costs. In this regard it is worth emphasising that the Scottish Government would not previously support the inclusion of a road-based transport improvement policy within the Dumfries and Galloway Structure Plan, and there are currently no indications that their position has changed regarding this. In brief it seems likely that a robust and convincing case will need to be made, in order to overcome the current presumption by the Scottish Government against such a scheme.

Environment:			
Mitigation Options Included: (Costs & Benefits)	See separate report		
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	See ASTs in Detailed Environmental Report (Appendix B)		Negligible
Air Quality			Negligible/ Neutral
Water Quality, Drainage and Flood Defence			Minor/ Negligible Adverse
Geology			Minor Adverse
Biodiversity			Minor/ Moderate Adverse
Visual Amenity			Minor Adverse
Agriculture and Soils			Minor/ Moderate Adverse
Cultural Heritage			Minor Adverse
Monetised summary		Carbon based emissions disbenefit -£1.4 million	
Monetary Impact Ratio			

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	Decrease in accident rates (per 100 million vehicle kms) from 19.3 in 1992/94 to 13.8 in 2006/08. Severity ratio improving but still above national average. Improved geometry/alignments will improve this situation.	The modelling tool developed for this study is not considered to generate sufficiently robust comparisons of accidents to allow monetisation.
	Change in Balance of Severity		
	Total Discounted Savings		

Security		Minimal impact expected	
Monetised summary			
Monetary Impact Ratio			

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	Approx 10 minute improvement in travel time anticipated	£436.8 million
	User Charges	n/a	
	Vehicle Operating Costs	Increased speed and longer journey mileages result in increased costs	-£17.8 million
	Quality / Reliability Benefits	Significantly improved reliability resulting from dualling	
Private Sector Operator Impacts	Investment Costs	0	
	Operating & Maintenance Costs	0	
	Revenues	0	
	Grant/Subsidy payments	0	
Monetised summary		£432.7 million	
Monetary Impact Ratio			

Economy (Wider Economic Benefits)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Wider Economic Benefits	Agglomeration economies	It is anticipated that in this particular study context (and do-something scenario tests), the conventional TEE analysis captures the appropriate likely impacts associated with these options within the study area under consideration.	
	Increased output in perfectly competitive markets (WB3)		
	Wider benefits arising from improved labour supply (WB4)		
Monetised summary			
Monetary Impact Ratio			

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic Impacts		£5.2 million increase in GVA
	National Economic Impacts	Mostly redistributed from other parts of Scotland, but some economic activity attracted from English Borders	£0.5 million increase in GVA
	Distributional Impacts		

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport Interchanges	Services & Ticketing	n/a	
	Infrastructure & Information	n/a	
Land-use Transport Integration		Mixture of compliance/non-compliance.	
Policy Integration		Mixture of compliance/non-compliance.	

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage	n/a	
	Access to Other Local Services	n/a	
Comparative Accessibility	Distribution/Spatial Impacts by Social Group		
	Distribution/Spatial Impacts by Area		

Cost to Public Sector		
Item	**Qualitative information**	**Quantitative information**
Public Sector Investment Costs		£166.6 million
Public Sector Operating & Maintenance Costs		Negligible
Grant/Subsidy Payments		Nil
Revenues		Nil
Taxation impacts		-£9.9 million

Monetised Summary	
Present Value of Transport Benefits	£432.7 million
Present Value of Cost to Government	£156.7 million
Net Present Value	£274.6 million
Benefit-Cost to Government Ratio	2.753
Benefit Cost to Government Ratio (including WEBs)	2.753 (No WEBs)
Benefit Cost to Funding Agency Ratio	-0.65

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We have now undertaken a more detailed appraisal, following the recently refreshed STAG guidance, with a view to determining whether either (or both) options were worth pursuing. The appraisal is set against the established STAG Criteria and locally-determined Transport Planning Objectives, and has to include an examination of the Benefit Cost Ratios for both proposed road links; consideration of the Wider Economic Benefits; and careful evaluation of the environmental disbenefits.</td><td rowspan="3">Total Public Sector Funding Requirement:</td><td>Capital costs/grant - £55 million (2002 prices)</td></tr>
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(if applicable)</td><td></td><td>Amount of Application:</td><td></td></tr>
</table>

Background Information	
Geographic Context:	The option routes south of the current A709 link and covers a distance of approximately 10 miles. The route would go offline at Torthorwald and pass south of Loch Maben and Castle Loch, before linking to the motorway network at Lockerbie.
Social Context:	The social make up along these corridor comprises of a mix of rural communities interspersed with the establishment of small settlements, with Annan being the main service centre for the southern area. A Social Inclusion Partnership (SIP) area has been established in north west Dumfries.
Economic Context:	The Solway Coast is noted for high quality agricultural land which is devoted to predominantly dairy farms with large herds of Friesian, Ayrshire and Holstein cattle. In the corridor, 47% of agricultural units are dairy, 30% mixed beef/beef and sheep and 23% arable. The key processing unit is The Cheese Company's creamery located to the east of Lochmaben. The dairy, beef and sheep industries operate through livestock markets at Lockerbie, Carlisle, Annan and Dumfries. Arable farms mainly concentrate on cereals with the occasional specialism in oil seed rape or potatoes on the Solway Coast. Major employers within the route corridor are the Chapelcross Nuclear Powerstation, now closed and in the process of a lengthy decommissioning, and the Ministry of Defence's explosives store at Broomhills nearly Eastriggs. The economy of the area is dependent on a few key industries and employment sectors with agriculture, manufacturing and service employment. These are unlikely to provide new employment opportunities for future generations. There are new markets opening up along the motorway corridor with Steven's Croft timber processing plant and expansion of Glanbia dairy products near Lockerbie.

Planning Objectives	
Objective:	**Performance against planning objective:**
To improve safety for all road users by reducing total road traffic accidents by 25% on the routes linking Dumfries to the A74(M).	Both the A75 improvements option, and the new route south of the A709 will provide significant safety benefits. The option to provide a new route south of the A709 will be direct in nature and designed to current safety standards. Both options will impact positively on future accident rates; however, the poor record of the A75(T) between Gretna and Dumfries gives the greatest scope for improvement. There are no direct implications in terms of security

To increase the reliability of journey times by 50% for all vehicles travelling between Dumfries and the A74(M).	Journey time reliability will be improved by either option. A key factor in journey time reliability between Dumfries and the motorway network is slow moving freight vehicles travelling between the Loch Ryan ports and the motorway. Improvements to the A75 will allow faster traffic to pass, whilst a new route built would allow more scope for travel between Dumfries and the motorway network.
To aid economic prosperity and area regeneration by improving accessibility and reducing travel costs by 25% between Dumfries and the A74(M).	The proposal will help to support/stimulate the regional economy, and improves both local and national accessibility. Travel costs are reduced through faster, more reliable journey times, although this is to a fairly limited extent.
To safeguard the environment and heritage of the study area.	A new purpose built route south of the A709 will however encounter environmental constraints. These constraints have been detailed within the environmental appraisal and mitigation measures suggested.
To reduce the impacts of traffic on local communities	The new route to the south of the A709 would reduce traffic impacts on local communities as the route will be designed to specifically bypass these areas.
Rationale for Selection or Rejection of Proposal:	**Given the environmental challenge, relative absence of counter-balancing benefits, and the poor BCR we do not recommend further consideration of this option.**

Implementability Appraisal	
Technical:	This option involves a significant amount of newly constructed roads, including the by-passing of Torthorwald, and the existing A709 would be retained for local traffic. The construction involved would be well within the bounds of standard civil engineering experience for similar road schemes, and it is not anticipated that major technical issues would be presented. Accordingly any cost or time over-runs are likely to be within anticipated margins and will not present significant challenges to the scheme. In terms of the route infrastructure for the A709, the alignment does traverse aspects of challenging terrain however all aspects would be feasible to implement using existing design standards and technology and any particular challenges for road infrastructure are already well-known. Whilst it is possible that site-specific difficulties might emerge during detailed design and subsequent construction, these are not foreseen at this stage. The preferred alignment has been chosen to take account of known geographical and topographical features and so navigate these with known engineering solutions.

Operational:	The option would involve partial reconstruction of the A709 and some newly constructed roads. The new works would be the subject of the usual statutory procedures for road schemes in Scotland. Subject to following the correct procedures Dumfries and Galloway have the necessary powers to promote the scheme. There are no operational problems associated with the construction of a new fast link to the motorway south of the A709. A new, purpose built route will bypass villages and other settlements, helping relieve congestion on both the A75 and A701 by providing an alternative route to the national motorway network. It is assumed that routine maintenance of the option will to be the responsibility of the Council, and as there would be no significant closures of roads to offset the newly built sections, it is likely that operating costs will be higher than at present, imposing either an additional budgetary burden for the Council or the need for additional central funding.
Financial:	The capital cost associated with the option will be high, and regardless of the responsibilities discussed in the previous section it is certain that central government funding would be required to secure either scheme. However, funding, subject to a sufficiently robust business case, is unlikely to pose any impediment to proceeding with the development. Avenues to explore include: • opportunities for developer contributions towards parts of the work; and • funding from SWestrans using finance secured from Transport Scotland/Scottish Executive or European sources. The ongoing maintenance costs have been discussed already, and are unlikely to be onerous subject to support for the scheme by the Executive.

Public:	Given the propensity for car ownership and use in the area, and the general preference of the travelling public for road-based transport improvements over those based on public transport, it seems reasonable to conclude that any option offering the prospect of faster and more reliable transport links from Dumfries and Galloway to the national motorway network will have the support of the majority of the general public. There will, of course, be isolated public objections to any adverse impacts of the option pursued, and these are likely to be greatest for the A709 option with its significant proportion of newly built roads, whereas Option 1 concentrates any disbenefits within a corridor already perceived to some extent as "blighted" by the A75(T). Although there are no references in either Structure Plan or Local Plan to "green belts" as such, there is a general policy to constrain development within existing settlement boundaries if possible, and the public may well be expected to express concern if these boundaries are modified or eroded by transport developments such as the road improvements under consideration. Taking these factors into account, we anticipate the public would generally be in favour of any improvements linking Dumfries to the motorway network. The current routes have a history of traffic congestion and accident problems which would in part be relieved by any improvements, while capacity would be significantly improved. A new, 10 mile purpose built route, south of the A709, designed to modern standards and bypassing local settlements would be broadly supported by the public. The route would also solve current accident and reliability problems endemic in the area. It is probable that a Public Inquiry will be necessary before proceeding with construction of any new route to the south of the A709. The A709 option may be met with significant environmental opposition due to the areas in which the proposed alignment passes through. The supporting environmental appraisal and proposed mitigation measures will be of crucial importance. The general public may have specific concerns regarding adverse impacts during construction. The A709 option, with its greater proportion of off-line construction, will minimise adverse impacts on existing travellers. It is also informative to widen the consideration of public issues to include the likelihood of political support for either option. Local councillors are likely to see the potential benefits as a positive point in favour of promoting the road-based improvements, and in general their approach can be expected to mirror that of the general public – ie generally supportive, but with some possible local issues that will require to be addressed. There has been strong cross-party support for improved transport links throughout the lobbying carried out since 1999 and discussed in greater detail in Chapter 1. On a national level it will be necessary for Dumfries and Galloway Council to demonstrate the relative importance of the proposed improvements vis-à-vis other competing demands for funding across the whole of Scotland. National politicians will take a wider view than local councillors and will need to be assured that channelling scarce funds to either option will fit with established national policies and be an acceptable use of funds. They will also need to be reassured regarding possible cost over-runs and their ongoing commitments to operational costs. In this regard it is worth emphasising that the Scottish Executive would not previously support the inclusion of a road-based transport improvement policy within the Dumfries and Galloway Structure Plan, and there are currently no indications that their position has changed regarding this. In brief it seems likely that a robust and convincing case will need to be made in order to overcome the current presumption by the Scottish Executive against such a scheme.

Environment:			
Mitigation Options Included: (Costs & Benefits)	See separate report		
Sub-objective	**Qualitative Information**	**Quantitative Information**	**Significance of Impact**
Noise and Vibration	See ASTs in Detailed Environmental Report (Appendix B)		Moderate/ Substantial Adverse
Air Quality			Slight Positive
Water Quality, Drainage and Flood Defence			Moderate/ Major Adverse
Geology			Moderate Adverse
Biodiversity			Major Adverse
Visual Amenity			Major Adverse
Agriculture and Soils			Major Adverse
Cultural Heritage			Moderate Adverse
Monetised summary		Carbon based emissions disbenefit -£210,000	
Monetary Impact Ratio			

Safety			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Accidents	Change in Annual Personal Injury Accidents	Increase in accident rates (per 100 million vehicle kms) from 24.6 in 1992/94 to 32.1 in 2006/08, severity ratio broadly unchanged. Improved geometry/alignments should maintain/improve this situation.	The modelling tool developed for this study is not considered to generate sufficiently robust comparisons of accidents to allow monetisation.
	Change in Balance of Severity		
	Total Discounted Savings		
Security		Minimal impact expected	
Monetised summary			
Monetary Impact Ratio			

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
User Benefits	Travel Time	Approx 4 minute improvement in travel time anticipated, plus associated savings on routes which become less congested.	£42.7 million
	User Charges	n/a	
	Vehicle Operating Costs	Increased speed and longer journey mileages result in increased costs	-£8.0 million
	Quality / Reliability Benefits	Improved reliability resulting from bypassing local communities	
Private Sector	Investment Costs	0	

Economy (Transport Economic Efficiency)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Operator Impacts	Operating & Maintenance Costs	0	
	Revenues	0	
	Grant/Subsidy payments	0	
Monetised summary		£34.7 million	
Monetary Impact Ratio			

Economy (Wider Economic Benefits)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Wider Economic Benefits	Agglomeration economies	It is anticipated that in this particular study context (and do-something scenario tests), the conventional TEE analysis captures the appropriate likely impacts associated with these options within the study area under consideration.	
	Increased output in perfectly competitive markets (WB3)		
	Wider benefits arising from improved labour supply (WB4)		
Monetised summary			
Monetary Impact Ratio			

Economy (Economic Activity and Location Impacts)			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Economic Activity and Location Impacts	Local Economic Impacts		£3.7 million increase in GVA
	National Economic Impacts	Mostly redistributed from other parts of Scotland, but some economic activity attracted from English Borders	£0.4 million increase in GVA
	Distributional Impacts		

Integration			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Transport Interchanges	Services & Ticketing	n/a	
	Infrastructure & Information	n/a	
Land-use Transport Integration		Some compliance, but very significant areas of non-compliance.	
Policy Integration		Some compliance, but very significant areas of non-compliance.	

Accessibility & Social Inclusion			
Sub-objective	**Item**	**Qualitative Information**	**Quantitative Information**
Community Accessibility	Public Transport Network Coverage	n/a	
	Access to Other Local Services	n/a	
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	Faster journey times	Improvements for key socially excluded areas
	Distribution/Spatial Impacts by Area		For example 76% of people travelling Dumfries – Gretna experience faster journeys

Cost to Public Sector		
Item	**Qualitative information**	**Quantitative information**
Public Sector Investment Costs		£55.4 million
Public Sector Operating & Maintenance Costs		Negligible
Grant/Subsidy Payments		nil
Revenues		nil
Taxation impacts		-£1.4 million

Monetised Summary	
Present Value of Transport Benefits	£34.8 million
Present Value of Cost to Government	£54.0 million
Net Present Value	-£19.2 million (excluding carbon impacts)
Benefit-Cost to Government Ratio	0.64
Benefit Cost to Government Ratio (including WEBs)	0.64 (no WEBs)
Benefit Cost to Funding Agency Ratio	1.35

Appendix B – Environmental Appraisal

Dumfries to A74 Fastlink
STAG Part 2: Environmental Appraisal

Report for Dumfries & Galloway Council

April 2009

IronsideFarrar

CONTENTS **Page**

1.0 Introduction

Ironside Farrar were commissioned as part of the MVA Team to undertake environmental assessment under STAG Part 2 for the Dumfries to A74 Motorway Fastlink. The assessment focuses on two proposed corridor options as per Figure 1.1. This section sets out the Environmental Appraisal of the corridors addressing the potential impacts these proposals may have on the environment and addressing issues of environmental risk, environmental mitigation and environmental performance.

1.1 Purpose of this Report

This section of the STAG Part 2 report presents the findings of a detailed environmental assessment of the Dumfries to A74 (M) Fastlink proposals. The STAG Part 2 aims to integrate environmental considerations into the decision making and selection process. It assesses the potential environmental effects of both the route options and identifies opportunities to mitigate any adverse environmental effects.

The report contains the following information:

- Summary of the findings of the STAG Part 1 report
- Description of the STAG Part 2 requirements
- Relationship between STAG assessment and other environmental assessment types
- Details of the consultation process
- Description of the Environmental Baseline i.e. current environmental issues and opportunities within the Strategy area.
- Assessment of the proposed route options against the environmental sub-criteria
- Details of mitigation and further assessment required

1.2 Work Undertaken to Date

Stage 1 – Preliminary Assessment Report

A preliminary assessment report, undertaken by Halcrow and Ironside Farrar, in December 1995 identified five route options for improving transport links between Dumfries and the A74 (M). Contained within this report was an initial assessment of the environmental context in which each of the route options were situated.

STAG Part 1

The STAG Part 1 appraisal was completed in October 2005. The STAG Part 1 Report is intended to act like a scoping report to identify the likely issues against the STAG criteria (Environment, Safety, Economy, Integration and Accessibility & Social Inclusion) and inform the options appraisal process.

The initial appraisal (STAG Part 1) assessed the two options taken forward for further assessment following the 1995 study:

- A709 (South) Option – involves construction of a new offline road between Dumfries and Lockerbie
- A75 Dualling Option – involves online dualling (widening) of the existing A75 road between Dumfries and Gretna.

In line with STAG best practice, the options appraised for STAG Part 1 Appraisal were indicative, broad-brush and conceptual.

1.3 STAG Part 2 Appraisal

STAG Part 2 requires a more focussed and detailed environmental appraisal of the scheme and the two proposals taken forward following the recommendations of the STAG 1 appraisal.

This assessment is in line with the Government Objective for Environment:

To protect our environment and improve health by building and investing in public transport and other types of efficient and sustainable transport which minimise emissions and consumption of resources and energy.

This environmental assessment looks at the potential environmental impacts of implementing the options within each corridor and likely requirements for mitigation and/or further assessment.

1.4 Sources of Information

Environmental information for the STAG Part 1 was obtained through a desk study of the proposed corridors and included information from the following sources:

- SEPA Website – information on flooding, water quality, groundwater etc
- SNH Website –information on protected species and designated sites
- PastMAP Website - digital datasets for cultural heritage sites
- UK National Air Quality Archive Website- air quality data

This data was reviewed as part of the STAG 2 and an assessment made of the likely environmental constraints and issues of the proposed corridor. The following additional sources were used as part of the assessment:

- A74 (M) Dumfries Link Study – Stage 1 Preliminary Assessment Report, 1995
- Dumfries Transport Link to Motorway Network 'STAG Part 1 Report,' 2005
- Dumfries and Galloway Council '*SWESTRANS SEA Environmental Report'*, 2007
- Air Quality in Scotland – Scottish Government funded source for information on air quality across Scotland
- Scottish Executive '*Scottish Noise Mapping*' – website providing information on the noise maps produced for Scotland.
- Historic Scotland – Spatial Data Website for information on Cultural Heritage.
- Topographical Survey maps of the route provided by D&G Council
- Preliminary alignments for both options provided by Mott Macdonald

1.5 Consultations

Ironside Farrar contacted statutory and non-statutory consultees during preparation of previous studies on a proposed Dumfries to A74(M) motorway link. Consultation responses to the SWESTRANS Regional Transport Strategy (March 2007) were also reviewed as part of the STAG Part 2 appraisal.

Recent consultation requests have been made for the STAG Part 2 by MVA, who submitted an outline summary of the two route options put forward for the Dumfries to A74 (M) Fastlink.

As part of this consultation exercise, SNH, Historic Scotland, SEPA and the RSPB were contacted for a response on both options in terms of likely environmental issues. A summary of these responses is provided below with full responses given as Appendix 1.1.

Table 1.1 Summary of Consultation Responses (Received by end March 2009)

Consultee	Summary of Points Raised
SNH	**A709 (South) Option -** • Concern over the proximity of the A709 route to Castle Loch (SPA, Ramsar, SSSI and LNR) and the potential for impacts on the aggregations of non-breeding Pink-Footed geese of European importance and the non-breeding aggregations of Pink-Footed geese, Greylag geese and Goosander of national importance. • Concern over the proximity of the route to Hightae Mill Loch (LNR) and potential impacts to the areas of open water, wetland and woodland including the access for local residents from the B7020. • Make considerations for the habitats included in the Dumfries and Galloway LBAP including ancient woodland and raised bogs. • Potential for route to impact on a number of protected species including bats, Otter and great crested newts. Other species which require due consideration include badger, red squirrel, water vole and breeding birds. • Should consider the impacts to public access, in particular the development of the Core Paths Plan. Legislative requirements • Need for an Appropriate Assessment for Castle Loch SPA under the EC Directive 79/409/EEC to determine the implications of the project on protected interests within the designated Natura 2000 site. • Under The Conservation (Natural Habitats &c.) Regulations 1994 (as amended) should work to be carried out for the proposals effect European protected species then licenses will be required from the licensing authority.
	A75 Dualling Option – • The proximity of the A75 to the Solway Firth Estuary (SPA, SAC & SSSI) and potential for impacts to associated important biodiversity including aggregations of non-breeding/ breeding birds, coastal, estuarine and marine habitats with associated plant communities and River/ Sea Lampreys and Natterjack toad. • Proximity of route to Longbridge Muir (SAC, SSSI) and potential for impacts to peatland habitat. • Should consider the raised bog habitats within the corridor of European priority and importance. • Make considerations for the habitats included in the Dumfries and Galloway LBAP including ancient woodland and raised bogs. • Potential for route to impact on a number of protected species including bats, Otter and great crested newts. Other species which require due consideration include badger, red squirrel, water vole and breeding birds. • Should consider the impacts to public access, in particular the development of the Core Paths Plan. Legislative requirements • Under The Conservation (Natural Habitats &c.) Regulations 1994 (as amended) should work to be carried out for the proposals effect European protected species then licenses will be required from the licensing authority.
SEPA	**A709 (South) Option -** • •
	A75 Dualling Option – •

Consultee	Summary of Points Raised
HS	**A709 (South) Option -** • •
	A75 Dualling Option – •
RSPB	**A709 (South) Option -** • Highlighted importance of designated sites of nature conservation importance, including Castle Loch SPA, which the route passes close to. • Concerns of potential disturbance to qualifying interests of the SPA, namely overwintering, feeding and roosting, geese. • Likely requirement of an Appropriate Assessment • Potential mitigation solutions include limiting timing of work near sensitive areas to periods when geese are not present (i.e. during the period of May-September).
	A75 Dualling Option – • Potential disturbance to overwintering, feeding and roosting, geese (barnacle and pink footed geese) which are qualifying species to the Inner Solway Flats & Marshes SPA. • Likely requirement of an Appropriate Assessment • Potential mitigation solutions include limiting timing of work near sensitive areas to periods when geese are not present (i.e. during the period of May-September).

1.6 Assumptions Made During Assessment

It is important to set out the assumptions made as part of the assessment process. The STAG Part 2 assessment assumes the following:

- Both Dumfries to A74 Fastlink options would likely be subject to project level EIA and Appropriate Assessment
- That mitigation suggested as part of the STAG would be refined by the EIA process and would be included as part of contractual agreements for the construction and operation of either road option.

1.7 Relationship of STAG to Other Assessment Methods

The requirement for various tiers of environmental assessment is based in UK legislation:

- Environmental Assessment (Scotland) Act
- Environmental Impact Assessment (Scotland) Regulations 1999
- The Conservation (Natural Habitats, &c.) Amendment (No.2) (Scotland) Regulations 2007

Assessment Method	Comments
Strategic Environmental Assessment (SEA)	• Requirement under the Environmental Assessment (Scotland) Act 2005 • The A74 Fastlink Options were included in the South West of Scotland Regional Transport Strategy as potential interventions. • This assessment highlighted that the project would likely require EIA and Appropriate Assessment (AA) before the project could be implemented. • Potential impacts of the proposed corridor on the Upper Solway Flats and Marshes, which are designated as Site of Special Scientific Interest (SSSI), The Upper Solway Flats and Marshes

Assessment Method	Comments
	Special Protection Area (SPA) and the Solway Firth Special Protection Area (SPA). • That the scheme had the potential for major adverse impacts on: biodiversity, geology, water and cultural heritage
Environmental Impact Assessment (EIA)	• requirement under the Environmental Impact Assessment (Scotland) Regulations 1999, as amended by the Environmental Impact Assessment (Scotland) Regulations 2002 (SSI 2002/324) • Environmental Impact Assessment looks at project level impacts. • The process of EIA is used as a means of informing the decision-making process throughout design to avoid potentially significant impacts where practicable and by incorporating mitigation measures to reduce or offset any predicted adverse environmental impacts.
Appropriate Assessment (AA)	• Conservation (Natural Habitats, &c.) Regulations 1994' requires competent authorities to carry out an Appropriate Assessment (AA) of plans and projects that either alone or in combination with other plans and projects, are likely to have a significant effect on European designated sites. • The regulations require that where an authority concludes that a development proposal is likely to have a significant effect on a European site, even if the development is outwith the European site boundary, an appropriate assessment of the implications for the nature conservation interests of the site must be undertaken. • SNH raised the issue of AA in their response to the environmental report submitted for the SEA of the South West of Scotland Regional Transport Strategy. SNH stated that given the likely impacts of the Dumfries to A74 Fastlink on the Lochmaben Lochs, the Upper Solway Flats and Marshes Special Protection Area (SPA) and the Solway Firth Special Protection Area (SPA) were uncertain, further assessment would be required at individual project level.

2.0 STAG– ASSESSMENT METHODOLOGY

The assessment of environmental impacts within a STAG appraisal should follow the process outlined below:

- Baseline information - collation of relevant background information
- STAG Part 1 – to filter out unsuitable proposals by identifying any major adverse environmental impacts. The outcome is summarised in the Part 1 Appraisal Summary Table (AST)
- STAG Part 2 – a more in-depth environmental assessment of those proposals which have passed through the Part 1 successfully, including the identification of appropriate mitigation measures. The outcome is summarised in the Part 2 AST

The STAG 2 assessment focuses on the significant beneficial and adverse impacts that may arise as a consequence of the proposal. The assessment considers the following:

- Reference to environmental objectives at National, Regional and Local levels
- Knowledge and experience of the assessment team and project experts
- Use of standard checklists for determining impact significance
- Desk studies and review of published information
- Consultations
- Ecological survey/walkover to establish issues
- Comparison with other similar transport projects

2.1 Impact Magnitude

When considering the nature of the impacts upon the environment the STAG guidance states the importance of considering the type of impact, likely duration of impact and scale of impact.

Each specialist topic within the STAG has different criteria for predicting environmental impacts and their magnitude but each records impact on a seven point scale as shown below. The assessment methods used will be described in greater detail within each of the sections of this report.

- Negative Major
- Negative Moderate
- Negative Minor
- Neutral
- Positive Minor
- Positive Moderate
- Positive Major

2.2 Receptor Sensitivity/ Importance

The sensitivity of the receptor should be assessed as major, moderate or minor. The method for this will be specific to the environmental medium under consideration.

2.3 Significance of Impact

Impact magnitude and receptor sensitivity are combined to indicate significance. Impact significance range is described in terms of major/ moderate/ minor/ negligible and combinations (e.g. minor-moderate), adverse and positive.

Table 2.1 Matrix to Evaluate Significance of Impact

		Value / Sensitivity			
		HIGH	MEDIUM	LOW	NEGLIGIBLE
MAGNITUDE	Major Negative	Major Adverse	Moderate Adverse	Minor Adverse	Minor Adverse
	Moderate Negative	Moderate Adverse	Moderate Adverse	Minor Adverse	No Significant Effect
	Minor Negative	Minor Adverse	Minor Adverse	No Significant Effect	No Significant Effect
	Negligible	No Significant Effect	No Significant Effect	No Significant Effect	No Significant Effect
	Minor Positive	Minor Beneficial	Minor Beneficial	No Significant Effect	No Significant Effect
	Moderate Positive	Moderate Beneficial	Moderate Beneficial	Minor Beneficial	No Significant Effect
	Major Positive	Major Beneficial	Moderate Beneficial	Minor Beneficial	Minor Beneficial

3.0 ENVIRONMENTAL APPRAISAL

3.1 Introduction

This section sets out the Environmental Appraisal of both proposed route alignments as detailed in STAG Part 1:

- Off-line route to the south of the existing A709; and
- Online upgrade of the A75

The appraisal addresses the potential impacts of both schemes on the environment whilst also considering issues of environmental risk, environmental mitigation and environmental performance.

The proposals for an improved transport A74 Motorway Link from Dumfries have been under consideration for a number of years and the following environmental assessment of the proposed schemes provides greater detail on their likely impacts by assessing them against the following STAG Environmental Sub-Criteria:

- Noise & Vibration
- Air Quality (Global and Local)
- Water Quality, Drainage and Flood Defence
- Geology
- Ecology, Biodiversity and Nature Conservation
- Landscape and Visual Amenity
- Land Use, Agriculture and Soils
- Cultural Heritage

For each Environmental Sub-Criteria the proposed routes are assessed individually and, following each assessment, a comparison summary table of potential residual impacts is provided. This enables the reader to easily compare and contrast the significance of impacts for each sub-criteria in order to inform the decision making process. Additionally, detailed Appraisal Summary Tables against each criteria and route option is provided in Appendix 1.2.

3.2 NOISE & VIBRATION

3.2.1 Introduction

Transport is a major source of noise and noise exposure and can have an adverse impact on human health and the perceived quality of life. This chapter aims to evaluate noise and vibration impacts which are likely to arise during implementation of either of the proposed A74 Motorway Fastlink route alignments. Below, the legislative and environmental context is set out and a preliminary assessment of potential impacts is undertaken.

3.2.2 Legislation & Guidance

The Environmental Noise 2002/49/EC, more commonly referred to as the Environmental Noise Directive (END) deals with noise from road, rail, and air traffic, and from industry. The Directive is transposed into Scottish law through the Environmental Noise (Scotland) Regulations 2006. Under the regulations, the Scottish Government were required to produce noise maps covering levels of traffic noise across the Glasgow and Edinburgh agglomerations and the main transportation road and rail links (the area of Dumfries and the A74 (M) route are included).

This assessment has been carried out with reference to the following documents:

- Design Manual for Roads and Bridges (DMRB) (The Highways Agency et al., 1993);
- Planning Advice Note, (PAN 56) Planning and Noise, Scottish Executive
- The Noise Insulation (Scotland) Regulations 1975 (NISR);
- Memorandum on the Noise Insulation (Scotland) Regulations 1975 (Memorandum);
- World Health Organisation, (WHO), Guidelines for Community Noise, 1999.

3.2.3 Definitions of Noise and Vibration

The World Health Organisation (WHO, 1999) has defined noise as unwanted sound, and sound is measured in terms of decibels (dB). Whilst the audible range of hearing extends from 20 Hertz (Hz) to 20,000Hz, human hearing is not equally sensitive to all frequencies. Consequently, the A-weighting is used to simulate the response of the human ear and environmental noise is generally measured in terms of dB(A).

When considering noise levels it may be of assistance to note that doubling or halving of the otherwise similar traffic flow is equivalent to a change of approximately 3 dB(A), and a subjective impression of a doubling of loudness generally corresponds to a 10 dB(A) sound level increase. As noise is assessed as a logarithmic ratio of pressure levels (i.e. decibels), it is sometimes helpful to consider the relationship between the subjective evaluation of noise and the actual objective levels, and examples are therefore provided in below.

Noise Level dB(A)	Description
120	Threshold of pain
95	Pneumatic drill (unsilenced); at a distance of 7m
83	Heavy diesel lorry (40 km/h at a distance of 7m)
81	Modern Twin-engined Jet (at take-off, at a distance of 152m)
70	Passenger Car (60 km/h at distance of 7m)
60	Office Environment
50	Ordinary Conversation
40	Library
35	Quiet Bedroom
0	Threshold of hearing

Generally, noise fluctuates over time and to compare different types of time-varying sound it is therefore necessary to obtain representative levels. For environmental noise this is commonly the equivalent continuous sound pressure level, the L_{eq}. It is also possible to represent time-varying noise by means of statistical parameters such as analysis of the distributions of sound levels. For example, L_{90}, is the level exceeded for 90% of the measurement time and L_{10} is the level exceeded for 10% of the measurement time period. The index adopted by the Government to assess traffic noise is the $L_{A10(18hr),}$ which is the arithmetic mean of the noise levels exceeded for 10% of the time in each of the one hour periods between 06:00h and midnight.

Road Traffic Noise

When considering noise from traffic, the main sources are:

- Noise generated by the engine, exhaust system and transmission. This is the main noise source resulting from congestion and contributes a significant proportion of low frequency

noise. This noise is particularly apparent from heavy goods vehicles (HGVs) when accelerating, braking or changing gear.
- Noise generated from contact of the tyres with the road surface. This is the dominant noise source under free flowing traffic conditions at moderate to high road speeds, and contributes a significant proportion of higher frequency noise.

There are a number of factors that influence the noise level experienced by receptors e.g. the residents of a property, and these can be separated into two categories:

- Volume and speed of traffic, the composition of the traffic (i.e. the percentage of HGVs), and the gradient and surface characteristics of the carriageway.
- How noise travels, such as the distance of the receptor from the source, the topography and characteristics of the ground between the source and receptor, the presence of any screening or barrier effects, and the wind strength and direction.

Vibration from Road Traffic

Traffic-induced vibration is a low frequency disturbance which can be transmitted through the air or ground. Vibration is measured in terms of peak particle velocities (PPVs) and is defined as the maximum speed of movement of a point in the ground during the passage of a vibration.

- Air-borne vibration from traffic is produced by the engine and exhaust of the vehicle
- Ground-borne vibration is produced by the interaction between rolling wheels and the road surface
- A traffic generated vibration PPV of 0.2mm/s measured on a floor in the vertical direction is generally imperceptible, at about 0.5 mm/s it is perceptible, and may become disturbing or annoying at higher levels.

There are two effects of traffic vibration that need to be considered;

Impacts on buildings

- Research carried out on ground-borne vibration has concluded that there is no evidence to suggest that traffic-induced, ground-borne vibration is a source of significant damage to buildings (Watts, 1990).
- There is no evidence that traffic-induced air-borne vibration can cause even minor damage to buildings.

Disturbance to Residents

- Ground-borne vibration is much less likely to be the cause of disturbance to occupiers than air-borne vibration (Baughan & Martin, 1981; Watts, 1984).
- Air-borne vibration can be a source of annoyance to local people, causing vibrations of flexible elements within properties close to the carriageway (e.g. doors, windows and occasionally floors).
- This chapter therefore addresses the issue of nuisance at properties caused by air-borne vibration.

3.2.4 Impact Methodology

The assessment of noise and vibration was based on a high level desk study using:

- Desk top investigation of local authority Noise Action Plans.
- Description of proposed mitigation measures; and
- Assessment of residual impact significance

- OS maps and option proposals plans.

At this strategic level noise and vibration impacts were assessed on qualitative information based against the perceived numbers of people adversely affected by the route alignments.

Determining Potential Impacts

To determine the impact it is necessary to determine the likely difference between current noise levels and noise levels should the proposal be implemented. In order to make this assessment, the change is assessed in terms of sensitivity of receptor, the magnitude of change and the significance of impact.

The assessment of the significance of noise impacts was based on the sensitivity of noise receptors and the magnitude of impact in terms of predicted noise levels and extent of noise change. The difference in noise levels, together with the sensitivity of the receptors, determines the significance of impact as explained below.

Sensitivity
The criteria used to classify the sensitivity of receptors to noise as a result of the proposed scheme are defined in Table 3.2.1:

Table 3.2.1 – Sensitivity Criteria

Sensitivity	Description	Examples of Receptors
High	Receptors where people or operations are particularly susceptible to noise.	Residential. Quiet outdoor areas used for recreation. Conference facilities. Auditoria/studios. Schools in daytime. Hospitals/residential care homes.
Medium	Receptors moderately sensitive to noise, where it may cause some distraction or disturbance.	Offices. Restaurants.
Low	Receptors where distraction or disturbance from noise is minimal.	Residences and other buildings not occupied during working hours. Factories and working environments with existing high noise levels.

Impact Magnitude

DMRB Vol. 11[1] states that 'people are more sensitive to abrupt changes in traffic noise associated with new road schemes than would be predicted from the steady state evidence. In the period following a change in traffic flow, people may find benefits or disbenefits when the noise changes are as small as 1 dB(A)'.

When considering two sounds with similar acoustic properties, i.e. similar spectral and temporal characteristics, a change of more than 3 dB(A) is regarded as being just perceptible to the human ear.

The magnitude of impact has been assessed by comparison between the likely increase or decrease in noise levels with or without the implementation of the proposal. The magnitude of impact was defined as shown in Table 3.2.2.

[1] Section 3, Part 7, Chapter 3, Paragraph 3.5

Table 3.2.2 Magnitude of Impacts due to Changes in Road Traffic Noise

Change in Noise Level	Magnitude of Impact
5 dB(A) and greater	High adverse
3 to < 5 dB(A)	Medium adverse
1 to < 3 dB(A)	Low adverse
0 to < 1 dB(A)	Negligible adverse
0 dB(A)	No impact
0 to <-1 dB(A)	Negligible beneficial
-1 to < -3 dB(A)	Low beneficial
-3 to < -5 dB(A)	Medium beneficial
-5 dB(A) and greater	High beneficial

Impact Significance
The significance of noise impacts was determined according to the relationship between magnitude and sensitivity, as shown in Table 3.2.3.

Table 3.2.3 - Significance of Noise Impacts

Magnitude	Sensitivity		
	Low	Medium	High
High	Moderate	Moderate/Substantial	Substantial
Medium	Slight/Moderate	Moderate	Moderate/Substantial
Low	Negligible/Slight	Slight/Moderate	Moderate
Negligible	Negligible	Negligible/Slight	Slight

OPTION – Lockerbie to Dumfries (South) A709

3.2.5 Baseline Information

The Scottish Government has produced maps delineating Candidate Noise Management Areas (CNMAs) and Candidate Quiet Areas (CQA) in response to the European Parliament and Council Directive for Assessment and Management of Environmental Noise 2002/49/EC. However, currently there are no CNMAs or CQAs within the proposed corridor alignment. Existing areas where noise and vibration is likely to be of relevance, in relation to the proposed A709 (South) route, are settlements along the existing A709 including Lochmaben, Torthorwald and the western extent of Lockerbie and the settlements close to the proposed route including Hightae, Heck and Ryemuir.

3.2.6 Potential Environmental Impacts

The proposed A709 (South) route involves the construction of a new road through a predominantly rural landscape with a relatively low population density. The effect is likely to be a significant increase in noise and vibration levels from the existing baseline within the proposed corridor. Based on the information available, potential impacts on noise and vibration from the proposed project are identified as:

- Introduction of significant levels of new road and traffic noise and vibration within rural setting.
- Possible reduction in levels of traffic noise and vibration along existing A709 (in particular at Lochmaben) and the A75, as motorists choose to utilise the new faster route to and from Scotland's central belt.

- Cumulative impacts associated with the existing A709 with the new A709 (South) route adding to existing levels of traffic noise and vibration.

Receptors within the proposed corridor are predominantly settlements/ residential and members of the public (walkers and cyclists). The sensitivity of these receptors to changes in noise levels are considered **high**.

The potential impacts of the proposal are likely to be both positive and negative depending on the location of existing residential properties. Lochmaben and other settlements along the existing A709 route are likely to see a reduction in traffic noise levels as motorists opt to make use of the faster new A709 (South) option. However, the new A709 (South) road will introduce new and increased levels of noise and vibration to areas with relatively low levels of background noise. In particular, consideration should be paid to potential impacts to receptors at Hightae. The overall magnitude of impacts of the proposal, with new and significant changes from baseline conditions, are envisaged to be **medium**. Potential impacts are summarised in Table 3.2.4 below.

Table 3.2.4 Potential Impacts to Noise and Vibration

Topic/ Receptors	Sensitivity	Magnitude	Impact Significance Before Mitigation
Noise & Vibration	High	Medium	Moderate/ Substantial

3.2.7 MITIGATION

In progressing the scheme, it is important that impacts from noise and vibration are acknowledged and further detailed assessment is undertaken at the appropriate stages to inform detailed design of proposed solutions. Detailed appraisal is likely to include transport noise assessments for the proposed solution.

3.2.8 RESIDUAL IMPACTS

Appropriate mitigation will provide improvements to help reduce the levels of noise and vibration to as low as practically possible. However, the scale of the proposal is such that the level of change from baseline noise and vibration is likely to be substantial. In terms of the change in the number of people impacted there may be a slight reduction as the new route passes less receptors.

Table 3.2.5 Summary of Potential Residual Impact Significance

Topic/ Receptors	Impact Significance Before Mitigation	Residual Impact Significance after Mitigation)	Comment
Noise & Vibration	Moderate/ Substantial	Moderate Adverse	Assuming appropriate mitigation is implemented.

Overall, the number of residential properties that will be affected by the proposed route is likely to be less than the number currently impacted upon by the existing A709. However, at this stage determining the impacts of noise and vibration on receptors within the corridor is difficult due to the lack of detailed survey information, therefore residual impact significance of the proposed route, at this stage, is considered to be **Moderate Adverse**.

OPTION – A75 (T) DUALLING

3.2.9 Baseline Information

The Scottish Government has produced maps delineating Candidate Noise Management Areas (CNMAs) and Candidate Quiet Areas (CQA) in response to the European Parliament and Council Directive for Assessment and Management of Environmental Noise 2002/49/EC. However, currently there are no CNMAs or CQAs within the proposed corridor alignment. Existing areas where noise and vibration is likely to be of relevance are the settlements situated along the existing A75 route including; Collin, Carrutherstown, Annan and Gretna and other smaller settlements.

3.2.10 Potential Environmental Impacts

The A75 dualling proposal involves route widening of the existing A75. Based on the information available, potential impacts on noise and vibration from the proposed project are identified as:

- Potential increase of traffic speeds resulting in increased levels of traffic noise.
- Cumulative impacts of A75 traffic noise and vibration levels with other road infrastructure in the corridor.

Receptors within the proposed corridor are predominantly settlements/ residential. The sensitivity of these receptors to changes in noise levels are considered **high**.

The proposal is unlikely to experience a significant change from the existing baseline noise and vibration levels along this corridor. The magnitude of impacts for the purpose of this assessment is envisaged to be **negligible.** Potential impacts are summarised in Table 3.2.6 below.

Table 3.2.6 Potential Impacts to Noise and Vibration

Topic/ Receptors	Sensitivity	Magnitude	Impact Significance Before Mitigation
Noise & Vibration	High	Negligible	Slight

3.2.11 Mitigation

In progressing the strategy, it is important that impacts from noise and vibration are acknowledged and further detailed assessment is undertaken at the appropriate stages to inform detailed design of proposed solutions. Detailed appraisal is likely to include transport noise assessments for the proposed solution.

3.2.12 Residual Impacts

Appropriate mitigation is likely to provide improvements to the existing A75 and it is envisaged that these measures will ensure noise and vibration impacts are sustained and/ or improved from the existing baseline levels.

Table 3.2.5 Summary of Potential Residual Impact Significance

Topic/ Receptors	Impact Significance Before Mitigation	Residual Impact Significance after Mitigation)	Comment
Noise & Vibration	Slight	Negligible	Assuming appropriate mitigation is implemented.

At this stage, lack of detailed information does not allow for a comprehensive assessment of potential impacts. However, the A75 already exists and the levels of noise and vibration currently experienced are unlikely to change significantly upon completion of the project. The residual impact significance of the proposal is therefore assessed as **Negligible.**

3.2.13 Summary

A comparison of the appraisal for each of the Dumfries to A74 (M) Fastlink proposals is provided in Table 3.2.6 below, in order to inform the decision making process.

Table 3.2.6 Summary Potential Residual Impacts to Noise and Vibration

Environmental Criteria: Noise & Vibration		
Receptor	**LOCKERBIE TO DUMFRIES (South) A709**	**A75 (T) DUALLING**
	Impact Significance After Mitigation	
Noise & Vibration	Moderate Adverse	Negligible

3.3 AIR QUALITY

3.3.1 Introduction

Global air quality is of concern due to the contribution of worldwide emissions to climate change, particularly emissions of CO_2. Local air quality is of specific relevance in Air Quality Management Areas (AQMAs), however Dumfries and Galloway Council have not as yet implemented any AQMAs.

3.3.2 Legislation & Guidance

Air Quality

European Union directives on air quality were enacted in UK law through Part IV of the Environment Act 1995, which established the process known as Local Air Quality Management (LAQM). Guidelines for local air quality were published in the 1997 National Air Quality Strategy (NAQS) and associated guidance and technical guidance, revised in 2000 and 2001.

The latest air quality objectives are set out in the Air Quality (Scotland) (Amendment) Regulations 2002 and the Air Quality (Scotland) Regulations 2000. These objectives are based on the medical evidence of the effects of each pollutant on human health, taking account of the costs, benefits and technical feasibility of achieving the objectives. Of the target pollutants, only sulphur dioxide is not considered to have a predominant road traffic source.

In areas where an air quality objective is not anticipated to be met, Local Authorities are required to establish Air Quality Management Areas (AQMA) and to develop and implement measures to be taken to work towards reducing pollution levels to below the objective targets.

Table 3.3.1: Summary of objectives outlined in the Air Quality (Scotland) Regulations 2000 as amended in 2002

Pollutant	Objective	Averaging time	Date to be achieved by
Benzene	16.25 ugm^{-3} 3.25 ugm^{-3}	running annual mean	31/12/03 31/12/10
1,3-Butadiene	2.25 ugm^{-3}	running annual mean	31/12/03
Carbon monoxide (CO)	10 mgm^{-3}	running 8 hour mean	31/12/03
Lead (Pb)	0.5 ugm^{-3} 0.25 ugm^{-3}	annual mean annual mean	31/12/04 31/12/08
Nitrogen dioxide (NO_2)	200 ugm^{-3} (105ppb) not to be exceeded more than 18 times a year 40 ugm^{-3} (21ppb)	1 hour mean annual mean	31/12/05 31/12/05
Particles (PM_{10})*	50 ugm^{-3}not to be exceeded more than 35 times a year 40 ugm^{-3} 50 ugm^{-3}not to be exceeded more than 7 times a year 18 ugm^{-3}	24 hour mean annual mean 24 hour mean annual mean	31/12/04 31/12/04 31/12/10 31/12/10

Pollutant	Objective	Averaging time	Date to be achieved by
Sulphur dioxide (SO_2)	350 ugm^{-3} not to be exceeded more than 24 times a year	1 hour mean	31/12/04
	125 ugm^{-3} not to be exceeded more than 3 times a year	24 hour mean	31/12/04
	266 ugm^{-3} not to be exceeded more than 35 times a year	15 minute mean	31/12/05

*PM_{10} is approximately equivalent to the ISO thoracic fraction (i.e. those particles small enough to penetrate to the lung) and represents a log normal sampling efficiency (with respect to particle size) with a median cut off of 10 um aerodynamic diameter.

Nuisance

There are no formal standards with respect to dust nuisance. Generally, the deposition of visible dust on surfaces would be deemed to be unacceptable. This level of deposition might equate to a dust deposition rate of 200 $mgm^{-2}day^{-1}$ (as a monthly mean; PAN50, Annex B). Visible dust nuisance might occur at lower levels of dust deposition where there is a marked difference in colour between the dust and the affected surface. Dust nuisance is not considered further within the assessment of the Strategy given its strategic nature. Dust nuisance would have to be considered for each proposed solution at the detailed project level to ensure appropriate dust control measures are implemented.

3.3.3 Assessment Methodology

Baseline Air Quality

Information about current concentrations of air pollutants at the site was derived from the Air Quality Scotland Website (http://www.scottishairquality.co.uk) and from the Action Plans/Updating and Screening report on the relevant Local Authority websites. However, both route options fall within Dumfries and Galloway Council boundaries and at present there are no Local Air Quality Management Areas notified within this area.

Impact Assessment

The impact assessment for air quality strategy pollutants was based on Scottish Transport Appraisal Guidance (STAG) published by the Scottish Government. Concentrations of nitrogen dioxide and PM_{10} are of particular concern, both with respect to compliance with the objectives of the Air Quality Strategy and also their potential effects on human health.

Each of the proposed route options was appraised in terms of likely pollution and impacts on the baseline air quality should the proposed solution be implemented under the scheme.

Given the strategic nature of the A74 (M) Fastlink options, the impact assessment has been based on qualitative data available for the study area. The criteria used to assess the magnitude of predicted air quality impacts are tabulated below:

Sensitivity

The criteria used to classify the sensitivity of receptors to changes in air quality as a result of the proposed scheme are defined in Table 3.3.2:

Table 3.3.2 Sensitivity of Receptors

Sensitivity	Description	Examples of Receptors
High	Receptors particularly susceptible to changes in air quality.	• Areas that have been declared as AQMA • Areas with high levels of existing congestion e.g. city and town centres • Residential areas • Community facilities e.g. schools/sports pitches /hospitals/residential care homes.
Medium	Receptors moderately sensitive to changes in air quality.	• Areas with high levels of existing congestion e.g. city and town centres • Residential areas
Low	Receptors where impacts of changes to air quality is minimal.	• Non residential areas

Magnitude of Impacts

The criteria used to classify the magnitude of impacts are defined in Table 3.3.3:

Table 3.3.3 Magnitude of Impacts

Magnitude	Description
High	Significant increase/decrease in the predicted number of exceedences of a relevant air quality standard.
Medium	Occasional degradation or improvements with impacts on relevant air quality standard.
Low	Degradation or improvements to air quality without any impacts to the relevant air quality standard.
Neutral	Emission of pollutant(s) leading to no measurable change in predicted concentrations

Impact Significance

The significance of air quality impacts was determined according to the relationship between magnitude and sensitivity, as shown in Table 3.3.4.

Table 3.3.4 Significance of Air Quality Impacts

Magnitude	Sensitivity		
	Low	Medium	High
High	Moderate	Moderate/Substantial	Substantial
Medium	Slight/Moderate	Moderate	Moderate/Substantial
Low	Negligible/Slight	Slight/Moderate	Moderate
Negligible	Negligible	Negligible/Slight	Slight

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3.3.4 Potential Impacts

Potential air quality environmental impacts from the proposed strategy include both positive and negative effects on air quality:

- Potential overall positive impacts on air quality due to shorter travel distances and improved traffic flow rates for motorists travelling from/ to Dumfries and the central belt and for those accessing Dumfries from the A74 (M).
- Potential improvement in air quality in Lochmaben as motorists choose to travel on the new A709 (South) road reducing traffic emissions in Lochmaben town.
- However, possible negative impacts to local air quality at settlements close to the proposed new route.

Receptors include mainly residential properties along the new and existing A709 routes and are considered to have a **high** sensitivity to changes in air quality.

Considering a new road will be constructed to support a significant level of traffic flow and divert traffic from slower moving roads in residential areas and shorten journey length, it is envisaged overall that there may be a localised **low positive** magnitude of impact.

3.3.5 Potential Impacts to Air Quality

Topic/ Receptors	Sensitivity	Magnitude	Impact Significance
Air Quality	High	Low positive	Slight Positive

3.3.6 Mitigation

In progressing the scheme, it is important that impacts to air quality are acknowledged and further detailed assessment is undertaken at the appropriate stages to inform detailed design of the proposal. Detailed appraisal is likely to include transport noise assessments of the route option.

3.3.7 Residual Impacts

The A709 (South) scheme is a major intervention which does have minor positive benefits with regards to both local and global air quality.

Table 3.3.6 Summary of Potential Residual Impacts to Air Quality

Topic/ Receptors	Impact Significance Before Mitigation	Residual Impact Significance (i.e. with Mitigation)	Comment
Air Quality	Slight Positive	Slight Positive	Assuming appropriate mitigation is implemented.

Overall, the new A709 schemes impact to air quality has been assessed as **Slight Positive.**

OPTION – A75 (T) DUALLING

3.3.8 Potential Impacts

Potential air quality environmental impacts from the proposed strategy include both positive and negative effects on air quality:

- Potential overall positive impacts on air quality due to improved traffic flow rates for motorists travelling from/ to Dumfries and the A74 (M).

Receptors include mainly residential properties along the new and existing A709 routes and are considered to have a high sensitivity to changes in air quality.

The A75 already exists and at this stage it is perceived that the levels of traffic are not going to increase significantly as a result of the dualling scheme. The magnitude of the impacts are considered to be **negligible.**

Table 3.3.7 Potential Impacts to Air Quality

Topic/ Receptors	Sensitivity	Magnitude	Impact Significance
Air Quality	High	Negligible	Slight

3.3.9 Mitigation

In progressing the scheme, it is important that impacts to air quality are acknowledged and further detailed assessment is undertaken at the appropriate stages to inform detailed design of the proposal. Detailed appraisal is likely to include transport noise assessments of the route option.

3.3.10 Residual Impacts

The A75 option is unlikely to cause any significant impacts or changes to air quality, especially after mitigation measures are implemented.

Table 3.3.8 Summary of Potential Residual Impacts to Air Quality

Topic/ Receptors	Impact Significance Before Mitigation	Residual Impact Significance (i.e. with Mitigation)	Comment
Air Quality	Slight negative	Negligible/ Neutral	Assuming appropriate mitigation is implemented.

Overall, the impact of the A75 scheme to air quality is assessed as being **negligible**/ **neutral**.

3.3.11 Summary

A comparison of the two route options and the potential impacts they may have on Air Quality is provided in Table 3.3.8.

Table 3.3.8 Summary Potential Residual Impacts to Air Quality

Environmental Criteria: Air Quality		
Receptor	**LOCKERBIE TO DUMFRIES A709 (South)**	**A75 (T) DUALLING**
	Impact Significance After Mitigation	
Air Quality	Slight Positive	Negligible/ Neutral

3.4 WATER QUALITY, DRAINAGE AND FLOOD DEFENCE

3.4.1 INTRODUCTION

This chapter describes and assesses the potential impacts of the proposed schemes on the existing water environment found within both corridor options. It describes the impacts of the schemes on the relevant water features, including watercourses and their floodplains and outlines measures for avoiding or mitigating these impacts wherever possible.

3.4.2 METHODOLOGY

The assessment for water quality, drainage and flooding was based on the following:

- Desktop investigation using OS maps, British Geological Survey maps including:
  - Hydrology Map of Scotland (British Geological Survey (BGS), 1988)
  - Groundwater Vulnerability Maps (SEPA 2005)
  - BGS Lochmaben Scotland Sheet 10W Drift Edition, 1:50,000 scale
  - BGS Scotland Sheet 6 Drift Edition, 1:50,000 scale
- Guidance from DMRB Volume 11 Section 3 Part 10 (HA 216/06) Road Drainage and the Water Environment
- Water quality data from SEPA
- SEPA Indicative Flood Map
- Scottish Planning Policy (SPP) 7 Planning and Flooding
- Planning Advice Note (PAN) 61 Planning and Sustainable Urban Drainage Systems
- PAN 79: Water and Drainage
- Sustainable Urban Drainage Systems. Design Manual for Scotland and Northern Ireland. CIRIA C521
- Sustainable Urban Drainage Systems. Best Practice Manual. CIRIA C523

The assessment comprises several interconnected components:

- Description of current water environment: quality, quantity and location of surface water and groundwater features;
- Consideration of potential impacts arising from proposed scheme during construction and operation;
- Descriptions of proposed mitigation measures; and
- Assessment of residual impact significance.

The significance of impacts on water quality and drainage was determined using the general approach described in Chapter 3.2, i.e. impact significance determined by a combination of receptor sensitivity and impact magnitude.

The qualitative assessment of sensitivity of all water resources took into account the environmental importance of several attributes including:

- Conservation value
- Scale
- Rarity
- Substitutability
- Flood risk
- Vulnerability
- Economic value (abstractions, use of river)

Table 3.4.1 defines the criteria that were used to assign receptor sensitivity:

Table 3.4.1 Receptor Sensitivity Criteria

Sensitivity	Example Criteria
Major	• A watercourse with pristine/ near pristine (River A1/ A2) quality. • Water quality which does not affect diversity of species of flora and fauna. • All sites with international and European nature conservation designations, e.g. SPAs, SACs, EC designated freshwater fisheries. • All nature conservation sites of national importance designated by statute including SSSIs and National Nature Reserves. • Large scale importance of resource. • Rare resource. • Irreplaceable within an acceptable timeframe.
Moderate	• A watercourse with a measurable degradation in its water quality as a result of anthropogenic factors, a Class B (river). • Water quality has only limited impact upon the species diversity of flora and fauna in the watercourse. • All non-statutory designated sites of regional or local importance. • Medium scale importance of resource.
Minor	• Poor water quality resulting from anthropogenic factors, Classes C and D. • Major change in the species diversity of flora and fauna due to the significant change in the water quality.

Table 3.4.2 defines the criteria used to evaluate impact magnitude:

Table 3.4.2 Impact Magnitude Criteria

Magnitude	Criteria	Example
Major (adverse)	Loss of attribute	• Major shift away from the baseline conditions. • Fundamental change to water quality, e.g. downgrading from Class A to C or D, or from B to D. • Loss of an EC designated Salmonid fishery. • Pollution of potable source of abstraction.
Moderate (adverse)	Impact on integrity of attribute or loss of part of attribute	• A significant shift from the baseline conditions that may be long-term or temporary. • Results in a change in the ecological status of the watercourse, e.g. downgrading one class. • Loss in productivity.
Minor (adverse)	Minor impact on attribute	• Minor shift away from the baseline conditions. • Changes in water quality are likely to be relatively small or be of a minor temporary nature such that watercourse ecology slightly affected e.g. minor but measurable change within a class.
Negligible	Impact will occur but of insufficient magnitude to affect the use/ integrity	• Very slight change from the baseline conditions such that no discernible effect upon the watercourse's ecology results. • No change in classification. • No increase in flood risk.

Table 3.4.3 presents the matrix for the derivation of the significance of impact from receptor sensitivity and impact magnitude.

Table 3.4.3 Significance of Impact Matrix

Magnitude of Impact		Receptor Sensitivity		
		Minor	Moderate	Major
	Major	Moderate (adverse)	Moderate/Major (adverse)	Major (adverse)
	Moderate	Minor/Moderate (adverse)	Moderate (adverse)	Moderate/Major (adverse)
	Minor	Negligible	Minor (adverse)	Minor/Moderate (adverse)

3.4.3 LEGISLATION & GUIDANCE

Water Framework Directive

The Water Framework Directive (2000/60/EC) is a major piece of European legislation. Its overall objective is to bring about the effective co-ordination of water environment policy and regulation across Europe in order to:

- Prevent deterioration and enhance status of aquatic ecosystems, including groundwater
- Promote sustainable water use,
- Reduce pollution and
- Contribute to the mitigation of floods and droughts.

The Directive came into force in December 2000 and is transposed into Scots Law through the Water Environment and Water Services (Scotland) Act 2003 (WEWS) and Water Environment (Controlled Activities) (Scotland) Regulations 2005 (CAR). Historically, the main European legislation that has been concerned with groundwater protection is the Groundwater Directive (80/68/EEC). This Directive is expected to be revoked by the Water Framework Directive in 2013.

CAR regulates discharges to the water environment, including groundwater, through a system of authorisation; licences (for the highest discharges such as larger sewage discharges) registrations for discharges of lower risk (such as small-scale sewage discharges) and general binding rules (for low risk discharges such as small-scale Sustainable Urban Drainage Systems (SUDS)).

To help meet these needs, the Government has set standards for water quality. The Scottish Environment Protection Agency (SEPA) is responsible for monitoring, maintaining and enforcing these standards. SEPA's Groundwater Protection Policy for Scotland (Dec 2003) provides a general framework for the management and protection of groundwater in Scotland.

Since April 2006, CAR also establishes SEPA control regimes over aquatic engineering activities. There are a range of levels of authorisation depending on the works to be carried out, but for any permanent river diversion, straightening, channelization, re-sectioning > 2m and any culverting for land gain, a complex licence will be required.

The WEWS includes amendments to Section 1 (duty of Scottish Water to provide for sewerage) of the Sewerage (Scotland) Act 1968 (c.47) ("the 1968 Act") regarding construction standards for SUDS. For all new developments SUDS are now required for surface water systems which provide attenuation and treatment prior to return, by natural dissipation where possible, to the water environment.

Water Quality

UK statutory organisations, including SEPA, have developed a new monitoring strategy to meet requirements of the Water Framework Directive (WFD). One requirement is that the quality status of every water body is reported in each successive River Basin Management Plan across the country.

The route corridor lies within the Solway-Tweed River Basin District. When the European Water Framework Directive (WFD) was transposed into UK legislation the Solway-Tweed River Basin District was given separate provision to enable a coordinated approach to river basin planning between the Environment Agency and Scottish Environment Protection Agency (SEPA).

Surface water features are provided an overall classification under the monitoring strategy. The classifications are ranked in the following order of highest to lowest water quality:

- High/ Pass
- Good
- Moderate
- Poor
- Bad/ Fail
- Not applicable

This data is provided as part of SEPA's Water Quality Classification Interactive Map.

Flooding

Scottish Planning Policy SPP7 *Planning and Flooding* advises that:

- new built development should be secure against flooding from all causes with an acceptable risk,
- that the development should be sustainable in relation to flooding and drainage,
- the development should have no adverse impact on the flood risk elsewhere.
- undeveloped land at what is termed 'medium to high' risk of flooding is generally not suitable for new development
- land that has the potential to provide floodwater storage should not be developed if the loss of storage would adversely impact on flood risk elsewhere.

Land regarded as being at medium to high risk of flooding and land that might be regarded as functional floodplain because of its importance as potential floodwater storage are defined as land with an annual probability of flooding no greater than 0.5% - more usually known as the 200 year return period event.

3.4.4 BASELINE INFORMATION

OPTION – Lockerbie to Dumfries (South) A709

Surface Water Features

The proposal is such that a number of water features are either crossed over or are located close to the new road alignment. Details of these water features are detailed below.

Watercourses

Main watercourses:	• River Annan - The river Annan is crossed by the proposed alignment. The river flows from the hills north of Moffat south-eastwards to join the Solway Firth at the town of Annan. Designated as a salmonid fishery (1980). • Lochar Water **-** Lochar Water is formed at the confluence of the Park Burn and the Amisfield Burn near the town of Locharbriggs and flows southward on the eastern side of Dumfries and enters the Solway Firth at the Upper Solway Flats, near the Channel of the River Nith. Designated as a salmonid fishery (2007).
Minor Burns:	• Torthorwald Burn; • Roughcleauch Burn • Ryemuir Burn • Marlake Burn • Valison Burn • Bengall Burn
Lochs	• Lochmaben Lochs Sites of Special Scientific Interest(SSSI) – A set of three lochs north west of Lochmaben: – Blind Loch – Upper Loch – Mill Loch • Castle Loch SSSI and Special Area of Conservation (SPA) • Kirk Loch • Hightae Mill Loch.
Un-named Ditches & Field Drains	The proposed corridor crosses a number of field drains and drainage ditches. These will need to be addressed during the detailed design of the bypass to ensure adequate drainage is maintained.
Marsh/ Wetland Areas	Saturated marshy areas associated with the river floodplains, where the water collects prior to discharge into the field drains/ ditches and watercourses exist within the corridor.

Water Quality

Each river identified within the proposed corridor is detailed in Table 3.6.4 below.

Table 3.4.4 Water Quality Classifications of Main River Courses

River	Overall Classification (2007 SEPA data)	Associated Protected Areas
River Annan	Moderate	• River Annan (for freshwater fish) • Urban Waste Water Treatment Directive Sensitive Area (UWWTD)

Lochar Water	Moderate	• Lochar Water • Nitrate Vulnerable Zone (Lower Nithsdale)

The sensitivity of the entire water resource within the proposed corridor, including European designated sites, to potential impacts is assessed as **major.**

Flooding

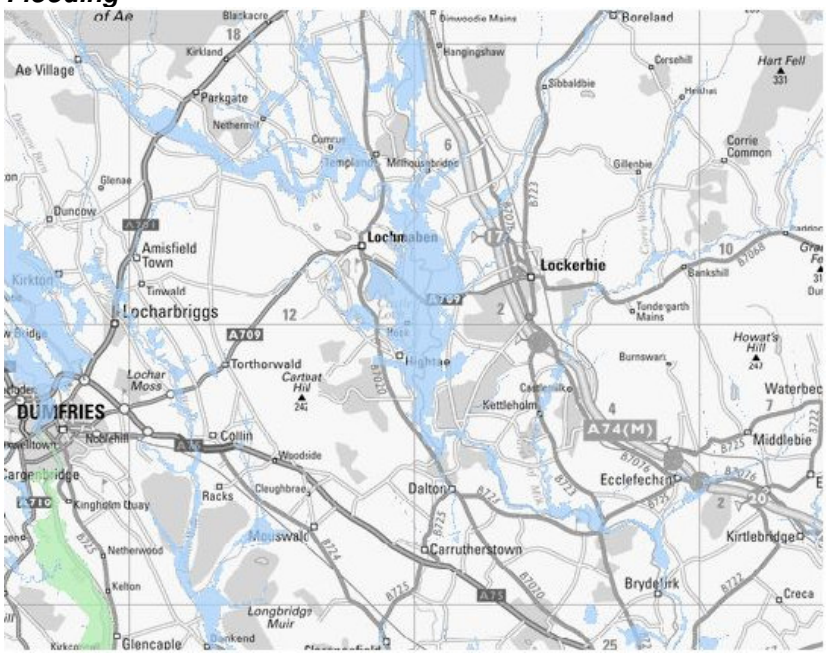

Figure 3.4.1 SEPA Indicative Flood Map showing area of corridor proposal.

From the SEPA Flood Map in Figure 3.4.1 above (Indicative 1:200 year) riverine flooding affects Lochar Water and the River Annan. Given the potential flood risk of the area a route-specific flood risk assessment may be required.

The sensitivity of the floodplains is considered to be **major** as potential changes could result in loss of storage capacity.

Drainage

Much of the area along the length of the proposed route is associated with both the Lochar Water and the River Annan. The route crosses a series of drainage pipes and channels within the cultivated areas, both of which would allow road- run-off to be easily contained.

Existing Scottish Water utilities are likely to require protection or diversion as part of the detailed design for the route including sewers and water mains.

Drainage for the proposed carriageway will be an important consideration for the detailed design given the importance of the proposed corridor in terms of flood attenuation and linkages between drainage and groundwater/ surface water quality.

The sensitivity of the existing drainage to change for the purpose of assessment is **moderate.**

Groundwater
This corridor crosses the Dumfries and Lochmaben aquifers and a number of naturally occurring sand and gravel aquifers. The SEPA Ground Water Vulnerability Map classes the ground water within this corridor between 2 – 4b (5 being most vulnerable and 1 least vulnerable). The sensitivity of the existing groundwater features are therefore assessed as **moderate.**

OPTION – A75 (T) DUALLING

Surface Water Features
The existing A75 alignment crosses close to or over a number of water features. Details of these water features are detailed below:

Main watercourses:	• River Annan - The river Annan is crossed by the proposed alignment. The river flows from the hills north of Moffat south-eastwards to join the Solway Firth at the town of Annan. • Lochar Water - Lochar Water is formed at the confluence of the Park Burn and the Amisfield Burn near the town of Locharbriggs and flows southward on the eastern side of Dumfries and enters the Solway Firth at the Upper Solway Flats, near the Channel of the River Nith. • Kirtle Water - Kirtle Water is located on the eastern side of the study corridor originating from a series of tributaries in the hills to the north of Kirtleton. The river joins the Solway Firth near Gretna.
Minor Burns	• Linne Burn; • Deadman's Gill; • Mauswald Burn; • Backkerr Burn; • Dornock Burn
Lochs	• The A75 route passes three lochs near Kelhead Flow.
Un-named Ditches & Field Drains	• The existing corridor crosses a number of field drains and drainage ditches. These will need to be addressed during the detailed design stage to ensure adequate drainage is maintained.
Marsh/ Wetland Areas	• There is likely to be saturated marshy ground associated with the river floodplains, where the water collects prior to discharge into the field drains/ ditches and watercourses.

Water Quality
Each river crossing the proposed A75 corridor is detailed in Table 3.6.7 below.

Table 3.4.7 Water Quality Classifications of Main River Courses

River	Overall Classification (2007 SEPA data)	Associated Protected Areas
River Annan	Moderate	• River Annan (for freshwater fish) • Urban Waste Water Treatment Directive Sensitive Area (UWWTD)
Lochar Water	Moderate	• Lochar Water (for freshwater fish) • Nitrate Vulnerable Zone (Lower Nithsdale)
Kirtle Water	Moderate	• Kirtle Water (for freshwater fish) • UWWTD Sensitive Area

The overall sensitivity of the water resources, within the corridor, to impacts is assessed as **moderate.**

Flooding

Figure 3.4.2 SEPA Indicative Flood Map of the proposed route corridor

From the SEPA Flood Map (Indicative 1:200 year) there is riverine flooding affecting Lochar Water, the River Annan and Kirtle Water as illustrated in Figure 3.6.2 above. Given the potential flood risk of the area a route-specific flood risk assessment may be required.

The floodplains within the corridor are relatively small and their sensitivity to change for the purpose of the assessment is considered to be **minor.**

Drainage

Much of the area along the length of the proposed route is associated with the Lochar Water, River Annan and Kirtle Water. The existing route also crosses a series of drainage pipes and channels within the cultivated areas of the route, both of which allow road- run-off to be easily contained.

Existing Scottish Water utilities are likely to require protection or diversion as part of the detailed design for route widening including sewers and water mains.

Drainage of the increased surface area of hardstanding will be an important consideration for the detailed design given the importance of the proposed corridor in terms of flood attenuation and linkages between drainage and groundwater/ surface water quality.

The sensitivity of the existing drainage to change for the purpose of assessment is **minor.**

Groundwater

The Dumfries aquifer is crossed by the existing A75 road at the western extent. In addition, a number of sand and gravel aquifers also exist within the route corridor. The vulnerability of the ground water within this corridor is classed between 2 – 4b (5 being most vulnerable and 1 least vulnerable) on the SEPA Ground Water Vulnerability Map. The sensitivity of groundwater features is assessed as **moderate**.

3.4.5 ENVIRONMENTAL IMPACTS

Potential Impact (Both Options)	Comments
Surface Water - Construction Phase	• Earthworks and construction may pollute nearby watercourses with sedimentary material or construction materials • Earthworks may mobilise pollutants in soil and allow them to contaminate nearby water resources through surface water run-off and percolation to groundwater • Earthworks may alter the hydrology of nearby water features resulting in changes to flood risk • Accidental physical damage to banks/ stream beds may affect flow characteristics • Pollution from accidental spillage of fuels, hydraulic fluids and lubricants • Pollution due to vandalism of stores or plant • Contaminated groundwater may pollute surface water bodies • Foul drainage from washroom facilities, wheel washing, etc. impacts on receiving waters • Works to culverts may allow sediment/ construction materials to pollute watercourses • Temporary diversion of watercourses to allow culvert work to take place may impact on the ecological quality of the watercourse and free passage of fish and mammals
Surface Water - Operational Phase	• Increased volume and rate of surface runoff from impermeable road surface affecting flow characteristics or causing soil erosion • Pollution of groundwater (and eventually receiving watercourses) from accumulated contaminants in runoff from these surfaces e.g. litter, fuel, dust, surfactants, pesticides and herbicides, salt • Changes to the permeability of surface cover may impact on the underlying hydraulic regime and groundwater recharge • Surface drainage schemes may alter the flow characteristics of nearby watercourses and the water levels in nearby marshy areas • Contaminants in routine run-off or accidental spillage from the road could reach groundwater or migrate to nearby surface waters • The distributor road will have greater impermeable surface area than the natural ground cover and thus greater volume of run-off • Road drainage arrangements such as new outfalls may alter flow characteristics of receiving waters • Road drainage arrangements may alter water levels in surrounding marsh/ bog areas
Flooding	• The threat of flooding will directly impact on the proposed corridor in terms of specification for the road and any crossing points. The sections of the route which cross the floodplains could be at risk of flooding, whilst all bridges/crossing points will have to be designed to accommodate flood flows taking into account current and future climate scenarios.
Drainage	• Any major development has the potential to affect the water environment, both directly on site and indirectly in the wider catchment area. • Impacts can be divided into effects on surface water and groundwater. • The road design should include a strategy for a sustainable drainage system (SUDS). • An increase in the rate of river levels rising has been attributed to the increase in hardstanding, including roads, within river catchments. Thus, the efficacy of any attenuation system to be incorporated into the scheme should be ensured prior to completion of the proposed route.

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The proposed scheme includes the development of a new transport link between the A74 Motorway and Dumfries. This will involve the replacement of natural land cover with new road and junctions, increasing the extent of impermeable surfaces. The proposal will require

incorporation of SUDS offering a level of retention and treatment. No surface water drainage should discharge from the road directly into any watercourse.

Surface Water Quality

Overall, considering the extent of engineering and construction works required to develop this option, and the potential scale of change from baseline conditions, the assessment of the magnitude of impact on surface water and groundwater quality is assessed as **major.**

Flooding

The magnitude of potential impacts from this development option, including a series of large bridge constructions, is assessed as **major**.

Drainage

Considering the potential significant change from baseline conditions caused by this scheme the magnitude of impacts to drainage is assessed as **major**.

Summary of Environmental Impacts

Potential impacts are likely to be at their most significant during the construction phase whereby movement of materials and construction activity increases the risk of accidents. The impacts of the proposed scheme on the water environment, drainage and flooding are summarised in Table 3.6.5 below.

Table 3.4.5 Summary of Potential Impacts on Water Quality and Drainage – A709

Receptor	Sensitivity	Magnitude	Impact Significance A709
Surface Water Quality	Major	Major	Major Adverse
Groundwater Quality	Major	Major	Major Adverse
Flooding	Major	Major	Major Adverse
Drainage	Moderate	Major	Moderate/ Major Adverse

OPTION – A75 (T) DUALLING

The proposed scheme includes widening of the existing A75 transport link between the A74 Motorway and Dumfries. This will involve the replacement of land cover with new road surface, including proposed junctions, which will increase the impermeable surface area. The proposal will require incorporation of SUDS offering a level of retention and treatment. No surface water drainage should discharge from the road directly into any watercourse.

Surface Water

The project involves widening of the existing carriageway which already has drainage infrastructure in place. The potential for impacts to water quality are reduced as a result and would be mainly limited to the construction period. Considering the nature of the project and the scale of development the magnitude of impacts to water quality are considered to be **moderate.**

Flooding
The infrastructure, including bridge crossing points, exist and may require modifications. However, the widening of the A75 is unlikely to cause large scale impacts on flooding and storage capacities. The magnitude of impacts to flooding are considered to be **minor.**

Drainage
The proposed scheme will significantly increase the amount of impermeable surface area, however, the presence of existing drainage infrastructure suggests that the magnitude of drainage impacts is likely to be **minor.**

Summary of Environmental Impacts
Potential impacts are likely to be at their most significant during the construction phase. The impacts of the proposed scheme on the water environment are summarised in Table 3.4.8 below.

Table 3.4.8 Summary of Impacts on Water Quality and Drainage

Receptor	Sensitivity	Magnitude	Impact Significance
Surface Water Quality	Moderate	Moderate	Moderate (adverse)
Groundwater Quality	Major	Minor	Minor/Moderate (adverse)
Flooding	Minor	Minor	Negligible
Drainage	Minor	Minor	Negligible

3.4.6 MITIGATION

Issue	General Mitigation for both Options
Flood Risk	• A flood risk assessment should be undertaken at the detailed design stage. Provided the recommendations of this are adopted, there should be negligible impact on the flood storage capacity of the proposed corridor. • The SUDS features as outlined below should be designed to ensure adequate capacity to address the flood risk.
Proposed Drainage - SUDS	• In view of the importance of maintaining water quality of Lochar Water, the River Annan and associated lochs, considerable care will need to be taken with the design of the drainage to prevent pollutants entering the water system. • Planning Advice Note (PAN) 79 Water and Drainage provides advice on good practice in relation to the provision of water and drainage in a planning context. PAN 61 provides guidance for Planning and Sustainable Drainage Systems.
Bridges / Crossings	• Appropriate design for bridge alterations will be required to accommodate flood conditions and ensure that the road remains in use during periods of flood. It is important to consider the low lying nature of the terrain at points along the existing route and the effects of potential flooding events. • No design information is available at this stage on bridge crossing alterations, although it is anticipated that there will not be a requirement for supporting pillars within the waterbodies themselves.
Swales/Detention Ponds	• Drainage proposed would likely include swales and detention ponds i.e. linear grassed drainage features to remove pollutants and to convey to ponds or basins for further treatment.
General protection of the water	• All measures implemented will ensure that surface water quality will not be adversely affected to satisfy the requirements of the Water Framework

Issue	General Mitigation for both Options
environment	Directive and the River Basin Management Plans which are part of the implementation for the Water Framework Directive in Scotland under the Water Environment and Water Services Act (Scotland) 2003 • SEPA Pollution Control Guidance and Best Practice measures implemented • SUDS schemes should ensure water attenuation and discharge does not impact on attenuation of floodplains • Water crossings should be designed in liaison with SEPA and Best Practice Guidance. • All actions should be compliant with SPP7 Planning and Flooding

3.4.7 Residual Impacts

The residual impacts provided below for each option assume that further assessment is undertaken and that recommendations for mitigation at the detailed stage are committed.

OPTION – Lockerbie to Dumfries (South) A709

Table 3.4.8 Summary of Impact Significance on the Water Environment

Receptor	Impact Significance Before Mitigation	Residual Impact Significance (i.e. with mitigation)	Comment
Surface Water	Major Adverse	Moderate/ Major Adverse	Assumes detailed consultation with SEPA, full compliance with pollution prevention guidelines and implementation of appropriate SUDS.
Groundwater	Major Adverse	Moderate/ Major Adverse	
Flooding	Major Adverse	Moderate/ Major Adverse	
Drainage	Moderate/ Major Adverse	Minor/ Moderate Adverse	

Overall, the route is aligned across two flood plains, local aquifers and close to lochs of European importance which make this corridor sensitive in hydrological and water quality terms. **Moderate/ Major Adverse Impact.**

OPTION – A75 (T) DUALLING

Table 3.4.9 Summary of Residual Impacts on Water Quality and Drainage

Receptor	Impact Significance Before Mitigation	Residual Impact Significance (i.e. with mitigation)	Comment
Surface Water	Moderate (adverse)	Minor (adverse)	Assumes detailed consultation with SEPA, full compliance with pollution prevention guidelines and implementation of appropriate SUDS.
Groundwater	Minor/Moderate (adverse)	Negligible	
Flooding	Negligible	Negligible	
Drainage	Negligible	Negligible	

Overall, the route is aligned across three relatively small flood plains and local aquifers of varying vulnerability. However, the project is considered to have a relatively low impact as the main road drainage infrastructure is already in place. ***Minor/ Negligible Adverse Impact.***

3.4.12 SUMMARY

Table 3.4.10 below provides a summary comparison of the environmental appraisal of both proposed Dumfries to A74 Fastlink options, for impacts on the water environment.

Table 3.4.10 Summary of Potential Residual Impacts to the Water Environment

Environmental Criteria: Water Quality, Drainage and Flood Defence		
Receptor	**LOCKERBIE TO DUMFRIES (South) A709**	**A75 (T) DUALLING**
	Impact Significance After Mitigation	
Surface Water Quality	Moderate/ Major Adverse	Minor Adverse
Groundwater Quality	Moderate/ Major Adverse	Negligible
Flooding	Moderate/ Major Adverse	Negligible
Drainage	Minor/ Moderate Adverse	Negligible

3.5 GEOLOGY

3.5.1 INTRODUCTION

Geology and soils play an important part in determining the environmental characteristics of an area. The underlying geology has a major influence on landform, and rock provides parent material from which soils are formed. Road schemes may have a direct effect on the geology and soils of a locality. In addition, the historic use of the land can influence the local ground conditions, particularly in cases where previous or existing uses generate ground contamination. The objective of this section is to undertake sufficient assessment of the project to identify any significant impact on geology and soils, and in particular the environmental issues associated with any contaminated land.

This chapter presents baseline conditions in terms of the solid strata, covering drift deposits and ground contamination. The assessment focuses on predicting impacts in relation to the existing ground conditions. This chapter reviews the existing information on geology and soils and potential impacts of the proposed scheme. The objective of this section is to undertake assessment of the two Dumfries to A74 Motorway Fastlink options to identify significant impacts on geology and soils, and in particular the environmental issues associated with any contaminated land in the area.

3.5.2 METHODOLOGY

Geological information has been compiled and reviewed using the following sources:

- British Geological Survey (BGS) geological maps.
- Relevant soil survey Maps of Scotland.
- SNH SiteLink – digital database which allows search of protected sites.
- Royal Society for Nature Conservation - Regionally Important Geological Sites (RIGS)

The assessment comprises the following components:

- Description of geological environment and features;
- Consideration of potential magnitude of impacts arising from proposed scheme during construction and operation;
- Description of proposed mitigation measures; and
- Initial assessment of residual impact significance.

The significance of impacts on geology was determined using the general approach described in Chapter 3.2, i.e. impact significance determined by a combination of receptor sensitivity and or importance and impact magnitude.

Table 3.5.1 defines the criteria that were used to assign receptor importance:

Importance	Criteria	Typical Examples
Very High	Attribute has a high quality and rarity on a regional or national scale.	Geology • Site protected under EU or UK legislation, e.g. SSSI, SPA, SAC, Ramsar site.
High	Attribute has a high quality and rarity on a local scale.	Geology • Site protected under UK legislation, e.g. SSSI.
Medium	Attribute has a medium quality and rarity on a local scale.	Geology • Site protected under local designation e.g. SINS or RIGS
Low	Attribute has a low quality and	Geology

	rarity on a local scale.	• Site not protected

Table 3.5.2 Example Criteria to Evaluate Impact Magnitude:

Magnitude	Criteria	Example
Major (adverse)	Loss of attribute and/or quality and integrity of the attribute.	• Major shift away from the baseline conditions. Permanent Change. • Extensive change to the systems or processes or features that form the basis for a geological/ geomorphological SSSI designation
Moderate (adverse)	Impact on integrity of attribute or loss of part of attribute.	• A significant shift from the baseline conditions that may be long-term or temporary. • Moderate change to the systems or processes or features that form the basis for a geological/ geomorphological SSSI designation
Minor (adverse)	Results in some measurable change in attribute quality or vulnerability.	• Minor shift away from the baseline conditions that may be short-term or temporary. • Minor change to the systems or processes or features that form the basis for a geological/ geomorphological SSSI designation
Negligible	Results in effect on attribute but of insufficient magnitude to affect the use or integrity.	• Very slight change from the baseline conditions such that little or no discernible effect upon the geology, geomorphology or soils results • No change to the systems or features that form the basis for a geological/ geomorphological SSSI designation

Table 3.5.3 Matrix for the derivation of the significance of impact.

Magnitude of Impact		Receptor Importance		
		Low	**Medium**	**Very High / High**
	Major	Moderate	Moderate/Major	Major
	Moderate	Minor/Moderate	Moderate	Moderate/Major
	Minor/ Negligible	Negligible	Minor	Minor/Moderate

3.5.3 BASELINE INFORMATION

Solid and Drift Geology

The solid geology occurring within the region of both corridors comprises Silurian Carboniferous, Permian and Triassic age rocks. The Silurian rocks consist of tightly folded and in places vertically inclined mudstones, greywackes, grift conglomerates and flaggy sandstones. The Permian rocks are breccias, red sandstones and mudstones. The Carboniferous rocks are from the Limestone series and may comprise sandstones, siltstones, mudstones, cementstones, coals and seat earths. Triassic rocks are regularly bedded micaceous sandstones shales and marles.

The drift geology within the route corridors is dominated by glacial deposits, however there is a significant amount of Alluvian. The glacial deposits comprise "boulder clay" which is described as a grey to red brown deposit containing cobbles of greywackes, sandstone and locally, granite. Glacial meltwater deposits comprise sands and gravels occurring as moundy terraces or isolated mounds deposited in late glacial times. The alluvium, associated with rivers, river plains comprises silt, sand and gravel deposit in present and former rivers and lakes often forming a series of terraces. Peat is found in a number of areas along the proposed corridors.

Floodplains/Topography/Groundwater
Detailed baseline for each scheme are provided below.

OPTION – Lockerbie to Dumfries (South) A709

Solid and Drift Geology
Importance of solid and drift geology along the corridor of the A709 (South) Option is assessed as **medium**. Further ground investigation will be required at detailed design stage to ensure that there are no geological constraints.

Floodplains
The proposed corridor crosses the relatively large floodplain of the River Annan, which will impact on the design of the route section from Parkfoot west of the Lochmaben Lochs to just before the motorway junction at Hallmuir. Additionally, a smaller section of the route corridor will be affected by the smaller floodplain of Lochar Water near Dumfries. Importance of the floodplains crossed by the proposed route are considered to be **high**.

Protected Sites
There are no sites designated for their importance in relation to geology or geomorphology however there are constraints with regard to natural heritage protection including the Regionally Scenic Area (RSA) of Mid-Annandale and Torthorwald Ridge. Lack of protected geological sites suggests the importance of geology is low. Despite this fact, the designated RSA is considered to have a **medium** sensitivity to this proposal.

Topography
The proposed corridor ascends fairly rapidly between Roucan and Ryemuir from approximately 15m above sea level to 130m. This stretch will require cut and fill as the land peaks and troughs on the upward ascent, presenting potentially significant engineering problems at the detailed design stage. Similarly the descent from Ryemuir to Marmeadow at 55m, and stretch from Marmeadow to the A74 motorway over the River Annan will also require major cut and fill works. The importance of topography is considered to be **high**. Ground Investigations would be required for EIA Assessment to determine detailed ground conditions and the likely impacts.

Groundwater
The groundwater regime at the site and impacts of the proposed development upon it are covered in full in Section 3.6 Water Quality, Drainage and Flood Defence.

OPTION – A75 (T) DUALLING

Solid and Drift Geology
Importance of drift and solid geology along this corridor is considered to be **medium**.Further ground investigation will be required at detailed design stage to ensure that there are no geological constraints.

Floodplains

The proposed corridor crosses three, relatively narrow areas which are prone to flooding from three rivers including Lochar Water, River Annan and Kirtle Water as shown in Figure 3.6.2. Importance of these three floodplains which are crossed by the existing A75 are considered to be **medium**.

Protected Sites
There are no sites designated for their importance in relation to geology or geomorphology however there are constraints with regard to natural heritage protection including the Regionally Scenic Area (RSA) of Mid-Annandale and Torthorwald Ridge and for the purpose of this assessment is provided an importance of **medium**.

Topography
The entire route of the A75 is relatively undulating, rising from Collin travelling eastwards to the highest point of 105m above sea level just before Carrutherstown. Beyond Carrutherstown the road undulates gradually towards Annan and then onto Gretna at a height of between 70 and 20m. The importance of topography is assessed at **medium.** Ground Investigations would be required for EIA Assessment to determine detailed ground conditions and the likely impacts.

Groundwater
The groundwater regime at the site and impacts of the proposed development upon it are covered in full in Section 3.6 Water Quality, Drainage and Flood Defence.

3.5.4 ENVIRONMENTAL IMPACTS

Potential impacts arising on or from geology are identified as:

- Loss or disturbance to important geological features
- Loss or sterilisation of mineral reserves
- Mine workings/ stability issues
- Contaminated land issues

A comprehensive Geotechnical investigation and cut and fill balance calculations will be required for the chosen route once the proposed corridor has been finalised. No information is available on potential mineral reserves, mine workings or stability.

OPTION – Lockerbie to Dumfries (South) A709

Construction of a new road along the existing proposal is likely to result in impacts of a **major** magnitude.

Table 3.5.4 Potential Significance of Impacts on Geology

Receptor	Importance	Magnitude	Impact Significance
Solid & Drift Geology	Medium	Major	Moderate/ Major Adverse
Floodplains	High	Major	Major
Protected Sites	Medium	Major	Moderate/ Major Adverse
Topography	High	Major	Major

OPTION – A75 (T) DUALLING

The proposal includes route widening which is considered to potentially result in impacts of a **minor**/ **moderate** magnitude.

Table 3.5.6 Potential Significance of Impacts on Geology

Receptor	Importance	Magnitude	Impact Significance
Solid & Drift Geology	Medium	Minor/ Moderate	Moderate
Floodplains	Medium	Minor/ Moderate	Moderate
Protected Sites	Medium	Minor/ Moderate	Moderate
Topography	Medium	Minor/ Moderate	Moderate

3.5.5 MITIGATION

Mitigation will be required to protect soil conditions on site, to allow the establishment of vegetation in accordance with the landscape design proposals. Mitigation measures for the protection of soils should be to follow good practice methodologies with special reference to over compaction, drainage and soil erosion. Cut and Fill balance calculations should aim to reduce the impacts of construction of the scheme.

Although no contamination has been identified at this stage, site investigations will be required to establish any contamination issues. Appropriate health and safety measures should be adopted to reduce the exposure of site workers to contaminated material.

Full mitigation against the impacts of the construction of the development will be required during construction, earth movement, and landscaping.

3.5.6 RESIDUAL IMPACTS

OPTION – Lockerbie to Dumfries (South) A709

Receptor	Impact Significance Before Mitigation	Impact Significance After Mitigation	Comments
Solid & Drift Geology	Moderate/ Major Adverse	Moderate	Assumes compliance with best practice
Floodplains	Major	Moderate	Assumes compliance with best practice and use of SUDS where required
Protected Sites	N/A	N/A	Assumes compliance with best practice
Topography	Major	Moderate	Assumes compliance with best practice

Although there is a lack of designation on the preferred corridor the scale of the proposal is such that impacts will be great, in particular the level of cut and fill required to construct the route. **Moderate Adverse Impacts**.

OPTION – A75 (T) DUALLING

The residual impacts assume that recommended mitigation measures, at the project level, are implemented in full.

Table 3.5.7 Potential Significance of Residual Impacts to Geology

Receptor	Impact Significance Before Mitigation	Impact Significance After Mitigation	Comments
Solid & Drift Geology	Moderate (adverse)	Minor (adverse)	Assumes compliance with best practice
Floodplains	Moderate (adverse)	Minor (adverse)	Assumes compliance with best practice and use of SUDS where required
Protected Sites	N/A	N/A	Assumes compliance with best practice
Topography	Moderate Adverse	Minor/ Moderate Adverse	Assumes compliance with best practice

Considering the lack of designations and the presence of existing infrastructure, the level of change from the current baseline is considered to be moderate. Overall the impacts to geology are considered to be **Minor Adverse Impacts**.

3.5.11 SUMMARY

Table 3.5.8 below provides a comparison summary of the environmental appraisal of both proposed Dumfries to A74 Fastlink options, for geology.

Table 3.5.8 Comparison Summary of Potential Residual Impacts to Geology

Environmental Criteria: Geology		
Receptor	LOCKERBIE TO DUMFRIES (South) A709	A75 (T) DUALLING
	Impact Significance After Mitigation	
Solid & Drift Geology	Moderate (adverse)	Minor (adverse)
Floodplains	Moderate (adverse)	Minor (adverse)
Protected Sites	Moderate (adverse)	Minor (adverse)
Topography	Moderate (adverse)	Minor Moderate Adverse

3.6 BIODIVERSITY, ECOLOGY & NATURE CONSERVATION

3.6.1 Introduction

The aim of the ecology section is to collate and summarise all the available data and to evaluate it in the context of development of each of the A74 Motorway Fastlink options. Based on the evaluation of data, this section provides a preliminary assessment of the significance of impacts, with mitigation and a summary of potential residual impacts. Further ecological assessment is likely to be required at the detailed design stage.

3.6.2 Legislation & Guidance

Relevant Designations and Guidance includes:

Legislation	Summary Description
Habitats Directive (EC 92/43/EEC)	Protects endangered or vulnerable habitats and species on European-wide basis
1979 EC Wild Birds Directive	As per habitats Directive, for birds.
Conservation (Natural Habitats Etc) Regulations 1994	Transposes habitats and Birds Directives into UK Law.
Nature Conservation (Scotland) Act 2004.	Identifies a duty to further the conservation of biodiversity.
United Kingdom Biodiversity Action Plan (UKBAP).	This Plan implements the Government's commitment to the Earth Summit in Rio de Janeiro in 1992. It identifies priority habitats and species for the UK
Scottish Biodiversity Strategy.	Scottish Governments strategy for the conservation and enhancement of biodiversity in Scotland.
Scottish Biodiversity 100 List.	Scottish Government's priority list for biodiversity action.
Biodiversity Action Plans	Implements UKBAP and Scottish Government biodiversity initiatives at local level
Trunk Road Biodiversity Action Plan	Scottish executive review publication
Dumfries & Galloway Biodiversity Action Plan, 1999	Implements UKBAP and Scottish Government biodiversity initiatives at local level
Natural Heritage Futures – Western Southern Uplands and Inner Solway	This recent publication by Scottish Natural Heritage provides a vision of sustainable land use and development. It seeks to reverse trends in decreasing diversity, loss of habitat and loss of local character. The key priorities are an integrated approach to all land uses and the need for dialogue to ensure this co-ordinated approach.
Population Status of Birds in the UK: Birds of Conservation Concern 2002-2007	This document is newly published by the RSPB and identifies UK bird species in terms of conservation concern with Red List species being of highest concern.
Protected Sites	Wildlife and Countryside Act 1981, and later amendments, and Nature Conservation (Scotland) Act 2004.
Protected Species	There is a legal obligation to ensure that protected species and their shelters are not disturbed or damaged. Species-specific legislation has been enacted and may be relevant if protected species

	are found during surveys.
Other Guidance	Inventory of Ancient, Long-established & Semi-natural Woodland Drainage assessment, a guide for Scotland. SEPA 2005

Protected species legislation includes the following:

European	
Otter	• Otter are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) as well as under the Regulations 39 and 43 of the Conservation (Natural Habitats &c.) Regulations 1994.
Bats	• Bats are also protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) as well as under the Regulations 39 and 43 of the Conservation (Natural Habitats &c.) Regulations 1994. • They are a priority species in the UK and Dumfries and Galloway Local Biodiversity Action Plan.
National	
Badger	• Badger and their setts are protected in the UK under the protection of Badgers Act and with further legislation by the Nature Conservation (Scotland) Act 2004.
Water Vole	• Water Vole populations have crashed in the UK and this is reflected in populations in the Dumfries area. Water Vole are protected under the Wildlife & Countryside Act 1981 as amended and are a priority species in both UK and Local Biodiversity Action Plans.
Other	
Birds	• Pink-footed Geese are part of the Solway wintering Icelandic population and are an individual qualifying species for the Castle Loch SPA. • Goldeneye, Whooper Swan, Barnacle Goose, Bar Tailed Godwit, Golden Plover and Redshank are also SPA qualifying species for the Upper Solway Flats and Marshes. • Barn Owl are a Schedule 1 species protected under the Wildlife & Countryside act 1981 (as amended)
Japanese Knotweed	• Stands of Japanese knotweed may be present along the proposed route. The presence of this species results in a legal requirement for Dumfries and Galloway Council to adequately address potential issues under the Wildlife and Countryside Act, 1981. Managing Japanese knotweed is the responsibility of the owner/occupier of a site. Prior to any handling and disposal of this alien species advice should be sought from SEPA.

3.6.3 Methodology

Impact Assessment Criteria

An assessment of impacts on ecology and nature conservation requires consideration of the relative importance of a site and a judgement as to the severity of any impact on the site.

Importance of known nature conservation interest

Table 3.6.1 describes the relative importance of different sites of nature conservation interest.

Wildlife Evaluation Criteria	
Level of value	**Examples**

International	**Sites**: All awarded, proposed or candidate sites for an international designation e.g. Special Protection Areas, Biosphere Reserves, Special Areas of Conservation. **Species:** Sites which are critical for those species listed as internationally important e.g. in European Habitats Directive or European Bird Directive.
National	**Sites**: All notified Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNRs), Marine Nature Reserves (MNRs), any National Conservation Review Grade 1 site. Any site with viable areas of any key habitat identified in the UK Biodiversity Action Plan or Scottish Manual for Local Biodiversity Action Plans. **Species**: Those given special protection under the Wildlife and Countryside Act 1981 and amendments. All Red Data Book Nationally Notable species. All species listed in the long list of the UK Biodiversity Action Plan. Also those included in the short and middle lists of the UK Biodiversity Action Plan and species listed in the Scottish Manual for Local Biodiversity Action Plans.
Regional	**Sites:** Any sites with viable habitats identified as priority habitat in a Regional Biodiversity Action Plan. All Listed Wildlife Sites. Any other sites with regionally important habitats not previously identified. **Species:** All species listed as priority species in Regional Biodiversity Action Plans. All Red Data Book Nb and N species. Species which have been identified as scarce in local publications e.g. a local flora, bird atlas.
Local	**Sites:** Sites with special importance locally for amenity education and those locally scarce habitats not previously identified e.g. a locally rich ditch, hedgerow or grassland. **Species:** Those with special importance in the parish or neighbourhood e.g. a Rookery or mature native trees.

Assessment of Severity of Effect

Table 3.6.2 Criteria for determining Severity of Effect

Severe	Loss or complete change to an entire site. Loss or severe depletion of a population of an internationally important, rare or protected habitat or species caused by loss of habitat, severance or disturbance.
Moderate	Loss or complete change to part of the site, or minor change over an entire site. Loss, or deletion, of a nationally important protected or nationally rare habitat or species through habitat loss, severance or disturbance.
Slight	Minor change to part of a site, or loss of a relatively small proportion of a large site. Potential for a slight reduction of a habitat or population locally important, nationally rare or regionally uncommon species, of minimal significance to viability.
Negligible	Sites and/or rare and uncommon species not significantly affected
Neutral	No likely change.

Overall Level of Impact

The assessment of impact has been based on the site importance and severity of effect criteria, which have been integrated into an Impact Matrix (Table 3.6.2). The assessment of impacts requires consideration of construction as well as operational phases. In this respect change can include disturbance arising from noise impacts.

Table 3.6.3 Ecology & Nature Conservation matrix: Guide to magnitude of impacts

Severity of Effect	Site Importance			
	International	National	Regional	Local
Severe	Extremely severe	Very severe	Severe- Very Severe	Moderate
Moderate	Very Severe	Severe	Moderate-Severe	Slight-Moderate
Slight	Severe	Moderate	Slight-Moderate	Slight
Negligible	Slight-Moderate	Slight	Negligible-Slight	Negligible

3.6.3 BASELINE INFORMATION

OPTION – Lockerbie to Dumfries (South) A709

Designated Sites

The route corridor crosses directly over one site designated as ancient woodland and also passes close to a number of sites designated for their importance to nature conservation, in particular the region surrounding Lochmaben Lochs close to the River Annan. These sites of importance to nature conservation are listed as follows:

Designated Sites and Level of Value
European • Castle Loch - Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) & Ramsar
National • Lochmaben Lochs SSSI – A set of three lochs north west of Lochmaben: – Blind Loch – Upper Loch – Mill Loch
Local • Castle and Hightae Mill Loch - Local Nature Reserve (LNR)

In addition to these sites within close proximity to the route corridor it is important to consider the potential indirect impacts of the development on the Upper Solway Flats and Marshes, designated as Sites of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar, and the Solway Firth which is also designated as a Special Protection Area (SPA). These areas are located some 14km from the proposed route alignement downstream from the main catchment areas covering the corridor.

The citations state the following in relation to the SSSI, SPA and SAC:

- The Upper Solway Flats and Marshes, which are designated as SSSIs on biological grounds due to its populations of breeding birds, natterjack toads, invertebrates and habitats- estuarine saltmarshes or merses (SNH 1988).
- The Upper Solway Flats and Marshes SPA is designated for its coastal and estuarine habitats and the national and international importance for wintering wildfowl and wading birds that these habitat support.
- The Solway Firth SAC is designated for its coastal habitats including: Atlantic salt meadows, dune grassland and estuaries; and marine species, sea and river lamprey.

- Castle Loch SPA is designated for its large populations of winter roosting Pink Footed Geese.

Dumfries and Galloway Local Biodiversity Action Plan

The importance of local biodiversity is illustrated in the Dumfries and Galloway Local Biodiversity Action Plan (LBAP, 1999). This plan details a number of species which require conservation status due to human pressures. Species which may be impacted upon by the development listed in the LBAP include otter, badger, squirrels and bats. These species should be considered as part of detailed alignment design and mitigation measures.

Baseline Conditions for Flora and Fauna

Habitats

A high level desk study identified the following habitats which are either crossed by, or close to, the corridor alignment:

- Agricultural land dominated by improved grassland.
- Field margins and hedgerows
- Rivers and streams
- Ancient and Semi-Ancient, Plantation Woodland
- Wetland, including: floodwater pasture, wet grassland and wet woodland
- Rush pastures

Further, detailed field studies and habitat surveys will be required to determine the specific habitats present along the route alignment.

Protected Species

Habitats and designated sites detailed above (Chapter 3.12.3) are likely to support the following protected species. Ecological surveys will be required at the detailed design phase to ascertain the presence/ absence and location of protected species.

Species	Comments/Requirements
Bats	The presence of mature trees with suitable cavities for roosting bats is likely along the proposed route. Any works on the route where trees are likely to be affected will need to be surveyed for signs of roosts pre-construction and the appropriate action taken by way of licensing and mitigation where bats are found to be in conflict with the scheme.
Badger	It is possible that the route passes through the territory of a social group(s) and a full corridor survey at the appropriate time (February/March) will be required to identify likely impacts and mitigation measures. Mitigation may have to include Badger underpasses at appropriate points to avoid road casualties arising from road traffic.
Water Vole	A presence/absence survey followed by a full survey if signs of water vole is found would be recommended.
Barn Owl	A species-specific survey would be required at the detailed design stage if suitable habitat is affected by the route.
Pink-footed Geese	Part of the Solway wintering Icelandic population and are an individual qualifying species for the Castle Loch SPA. Bird surveys will be required as part of any EIA/AA for the route.
Other birds	Goldeneye, Whooper Swan, Barnacle Goose, Bar Tailed Godwit, Golden Plover and Redshank are also SPA qualifying species for the Upper Solway Flats and Marshes. Bird surveys will be required as part of any EIA/AA for the route.

Summary of Known Conservation Interest

Desk-top data collation to date has identified sites and species as being of particular importance, details of which are summarised in Table 3.6.3

Table 3.6.4 Known interest on, or adjacent to, the proposed route

	Inter-national	***National***	***Regional***	***Local***
Sites				
Castle Loch SPA	+			
Solway Firth SSSI/SPA	+			
Upper Solway Flats and Marshes SSSI/SPA	+			
Solway Firth Ramsar	+			
Lochmaben Lochs SSSI		+	+	
Hightae MillLoch SSSI		+	+	
Castle and Hightae LNR				+
Habitats				
Agricultural land dominated by improved grassland.		+	+	
Field margins and hedgerows		+	+	
Rivers and streams		+	+	
Ancient and Semi-Ancient, Plantation Woodland		+	+	
Wetland, including: floodwater pasture, wet grassland and wet woodland		+	+	
Species				
European Protected Species of bird including Pink-footed Goose.	+			
Barn Owl		+		
Otter	+	+	+	
All Bat species	+	+	+	
Water Vole		+	+	
Badger		+	+	
Mature trees				+
Inundation wetland				+
Japanese Knotweed		+		

The above table is based on available data at the time of reporting and is likely to change/ expand as future surveys of the proposed route are undertaken at the detailed design stage. It is clear that at this stage there is significant range of sites, habitats and species from estuary and mudflat, two Annex 1 EC Habitats, through to features of local wildlife, amenity and landscape importance such as mature trees.

OPTION – A75 (T) DUALLING

Designated Sites

The A75 carriageway already exists and passes through or close by a number of sites designated as Ancient Woodland. In addition the route corridor also contains a number of sites designated for their importance to nature conservation. These sites of importance to nature conservation are listed as follows:

Designated Sites and Level of Value
European • Solway Mosses North SAC • Upper Solway Flats and Marshes SPA, SSSI & Ramsar • Solway Firth SAC
National • Longbridge Muir SSSI • Royal Ordnance Powfoot SSSI • Caerlaverock National Nature Reserve (NNR)

The route corridor is located between 1-1.5km distance from the Upper Solway Flats and Marshes SPA, Solway Firth SPA and Solway Mosses North SPA and it is important to consider the potential indirect impacts of the development on these sites.

The citations state the following in relation to the SSSI, SPA and SAC:

- The Upper Solway Flats and Marshes, which are designated as SSSIs on biological grounds due to its populations of breeding birds, natterjack toads, invertebrates and habitats- estuarine saltmarshes.
- The Upper Solway Flats and Marshes SPA is designated for its coastal and estuarine habitats and the national and international importance for wintering wildfowl and wading birds that these habitat support.
- The Solway Firth SAC is designated for its coastal habitats including: Atlantic salt meadows, dune grassland and estuaries; and marine species, sea and river lamprey.
- Solway Mosses North SAC is designated for the habitats active raised bogs and degraded raised bogs.

Dumfries and Galloway Local Biodiversity Action Plan

The importance of local biodiversity is illustrated in the Dumfries and Galloway Local Biodiversity Action Plan (LBAP, 1999). This plan details a number of species which require conservation status due to human pressures. Species which may be impacted upon by the development listed in the LBAP include otter, badger, red squirrel and bats. These species should be considered as part of detailed alignment design and mitigation measures.

Habitats

A high level desk study identified the following habitats which are either crossed by, or close to, the corridor alignment:

- Agricultural land dominated by improved grassland.
- Field margins and hedgerows
- Rivers and streams
- Ancient and Semi-Ancient, Plantation Woodland (including AW at Kelhead Moss Plantation)
- Wetland, including: floodwater pasture, wet grassland and wet woodland
- Rush pastures

Further, detailed field studies and habitat surveys will be required to determine the specific habitats present along the route alignment.

Protected Species

Habitats and designated sites detailed above are likely to support the following protected species. Ecological surveys will be required at the detailed design phase to ascertain the presence/ absence and location of protected species.

Species	Comments/Requirements
Otter	A presence/absence survey followed by a full survey if signs of otter are found would be recommended.
Bats	The presence of mature trees with suitable cavities for roosting bats is likely along the proposed route. Any works on the route where trees are likely to be affected will need to be surveyed for signs of roosts pre-construction and the appropriate action taken by way of licensing and mitigation where bats are found to be in conflict with the scheme.
Badger	It is possible that the route passes through the territory of a social group(s) and a full corridor survey at the appropriate time (February/March) will be required to identify likely impacts and mitigation measures. Mitigation may have to include Badger underpasses at appropriate points to avoid road casualties arising from road traffic.
Water Vole	A presence/absence survey followed by a full survey if signs of water vole is found would be recommended.
Barn Owl	A species-specific survey would be required at the detailed design stage if suitable habitat is affected by the route.
Pink-footed Geese	Part of the Solway wintering Icelandic population and are an individual qualifying species for the Castle Loch SPA. Bird surveys will be required as part of any EIA/AA for the route.
Other birds	Bar-tailed godwit, Barnacle goose, Cormorant, Curlew, Dunlin, Golden plover Goldeneye, Great crested grebe, Grey plover and Icelandic Black-tailed Godwit are also SPA qualifying species for the Upper Solway Flats and Marshes. Bird surveys will be required as part of any EIA/AA for the route.

Summary of Known Conservation Interest

Desk-top data collation to date has identified sites and species as being of particular importance, details of which are summarised in Table 3.6.3

Table 3.6.5 Known interest on, or adjacent to, the proposed route

	Inter-national	***National***	***Regional***	***Local***
Sites				
Solway Mosses North SAC	+			
Solway Firth SSSI/SAC/Ramsar	+			
Upper Solway Flats and Marshes SSSI/SPA	+			
Longbridge Muir SSSI		+		
Royal Ordnance Powfoot SSSI		+		
Caerlaverock National Nature Reserve (NNR)		+		
Habitats				
Agricultural land dominated by improved grassland.		+	+	
Field margins and hedgerows		+	+	

	Inter-national	***National***	***Regional***	***Local***
Rivers and streams		+	+	
Ancient and Semi-Ancient, Plantation Woodland		+	+	
Wetland, including: floodwater pasture, wet grassland and wet woodland		+	+	
Species				
European Protected Species of bird	+			
Barn Owl		+		
Otter	+			
All Bat species	+			
Water Vole		+		
Badger		+		
Mature trees				+
Inundation wetland				+
Japanese Knotweed		+		

The above table is based on available data at the time of reporting and is likely to change/ expand as future surveys of the proposed route are undertaken at the detailed design stage. It is clear that at this stage there is a significant range of sites, habitats and species from estuary and mudflat, two Annex 1 EC Habitats, to features of local wildlife, amenity and landscape importance such as mature trees potentially sensitive to the A75 dualling scheme.

3.6.4 POTENTIAL ENVIRONMENTAL IMPACTS

OPTION – Lockerbie to Dumfries (South) A709

The proposed scheme includes the development of a new transport link between the A74 Motorway and Dumfries. This will involve significant land take through the replacement of natural and semi-natural land cover with new road infrastructure and any proposed junctions.

Not all impacts associated with the development can be predicted at this stage due to the lack of detailed information relating to ecological elements of the proposed corridor and detailed design information. However, an initial assessment providing a generic outline of potential impacts is detailed below.

Designated Sites
The scheme is unlikely to directly impact upon designated sites however the scale of the project will involve significant engineering works with potential to cause negative impacts to designated areas located close to the route. In addition, construction works can potentially impact on the Solway Firth, Flats and Marshes SPAs through accidental pollution of water courses from toxic chemicals or materials used on site.

Initial assessment of the severity of impacts of the proposed scheme on designated sites is considered to be **severe.**

Habitat
The proposal will unavoidably include significant land take and loss of habitat of varying importance to nature conservation. An assessment of impact severity to habitats along the proposed corridor is **severe**.

Species
Lack of specific information relating to the presence of species along the proposed route makes it difficult to predict potential severity of impacts. However, a number of protected species are likely to be present at sites and habitats based along the route including streams, rivers, hedges, mature trees and areas of scrub. Severance whereby the road physically disrupts or blocks free movement of mobile species between habitats will be a significant issue. Considering the scale of the project and the likelihood of the presence of protected species, the severity of potential impacts is considered to be **severe.**

Summary of Environmental Impacts
Potential impacts are likely to be at their most significant during the construction phase. The impacts of the proposed scheme on biodiversity, ecology and nature conservation are summarised in Table 3.6.4 below.

Table 3.6.6 Summary of Potential Impacts on Biodiversity, Ecology and Nature Conservation

Receptor	Importance	Severity of Impact	Impact Significance
Designated Sites	International/ National/ Regional	Severe	Extremely Severe
Habitats	International/ National/ Regional	Severe	Extremely Severe
Species	International/ National	Severe	Extremely Severe

OPTION – A75 (T) DUALLING

The proposed scheme includes the dualling (widening) of the existing A75 carriageway to allow an increased traffic flow rate between Dumfries and the A74 Motorway. The scheme will involve significant land take along the length of the A75, however, at this stage, details of the quantity of land required for the road improvements are not available.

Designated Sites
The widening scheme is likely to directly impact upon ancient woodland designated sites through land take. Other designated sites located within the route corridor are unlikely to be impacted directly. However, consideration should be made to the scale of engineering works required to deliver the project and the potential for impacts/ disturbance to designated sites situated close to the route, through accidental pollution from materials used on site.

Initial assessment of the severity of impacts of the proposed scheme on designated sites is considered to be **slight.**

Habitat
The proposal will unavoidably include significant land take and loss of habitat of varying importance to nature conservation. An assessment of impact severity to habitats along the proposed corridor is **moderate**.

Species
No species surveys have been undertaken for this scheme, however it is assumed that protected species do exist at a number of locations along the route corridor. Despite this the route infrastructure already exists and issues such as severance for species movement or migration are unlikely to significantly change. The severity of the project on species is therefore assessed as **slight**.

Summary of Environmental Impacts

Potential impacts are likely to be at their most significant during the construction phase. The impacts of the proposed scheme on biodiversity, ecology and nature conservation are summarised in Table 3.6.4 below.

Table 3.6.7 Summary of Potential Impacts on Biodiversity, Ecology and Nature Conservation

Receptor	Importance	Severity of Impact	Impact Significance
Designated Sites	International/ National	Slight	Severe
Habitats	National/ Regional	Moderate (adverse)	Severe
Species	International/ National	Slight	Severe

3.6.5 MITIGATION

At this stage any suggested mitigation can only be generic with project level mitigation to follow further design, routing and site-surveys.

Any scheme must seek to *avoid* direct or indirect adverse impacts on the initial list of sites, habitats and species of nature conservation importance identified in Table 3.6.3. Where effects cannot be avoided then advice must be taken from appropriate statutory bodies, including SNH, to *minimise* the magnitude and severity of effect.

Mitigation by good design and best practice during construction can make a significant contribution through minimising the design footprint and adopting a sensitive wayleave whereby construction offices, machine compounds and material storage areas are sited away from areas of known interest.

Construction practices must conform to an agreed Code of Construction Practice/mitigation presented in any Environmental Statement and all personnel should be fully informed of obligations with regard to flora and fauna.

If unavoidable effects, after mitigation, are identified then *compensation* must be considered to offset any loss of biodiversity. A road corridor does offer significant opportunities for the creation of semi-natural habitats using native species especially where new habitat creation adjoins local areas of existing interest. For example, scrub is of greater value if it is created adjacent to existing scrub not affected by the proposal. Compensation can only be effective if new habitat is managed appropriately in the long term.

3.6.6 RESIDUAL IMPACTS

OPTION – Lockerbie to Dumfries (South) A709

Table 3.6.8 Summary of Potential Impacts on Biodiversity, Ecology and Nature Conservation

Receptor	Impact Significance Before Mitigation	Residual Impact Significance (i.e. with mitigation)	Comment
Designated Sites	Extremely Severe	Very Severe	Assumes implementation of all appropriate mitigation measures. However, a precautionary approach has
Habitat	Extremely Severe	Very Severe	

Species	Extremely Severe	Very Severe	been taken at this stage due to lack of detailed design information and survey data.

The proposed scheme includes the development of a new transport link between the A74 Motorway and Dumfries. This will involve significant land take through the replacement of natural and semi-natural land cover with new road infrastructure and any proposed junctions. Additionally, the ecological sensitivity of the proposed corridor alignment is considered to be high. **Major Adverse Impacts.**

OPTION – A75 (T) DUALLING

Receptor	Impact Significance Before Mitigation	Residual Impact Significance (i.e. with mitigation)	Comment
Designated Sites	Severe	Slight-Moderate/ Negligible	Major infrastructure already exists. Assuming implementation of all appropriate mitigation measures.
Habitat	Severe	Slight-Moderate/ Negligible	
Species	Severe	Slight-Moderate/ Negligible	

Overall the ecological importance of the proposed corridor is international, however the scale of the project is envisaged to have a slight impact due to construction works being limited to land which is already built or of reduced ecological importance. **Minor Adverse Impact.**

3.6.11 SUMMARY

A comparison summary of potential residual impacts arising from the Dumfries to A74 Motorway Fastlink proposals on biodiversity, ecology and nature conservation is provided in Table 3.6.9 below.

Table 3.6.9 Comparison Summary of Potential Residual Impacts to Wildlife

Environmental Criteria: Biodiversity, Ecology and Nature Conservation		
Receptor	**LOCKERBIE TO DUMFRIES (South) A709**	**A75 (T) DUALLING**
	Impact Significance After Mitigation	
Designated Sites	Very Severe	Slight-Moderate/ Negligible
Habitats	Very Severe	Slight-Moderate/ Negligible
Species	Very Severe	Slight-Moderate/ Negligible

3.7 LANDSCAPE & VISUAL AMENITY

3.7.1 INTRODUCTION

Landscape impacts relate to the effects of a development on landscape features, such as topography, vegetation, and built elements, and on landscape character, the "sense of place" which defines a location.

Visual impacts are the effects of a development upon views experienced by individual receptors, which may be people using houses, footpaths, roads, offices, etc, and the effects on the overall visual quality or visual amenity of an area.

3.7.2 METHODOLOGY

This assessment broadly follows the methodology outlined in DMRB Volume 11, Section 3, Part 5. This methodology has been somewhat simplified to reflect the more strategic nature of the assessment, and the less detailed proposals which are being assessed.

The baseline landscape has been assessed based on its existing character, and any relevant designated landscapes. The *quality* and the *value* of the landscape are assessed, based on the importance, rarity and attributes of the landscape. An assessment of the *susceptibility* of the landscape, i.e. its general vulnerability to change, is made, leading to a judgement of the *sensitivity* of the landscape to the proposed road development. The visual baseline is assessed based on the visual receptors who currently have views of the corridor, and the quality of their views, again leading to a judgement of *sensitivity* to visual change. Sensitivity is assessed as low, medium, or high.

The physical changes to the landscape, which is likely to arise from the construction, operation, and maintenance of the scheme, are set out. The magnitude of the change to the landscape, and to views, is assessed, and this is combined with the sensitivity to determine the level of impact, as set out in Table 3.9.1 below.

Table 3.7.1: Impact assessment

Sensitivity to change	Magnitude of change		
	Large	Medium	Small
High	Major	Moderate-major	Moderate
Medium	Moderate-major	Moderate	Minor-moderate
Low	Moderate	Minor-moderate	Minor

In terms of the Environmental Impact Assessment (Scotland) Regulations, impacts greater than *moderate* are usually considered to be "significant impacts".

OPTION – Lockerbie to Dumfries (South) A709

3.7.3 LANDSCAPE BASELINE

Landscape Character – Regional Landscape Character Assessment

The Landscape Character of the area of the proposed corridor is described in the SNH Landscape Character Assessment for Dumfries and Galloway (Land Use Consultants, 1998). The route lies across the Dumfries Coastlands regional landscape character, an assemblage of lowland and coastline landscape types forming a coastal belt between the Southern Uplands and the Solway Firth. Characterised by intensive agriculture, settlement, and transport corridors, and is dissected by rivers and floodplains.

At a local scale, the route corridor passes through three landscape character types; Type 6: **Lower Dale,** Type 7: **Middle Dale** and Type 16: **Upland Fringe**. As a result the landscape *quality* of the road corridor varies along its length:

- The area between Dumfries and Torthorwald Ridge is ordinary to good quality.
- Areas of high quality are found near Lochmaben between Hunter House and Heck, with characteristic tree belts, hedges and low rolling ridges.
- The final section between Lochmaben and Lockerbie is generally of good quality.

Landscape Designations

- The area to the west of the corridor is protected by Dumfries and Galloway Council as a Regional Scenic Area (RSA) (Mid-Annandale and Torthorwald Ridge). These areas are valued regionally and locally for their special scenic qualities and the contribution they make to tourism and quality of life. The road corridor passes through the RSA between Torthorwald and Parkfoot.

- There are no sites listed on the Inventory of Historic Gardens and Designed Landscapes, in the vicinity of the road corridor.

The *susceptibility* of the road corridor to change is determined to be great due to its relatively high landscape value along sections of the corridor. Based on this high value the sensitivity of the route alignment to road development is assessed as **high**.

3.7.4 VISUAL BASELINE

The visual baseline describes the visual receptors which currently have a view of the proposed corridor, and briefly describes the existing view. Visual receptors can include residents, workers, tourists and travellers who will see the corridor and potentially the new road. Their sensitivity to visual change varies as follows:

Table 3.7.2: Description of Visual Receptors

Receptor Type	Sensitivity
Residential properties	**High**
Tourists, recreational users,	Where the recreational activity is focused on the landscape, e.g. hill walking, viewpoints, **high** Where the activity is not focused on the landscape, e.g. jogging, sports: **low** or **medium**
Workers	Usually **Low**
Travellers	Depending on the speed and mode of travel, and the context, varies from low to high. For example, a popular tourist drive or cycle route will be **high**, while a brief glimpse from a motorway will be **low**.

There are visual receptors along the proposed corridor including a number of residential settlements and areas used for recreational activity including, viewpoints, nature reserves and countryside suitable for walking.

The main areas of potential constraint along this route corridor include:

- The River Annan which will require crossing as well as the smaller Lochar Water. The open, flat river floodplain will allow long distance views of traffic embankments.
- The Mid-Annandale and Torthorwald Ridge, RSA. Visible from the surroundings and an area requiring significant earthworks (cut and fill).
- The villages of Torthorwald, Hightae, Watchill and town of Lochmaben.
- Other smaller settlements/ hamlets and farm steadings.

- Cultural Heritage sites of interest – Scheduled Ancient Monuments (SAM) including: Torthorwald Castle, Kirk Loch, Castle Hill motte, Lochmaben Peel & Castle, Greenhillhead Fort, Hallmuir Settlements.
- Traveller receptors include motorists on the A709, B7020 and a number of minor roads. In addition, cyclists and walkers will also be potential receptors,

At this stage visual receptors are grouped together to provide one overall rating for sensitivity. Considering the wide ranging visual impact the road will have and the number of residential properties located along the corridor the sensitivity is considered to be **high.**

3.7.5 ASSESSMENT OF LANDSCAPE IMPACTS

Impacts on Landscape Character

The following section summarises the predicted impacts on landscape character, arising from the road proposals. The assessment follows the methodology outlined in 3.9.2. It is likely that some of these impacts may be partially mitigated through landscape design and planting along the road. However, at this stage no mitigation planting has been proposed or included in the assessment. Potential significant impacts are indicated by bold text.

The proposed corridor ascends fairly rapidly between Roucan and Ryemuir. This stretch is likely to require significant cut and fill as the land peaks and troughs on the upward ascent, presenting a **large magnitude** of change to this good quality landscape.

Similarly the descent from Ryemuir to Smallrigg will require significant cut and fill work creating a **large magnitude** of change.

The stretch from Smallrigg to the A74 motorway over the River Annan will also require major cut and fill works and installation of a new bridge over the River Annan floodplain. This will result in a **large magnitude** of change regarding high quality landscape south of Lochmaben Lochs and east towards the A74 motorway.

Impacts on landscape designations

There is a direct effect on the Regional Scenic Area (RSA), where the new road will run through the area between Torthorwald and Parkfoot significantly affecting the quality of the landscape. Around 5km of the corridor is within the RSA. There will be a **large** magnitude of change to this part of the RSA.

To summarise the potential impact of the scheme on landscape is provided in Table 3.7.3.

Table 3.7.3 Potential Impacts on Landscape

Receptor	Sensitivity	Magnitude	Impact Significance
Landscape	High	Large	Major Adverse

3.7.6 ASSESSMENT OF VISUAL IMPACTS

The following section summarises the predicted impacts on views, arising from the road proposal. It is likely that some of these impacts may be partially mitigated through landscape design, particularly screen planting along the road. However, at this stage no mitigation planting has been proposed or included in the assessment. Potential significant impacts are indicated by bold text.

A number of properties/ settlements along the route will have relatively close range (<300m) views of the road, resulting in a **large** magnitude of change.

Motorists on the A709, B7020 and a number of minor roads, assessed as low sensitivity, will view new road, and road junctions. The magnitude of change is likely to be perceived as **medium/ large**.

Cyclists using the National Cycle Route 74 (high sensitivity) will see a **medium** magnitude of change at the junction of the A74.

Walkers are of high sensitivity to visual impacts and at this stage it is likely that they will experience a **large** magnitude of change, arising from the new road development including bridges.

Table 3.7.3 Potential Significance of Impacts on Visual Amenity

Receptor	Sensitivity	Magnitude	Impact Significance
Settlements	High	Large	Major Adverse
Motorists	Low	Large	Moderate Adverse
Cyclists/ walkers	High	Medium/ Large	Major - Moderate Adverse

3.7.7 MITIGATION

Mitigation measures, including roadside planting and earthworks, may effectively mitigate some of the impacts identified above. Detailed mitigation measures will be developed at the project design stage. The following section outlines measures which should be considered, and which will help to mitigate the identified impacts.

Screen planting is recommended on embankments to mitigate close range views from settlements. The design of the River Annan bridge structure should be carefully considered from the point of view of the river valley/ floodplain landscape, and the potential impacts to users of the River Annan footpath.

Roadside hedge planting, with standard hedgerow trees. Replacement planting to compensate for the loss of shelterbelts. If necessary, the acquisition of additional land to allow planting, should be considered.

3.7.8 RESIDUAL IMPACTS

Although mitigation measures have not been agreed or fully assessed, it is likely that significant residual landscape and visual impacts would result from the final scheme. Significant residual landscape impacts are likely at the River Annan crossing, and the stretch across the RSA and mid-section of the route due to major cut and fill requirements.

Table 3.7.4 Potential Residual Significance of Impacts

Receptor	Impact Significance before Mitigation	Impact Significance After Mitigation	Comments
Landscape	Major Adverse	Major Adverse	Assumes all appropriate mitigation is implemented.
Visual			
▪ Settlements	Major Adverse	Major Adverse	
▪ Motorists	Moderate Adverse	Minor Adverse	
▪ Cyclists/ walkers	Major - Moderate Adverse	Major - Moderate Adverse	

The landscape and visual receptor sensitivity within this corridor is considered to be high. In addition, the scale of the proposal with large quantities of cut and fill and physical

interventions (i.e. bridge crossings) is envisaged to be of a major magnitude. **Major Adverse Impacts.**

OPTION – A75 (T) DUALLING

3.7.9 LANDSCAPE BASELINE

Landscape Character – Regional Landscape Character Assessment

The Landscape Character of the area of the proposed corridor is described in the SNH Landscape Character Assessment for Dumfries and Galloway (Land Use Consultants, 1998). The route lies across the Dumfries Coastlands regional landscape character, an assemblage of lowland and coastline landscape types forming a coastal belt between the Southern Uplands and the Solway Firth. Characterised by intensive agriculture, settlement, and transport corridors, and is dissected by rivers and floodplains.

The local landscape types which the corridor passes through include:

- Lower Dale – this represents the section between Dumfries and Collin/ Breconrae. Ordinary to good quality.
- Upland Fringe – between Breconrae and Carrutherstown is of the highest quality along this section and includes the Torthowald Ridge.
- Coastal Plateau and Coastal Plain – Travelling eastwards the landscape type alternates between the two, however the eastern half of the A75 between Annan and Gretna is dominated by Coastal Plateau. This section is considered to be a mixture of Good to Very Attractive landscape quality.

Landscape Designations

- An area at the western end of the corridor is protected by Dumfries and Galloway Council as a Regional Scenic Area (RSA) (Mid-Annandale and Torthorwald Ridge). These areas are valued regionally and locally for their special scenic qualities and the contribution they make to tourism and quality of life. The road corridor passes through the RSA between Breconrae and Carrutherstown.
- The boundary of the Nith Estuary National Scenic Area is located approximately 4km away from the A75 at its nearest point. Likely impacts to this scenic area are envisaged to be negligible due to its distance from the scheme.

The *susceptibility* of the road corridor to change is determined to be moderate as the quality of landscape varies between high and ordinary. Based on these qualities the sensitivity of the route alignment to road development is assessed as **medium**.

3.7.10 VISUAL BASELINE

The visual baseline describes the visual receptors which currently have a view of the proposed corridor, and briefly describes the existing view. Visual receptors can include residents, workers, tourists and travellers who will see the corridor and potentially the new road. Their sensitivity to visual change varies as follows:

Table 3.7.5 Visual Receptors

Receptor Type	Sensitivity

Residential properties	**High**
Tourists, recreational users,	Where the recreational activity is focused on the landscape, e.g. hill walking, viewpoints, **high** Where the activity is not focused on the landscape, e.g. jogging, sports: **low** or **medium**
Workers	Usually **Low**
Travellers	Depending on the speed and mode of travel, and the context, varies from low to high. For example, a popular tourist drive or cycle route will be **high**, while a brief glimpse from a motorway will be **low**.

There are visual receptors along the proposed corridor including a number of residential settlements and areas used for recreational activity including, viewpoints, nature reserves and countryside suitable for walking.

The main areas of potential constraint along this route corridor include:

- The River Annan which will require crossing as well as the smaller Lochar Water. The open, flat river floodplain will allow long distance views of traffic embankments.
- The Mid-Annandale and Torthorwald Ridge, RSA. Long distance views of the A75 from this region.
- Cultural heritage sites – including Annan Hill Scheduled Ancient Monument (SAM), Annan – Roman camp and Hayknowes SAM, Hayknowes - Settlement
- Towns of Annan, and Gretna.
- The villages of Collin, Carrutherstown, Eastriggs and Rigg.
- Other smaller settlements/ hamlets and farm steadings.
- Traveller receptors include motorists on the A709, B724, B725, B7020, B723, B6357, B721. In addition a number of minor roads exist throughout the route corridor and the Glasgow South Western Trainline runs parallel to the A75 on the southern side.
- Cyclists (using NCN 7 and 74, Local Cycle Route 11) and walkers (National Byway) will also be potential receptors,

At this stage visual receptors are grouped together to provide one overall rating for sensitivity. Many potential receptors are present within the corridor including highly sensitive receptors such as residential and members of the public pursuing outdoor leisure activities. The visual sensitivity of the corridor is therefore considered to be **high**.

3.7.11 ASSESSMENT OF LANDSCAPE IMPACTS

Impacts on landscape character

The following section summarises the predicted impacts on landscape character, arising from the road proposals. It is likely that some of these impacts may be partially mitigated through landscape design and planting along the road. However, at this stage no mitigation planting has been proposed or included in the assessment. Potential significant impacts are indicated by bold text.

Details of the proposed scheme including the level of cut and fill required are at this stage high level. The A75 carriageway already exists with impacts to landscape being intensification of the built environment within the corridor. The level of intensification is considered to be relatively small along the entire length of the scheme. The potential magnitude of impacts to landscape is therefore assessed as **small.**

Table 3.7.7 Potential Significance of Impacts on Landscape

Receptor	Sensitivity	Magnitude	Impact Significance
Landscape	High	Small	Moderate

3.7.12 ASSESSMENT OF VISUAL IMPACTS

The following section summarises the predicted impacts on views, arising from dualling of the road. It is likely that some of these impacts may be partially mitigated through landscape design, particularly screen planting along the road. However, at this stage no mitigation planting has been proposed or included in the assessment. Potential significant impacts are indicated by bold text.

A number of properties/ settlements along the route already have relatively close range (<300m) views of the road. The magnitude of change, through widening, is therefore considered to be **medium.**

Motorists using the roads are assessed as low sensitivity, will view a road which has been widened, and modified road junctions. The magnitude of change is likely to be perceived as **medium/ small**.

Cyclists using the National Cycle Routes will experience a **medium** magnitude of change.

Walkers are of high sensitivity to visual impacts and at this stage it is likely that they will experience a **medium** magnitude of change, arising from the new road development including bridges.

Table 3.7.8 Potential Significance of Impacts on Visual Amenity

Receptor	Sensitivity	Magnitude	Impact Significance
Settlements	High	Medium	Moderate/ Major Adverse
Motorists	Low	Medium/ Small	Moderate/ Minor Adverse
Cyclists/ walkers	High	Medium	Moderate/ Major Adverse

3.7.13 MITIGATION

Mitigation measures, including roadside planting and earthworks, may effectively mitigate some of the impacts identified above. Detailed mitigation measures will be developed at the project design stage. The following section outlines measures which should be considered, and which will help to mitigate the identified impacts.

Screen planting is recommended on embankments to mitigate close range views from settlements. The bridge crossing improvement designs should be carefully considered from the point of view of the river valley/ floodplain landscape, and the potential impacts to the public enjoyment of the outdoors.

Roadside hedge planting, with standard hedgerow trees. Replacement planting to compensate for the loss of shelterbelts. If necessary, the acquisition of additional land to allow planting, should be considered.

3.7.14 RESIDUAL IMPACTS

The scale and nature of the project are such that it is likely landscape and visual impacts can be mitigated to an acceptable level. Significant residual landscape impacts are therefore envisaged to be **minor adverse**.

Table 3.7.9 Summary of Potential Residual Impact Significance on Landscape & Visual

Receptor	Impact Significance before Mitigation	Impact Significance After Mitigation	Comments
Landscape	Moderate	Minor Adverse	Assumes all appropriate mitigation determined after detailed assessment would be implemented.
Visual			
▪ Settlements	Moderate/ Major Adverse	Minor Adverse	Assumes all appropriate mitigation determined after detailed assessment would be implemented.
▪ Motorists	Moderate/ Minor Adverse	Negligible	
▪ Cyclists/ walkers	Moderate/ Major Adverse	Minor Adverse	

Overall landscape sensitivity within this corridor is considered to be moderate and visual receptor sensitivity is considered as high. However, the relative change from the baseline as a result of the proposal is envisaged to be minor/ moderate. **Minor Adverse Impact.**

3.7.15 SUMMARY

A summary comparison of the significance of potential residual impacts of the proposed schemes on landscape and visual amenity is provided in Table 3.7.10.

Table 3.9.10 Summary Comparison of Impact Significance on Landscape and Visual Amenity

Environmental Criteria: Landscape & Visual		
Receptor	**LOCKERBIE TO DUMFRIES (South) A709**	**A75 (T) DUALLING**
	Impact Significance After Mitigation	
Landscape	Major Adverse	Minor Adverse
Visual	Major Adverse	Minor Adverse

3.8 LAND USE, AGRICULTURE AND SOILS

3.8.1 INTRODUCTION

This chapter considers land use, agriculture and soils within the proposed corridor. The main purpose is to:

- provide an account of the land use change that will occur as a result of the proposals;
- address the wider implications for land use within the vicinity of the site;
- identify and locate existing services/ utilities infrastructure; and
- assess significance of impacts on the above.

The following elements of land use are considered: agricultural land, services and utilities and adjacent land uses.

3.8.2 METHODOLOGY

The assessment comprised of a high level desk study including a literature review of the following:

- Historical maps
- MLURI land capability maps

Impact Assessment

Impact magnitude and receptor sensitivity are combined to indicate impact significance. The impact significance range is described in terms of major/ moderate/ minor/ negligible and combinations (e.g. minor-moderate), adverse and positive. Table 3.8.1 below indicates a potential matrix.

Table 3.8.1: Significance of Impact Matrix

Magnitude of Impact		Receptor Sensitivity		
		Minor	Moderate	Major
	Major	Moderate	Moderate/Major	Major
	Moderate	Minor/Moderate	Moderate	Moderate/Major
	Minor	Negligible	Minor	Minor/Moderate

3.8.3 BASELINE INFORMATION

OPTION – Lockerbie to Dumfries (South) A709

Factor	**Comments**
Land Capability & Farm Units	Land use within the preferred alignment is predominately agricultural categorised as Classes 3 to 5, with the majority classed as 5. Class 5 is land suited only to improved grassland and rough grazing (Land Capability for Agriculture Maps 78, 84, 85, The Macaulay Institute for Soil Research). Sensitivity of agricultural land is considered to be **major** as any loss of land will compound the impact due to the poor quality of the soils and reduction in already limited resources.
Infrastructure	*Roads* The proposed corridor crosses a number of existing roads along the length of the route including: • A709 • B7020 • A number of minor roads

Factor	Comments
	Rail The proposed corridor does not cross any railways. • Land use and infrastructure sensitivity at this stage is considered to be **moderate**.
Utilities	• Scottish Water utilities (including sewers and water pipelines) are likely to be present within the proposed corridor. Further detailed information should be sought from appropriate utility companies and consultation with SEPA at the project level. • Additionally, high pressure gas pipelines have been identified which cross the proposed route. Pipelines include: Lockerbie/Dumfries, Lockerbie Pipeline and Dumfries Milton. Extensive consideration and consultation with the Health and Safety and national grid will be required at the detailed alignment and design stage. The road is likely to require a number of structural safety and access features where gas pipelines cross the route as pipelines are regularly maintained. • No large overhead power lines are situated within the proposed corridor, however there is likely to be minor electricity and telecommunication lines crossed by the proposed route. • Land use and infrastructure sensitivity at this stage is considered to be **moderate**.
Community Land Use	• Community facilities which may be affected by the proposed corridor include schools, churches and leisure centres within the area. Community severance is primarily concerned with the separation of people from each other and from the facilities and services which they use. Access issues encompass Rights of Way and other footpaths. • There may be a number of Rights of Way, schools and areas of woodland potentially affected by the proposed corridor, known community land uses include: – Right of Way – Dumfries and Galloway has 641 Rights of Way amounting to a total distance of 1793km (Catalogue of Rights of Way, 2001) – National Cycle Route 74 – This route runs along the A74 and will be affected by the development of a junction between the new road and the motorway. – The proposed route crosses five wooded areas. One is recorded on the Ancient Woodland Inventory, however, at this stage, details of the other four are not known. There is also potential for impacts on other areas used by the community for outdoor leisure pursuits. • Community land use sensitivity is considered to be **major** due to the likelihood of a high degree of severance due to the construction of a road through rural villages and towns.

OPTION – A75 (T) DUALLING

Factor	Comments
Land Capability & Farm Units	Land use within the preferred alignment is predominately agricultural categorised as Classes 3. Class 3 is land capable of producing a moderate range of crops. Sensitivity of agricultural land is considered to be **major**.
Infrastructure	*Roads* The A75 crosses a number of existing roads along the length of its route including: • B724, B725, B7020, B723, B722, B6357, B721 • A number of minor roads *Rail* The route crosses the Glasgow South Western rail line near Gretna.
Utilities	• Scottish Water utilities (including sewers and water pipelines) are likely to be present within the proposed corridor. Further detailed information should be sought from appropriate utility companies and consultation with SEPA at the project level. • Additionally, high pressure gas pipelines have been identified which already cross the A75. Pipelines include: Dumfries/Milton pipeline and a mains utility line. Extensive consideration and consultation with the Health and Safety and national grid will be required at the detailed alignment and design stage. The road is likely to require a number of structural safety and access features where gas pipelines cross the route as pipelines are regularly maintained. • A number of overhead electricity lines are situated within the proposed corridor with main lines crossing the A75 at three points. There are also likely to be minor electricity and telecommunication lines which cross the route Infrastructure and

Factor	**Comments**
	services sensitivity at this stage is considered to be minor as the carriageway and associated service structures already exist. • Land use and infrastructure sensitivity at this stage is considered to be **moderate**.
Community Land Use	• Community facilities which may be affected by the proposed corridor include schools, churches and leisure centres within the area. Community severance is primarily concerned with the separation of people from each other and from the facilities and services which they use. Access issues encompass Rights of Way and other footpaths. • There may be a number of Rights of Way, schools and areas of woodland potentially affected by the proposed corridor, known community land uses include: – Right of Way – Dumfries and Galloway has 641 Rights of Way amounting to a total distance of 1793km (Catalogue of Rights of Way, 2001) – National Cycle Route 74 & 7 and Local Cycle Route 11 – Number 7 runs parallel to the A75, route 11 crosses the A75 just north of Annan and route 74 runs along the A74 motorway and is likely to be affected by the junctions at Gretna and the motorway. – The proposed route crosses a number of wooded areas including ancient woodland. There is also potential for impacts on other areas used by the community for outdoor leisure pursuits. • Community land use sensitivity is considered to be **moderate** due to the likelihood of a high degree of severance due to the construction of a road through rural villages and towns.

3.8.4 POTENTIAL ENVIRONMENTAL IMPACTS

OPTION – Lockerbie to Dumfries (South) A709

Potential impacts arising from the proposed construction of a new carriageway along the alignment from Dumfries to Lockerbie include:

- Land take - long-term loss of agricultural land and reduction in farm viability
- Severance issues, including restricting livestock access between pastoral fields and farm buildings.
- Loss of community woodland
- Impact on roads and utilities infrastructure
- Impact on recreational land use, including rights of way
- Impacts on community facilities including schools

The construction of a new road is considered to cause a **major** magnitude of impact. A summary of the potential significance of these impacts in detailed in Table 3.8.2.

Table 3.8.2 Summary of Impacts on Land Use, Agriculture and Soils

Receptor	Sensitivity	Magnitude	Impact Significance
Agriculture	Major	Major	Major
Infrastructure	Moderate	Major	Moderate/ Major
Community -facilities/ schools	Major	Major	Major

OPTION – A75 (T) DUALLING

Potential impacts arising from the proposed construction of a new carriageway along the alignment from Dumfries to Lockerbie include:

- Land take - long-term loss of agricultural land and reduction in farm viability
- Severance issues, including restricting livestock access between pastoral fields and farm buildings.

- Loss of community woodland
- Impact on roads and utilities infrastructure
- Impact on recreational land use, including rights of way
- Impacts on community facilities including schools

The widening of an existing road is considered to cause a **moderate** magnitude of impact. A summary of the potential significance of these impacts in detailed in Table 3.8.4.

Table 3.8.4 Summary of Impacts on Land Use, Agriculture and Soils

Receptor	Sensitivity	Magnitude	Impact Significance
Agriculture	Major	Moderate	Moderate/ Major
Infrastructure	Minor	Moderate	Minor
Community -facilities/ schools	Moderate	Moderate	Moderate

3.8.5 MITIGATION

The proposed bypass will result in the loss of agricultural land and potential impacts on land use and receptors such as community facilities and schools. Existing utilities also need to be considered. Measures to minimise the impact of this loss will include:

- Consultation with SGRPID as part of EIA process.
- Consultation with Utilities companies at detailed design stage.
- Reducing permanent impacts by reinstating all areas of temporary land take on completion of the works.
- Minimising land take in the construction of any junctions with existing roads.
- Minimising disruption to existing road infrastructure and ensuring public right of ways/cycle routes are unaffected by construction/operation of the route
- Identifying and minimising impacts and disruption to sensitive receptors e.g. schools and community facilities
- Minimise the impacts on woodland and areas of shelterbelt planting

3.8.6 RESIDUAL IMPACTS

The final road alignment and detailed design will require a substantial level of land take and subsequent impacts on land use, agriculture and soils.

OPTION – Lockerbie to Dumfries (South) A709

3.8.3 Potential Residual Significance of Impacts to Land Use, Agriculture and Soils

Receptor	Impacts before Mitigation	Impacts after Mitigation	Comments
Agriculture	Major	Major	Implementation of mitigation measures will help reduce the level of impact. However, at this stage a precautionary approach has been taken.
Infrastructure	Moderate/ Major	Moderate	
Community -facilities/ schools/ Rights of Way	Major	Major	

Overall the sensitivity of land use, agriculture and soil within this corridor is considered to be major. In addition the proposed project will require significant amounts of land take, converting

mainly agricultural and rural land, with associated natural habitats, into built environment. **Major Adverse Impacts.**

Further assessment will be required at the detailed design stage once a final alignment has been established.

OPTION – A75 (T) DUALLING

The widening of the existing A75 road will require a substantial level of land take and subsequent impacts on land use, agriculture and soils. It is anticipated that considerate detailed design and subsequent mitigation measures will adequately address the likely impacts of the proposed route.

Table 3.8.5 Potential Residual Significance of Impacts to Land Use, Agriculture and Soils

Receptor	Impacts before Mitigation	Impacts after Mitigation	Comments
Agriculture	Moderate/ Major	Moderate	Assumes all appropriate mitigation is implemented.
Infrastructure	Minor	Minor/ Negligible	
Community -facilities/ schools	Moderate/ Major	Moderate	

Overall land use, agriculture and soils sensitivity within this corridor is assessed as being moderate. In addition, the A75 proposal includes widening of the existing road which already accommodates existing infrastructure. **Minor/ Moderate Adverse Impacts.**

3.8.7 SUMMARY

A summary comparison of the significance of potential residual impacts of the proposed schemes on land use, agriculture and soils is provided in Table 3.8.6.

Table 3.8.6 Summary Comparison of Impact Significance on Land Use

Environmental Criteria: Land Use & Agriculture		
Receptor	LOCKERBIE TO DUMFRIES (South) A709	A75 (T) DUALLING
	Impact Significance After Mitigation	
Agriculture	Major	Moderate
Infrastructure	Moderate	Minor/ Negligible
Community -facilities/ schools and rights of way	Major	Moderate

3.9 CULTURAL HERITAGE

3.9.1 INTRODUCTION

The aim of this section is to identify features of cultural heritage value within the two corridor options put forward for the Dumfries A74 Fast Link. This assessment will provide a comprehensive basis for further discussion and decisions regarding the future of the option taken forward for development and the formulation of a mitigation strategy in consultation with Historic Scotland and Dumfries and Galloway Council Archaeologist.

The objectives to be undertaken in pursuing this study will be focused on assessing the cultural significance of the area to be affected by the development of either of the proposed routes, based on the evidence available from desk study.

3.9.2 METHODOLOGY

This section provides baseline information on cultural heritage importance based on the proposed corridors. Further, detailed assessment undertaken by a qualified archaeologist will be required as part of the detailed design of either scheme.

Cultural Heritage information has been compiled and reviewed using the following source:

- Historic Scotland GIS database for Scheduled Ancient Monument data and Listed Buildings data.

3.9.3 IMPACT ASSESSMENT

The criteria used to rate archaeological and architectural heritage sensitivity in the proposed development area are presented in Table 3.9.1 below.

Table 3.9.1 Criteria for establishing Archaeological Sensitivity

Sensitivity of receptor	*Definition*
High	Sites of National Importance, including Category A Listed Buildings; Scheduled Ancient Monuments; and sites on the non-statutory register of other identified sites maintained Dumfries and Galloway Council.
Medium	Archaeological sites or buildings of regional importance, including Category B Listed Buildings.
Low	Archaeological sites or buildings of local importance, including Category C (S) listed Buildings.
Negligible	A badly preserved or extremely common type of archaeological site/building of little value at local, regional or national levels.

Table 3.9.2 Criteria for classifying magnitude of Physical Impact

Magnitude of impact	*Definition*
Major	Total loss or major alteration of the site.
Moderate	Loss of one or more key elements of the site.
Minor	Slight alteration of the site.
Negligible	Very slight or negligible alteration of the site

Criteria for assessing the significance of impacts on cultural heritage features.

Table 3.9.3 Method of rating significance of impact on archaeological/ architectural heritage sites by the development

Magnitude of	***Feature Sensitivity***

Impact	*Negligible*	*Low*	*Medium*	*High*
Major	Negligible	Moderate	Major	Major
Moderate	Negligible	Minor	Moderate	Major
Minor	Negligible	Negligible	Minor	Moderate
Negligible	Negligible	Negligible	Negligible	Minor

3.9.4 LEGISLATION AND POLICY

The statutory framework for heritage in Scotland is outlined in the *Town and Country Planning (Scotland) Act* 1997*,* as amended in the *Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997.*

NPPG5 *Archaeology and Planning* (SOEnD 1994), NPPG18 *Planning and the Historic Environment* (SODD 1999) and PAN42 *Archaeology-the Planning Process and Scheduled Ancient Monument Procedures* (SOEnD 1994a) apply planning policy to ensure protection of cultural heritage interests. The planning guidance expresses a general presumption in favour of preserving heritage remains *in situ* as opposed to *'preservation by record'* (i.e. excavation and recording of finds on the instruction of a suitably qualified archaeologist).

3.9.5 BASELINE INFORMATION

Dumfries and Galloway has a wealth of sites with importance for cultural heritage. Within the Dumfries and Galloway region there are:

- 17671 archaeology records, of which 8596 are sites noted as planning constraints, and a further 3371 are potential constraints
- 3414 Listed Building records – 224 Grade 'A', 1812 Grade 'B', 1378 Grade 'C (S)'
- 20 Inventory Designed Landscapes·
- 162 Non-Inventory Designed Landscapes
- 38 Conservation Areas
- 34 Archaeologically Sensitive Areas

OPTION – Lockerbie to Dumfries (South) A709

A desk study exercise has yielded information on protected sites which may be affected by the proposed corridor alignment. At this strategic stage, features of significant cultural heritage are noted by name, other sites are too numerous to identify in detail and are simply referred to.

Protected Sites	
Scheduled Ancient Monuments (SAMs)	• Torthorwald Castle • Kirk Loch - Enclosures • Castle Hill - Motte • Lochmaben Peel and Castle • Greenhillhead – Fort • Hallmuir – Three separate settlements The sensitivity of SAMs is assessed as **high**.
Listed Buildings	A number of listed buildings are present at various locations along the route corridor. The sensitivity of these features varies between high and low, for the purpose of this assessment the sensitivity of

Protected Sites	
	listed buildings will be considered as **high**. The following provides place names near where listed buildings are located: • Torthorwald • Mossburn • Lochmaben • Castle Loch • Heck • Roberthill • Bengall • Hallmuir • Highlaw • Shillahall
National Monuments	Similarly, there are many recorded national monuments situated within the corridor route and their sensitivity of can vary depending on their importance. For the purpose of this assessment their sensitivity is considered to be **medium**/ **low**.
Gardens and Designed Landscapes	There are no gardens or designated landscapes within the corridor route.

OPTION – A75 (T) DUALLING

A desk study exercise has yielded information on protected sites which may be affected by the proposed corridor alignment. At this strategic stage, features of significant cultural heritage are noted by name, other sites are too numerous to identify in detail and are simply referred to.

Protected Sites	
Scheduled Ancient Monuments (SAMs)	• Annan Hill – roman camp • Hayknowes – settlement • Woodland • Blacketlees Cottages The sensitivity of SAMs is assessed as **high**.
Listed Buildings	A number of listed buildings are present at various locations along the route corridor. The sensitivity of these features varies between high and low, for the purpose of this assessment the sensitivity of listed buildings will be considered as **high**. The following provides place names near where listed buildings are located: • Carrutherstown • Kelhead Flow • Annan • Rigg • Gretna
National Monuments	Similarly, there are many recorded national monuments situated within the corridor route and their sensitivity of can vary depending on their importance. For the purpose of this assessment their sensitivity is considered to be **medium**/ **low**.
Gardens and Designed Landscapes	Within the corridor, gardens and designed landscapes include: • Kinmount House • Gretna Hall • Hetland Hall For the purpose of this assessment these features are considered

Protected Sites	
	of **medium**/ **low** sensitivity

The proposed corridor will need to consider these sites further at the detailed design stage to ensure that direct impacts and indirect impacts are addressed to the satisfaction of Historic Scotland and Dumfries and Galloway Council Archaeologist.

3.9.6 POTENTIAL ENVIRONMENTAL IMPACTS

Direct Impacts

Potential impacts on known or unknown buried archaeological remains in the case of this development proposal relate to the possibility of disturbing, removing or destroying in situ remains and artifacts during groundbreaking works (including excavation, construction and other works associated with the development) on the site.

Indirect Impacts

Indirect impacts include potential visual effects on the settings of listed buildings and monuments, since their curtilage and amenity (in addition to their physical remains) are protected by legislation.

The potential magnitude of impacts arising from development of this scheme is assessed as major. The following table provides an assessment of the potential significance of impact on each of the identified receptors.

OPTION – Lockerbie to Dumfries (South) A709

3.9.4 Potential Significance of Impact on Cultural Heritage

Receptor	Sensitivity	Likely magnitude of Impact	Potential Significance of Impact
SAMs	High	Major	Major
Listed Buildings	High	Major	Major
National Monuments	Medium/ Low	Major	Major/ Moderate

OPTION – A75 (T) DUALLING

3.9.6 Potential Significance of Impact on Cultural Heritage

Receptor	Sensitivity	Likely magnitude of Impact	Potential Significance of Impact
SAMs	High	Minor	Moderate
Listed Buildings	High	Minor	Moderate
National Monuments	Medium/ Low	Minor	Minor/ Negligible

3.9.7 MITIGATION

National planning policies and planning guidance (NPPG5 & PAN42), as well as the local plan policies require a mitigation response that is designed to investigate the potential for archaeological sites within the development area and thence allow the preservation or recording of any significant remains. Planning policy (NPPG18) also advocates the investigation and the recording or preservation of historic building remains.

3.9.8 RESIDUAL IMPACTS

Should any significant archaeological remains be identified by further evaluation then additional mitigation would be required to preserve them by avoidance (i.e. altering the development plans) or by record (further excavation). Potential residual impacts of the proposed routes are considered below.

OPTION – Lockerbie to Dumfries (South) A709

3.9.5 Potential Residual Significance of Impact on Cultural Heritage

Receptor	Significance of Impact before Mitigation	Significance of Impact after Mitigation	Comment
SAMs	Major	Major/ moderate	This assessment assumes implementation of mitigation measures. However, a precautionary approach has been taken due to; the scale of the project; and lack of design detail.
Listed Buildings	Major	Major/ moderate	
National Monuments	Moderate	Moderate/ minor	

Overall, sites of high cultural heritage importance within this corridor combined with the potentially large magnitude of impacts resulting from the proposal, creates potential for **Moderate Adverse Impacts.**

OPTION – A75 (T) DUALLING

3.9.7 Potential Residual Significance of Impact on Cultural Heritage

Receptor	Significance of Impact before Mitigation	Significance of Impact after Mitigation	Comment
SAMs	Moderate	Minor/ Negligible	This assessment assumes implementation of mitigation measures.
Listed Buildings	Moderate	Minor/ Negligible	
National Monuments	Minor/ Negligible	Negligible	

Overall, the cultural heritage sensitivity of the proposed corridor is assessed as being moderate/ high. Despite this fact, the A75 already exists and the magnitude of likely impact to cultural heritage is considered to be low. **Minor Adverse Impact.**

3.9.9 SUMMARY

A summary comparison of the significance of potential residual impacts of the proposed schemes on cultural heritage is provided in Table 3.9.8.

3.9.8 Potential Residual Significance of Impact on Cultural Heritage

Environmental Criteria: Cultural Heritage		
Receptor	**LOCKERBIE TO DUMFRIES (South) A709**	**A75 (T) DUALLING**
	Impact Significance After Mitigation	
SAMs	Major/ moderate (adverse)	Minor/ Negligible (adverse)
Listed Buildings	Major/ moderate (adverse)	Major/ Negligible (adverse)
National Monuments	Moderate/ minor (adverse)	Negligible (adverse)

3.10 CONCLUSIONS & RECOMMENDATIONS

As described in the STAG guidance, both proposals have been assessed for their potential impacts against the environmental sub-criteria in order to ensure that environmental implications are considered as part of the overall decision making process.

In order to assist the decision making process, the entire environmental appraisal, post mitigation, of the Dumfries to A74 (M) Fastlink scheme can be summarised and compared within Table 3.10.1.

Table 3.10.1 Summary of Environmental Appraisal for Both A74 (M) Fastlink Options

Environmental Criteria	Potential Environmental Impact Significance	
	LOCKERBIE TO DUMFRIES (South) A709	A75 (T) DUALLING
Noise & Vibration	Moderate Adverse	Negligible
Air Quality	Slight Positive	Negligible/ Neutral
Water Quality, Drainage and Flood Defence	Moderate/ Major Adverse	Minor/ Negligible Adverse
Geology	Moderate Adverse	Minor Adverse
Ecology, Biodiversity and Nature Conservation	Major Adverse	Minor/ Moderate Adverse
Landscape and Visual Amenity	Major Adverse	Minor Adverse
Land Use, Agriculture and Soils	Major Adverse	Minor/ Moderate Adverse
Cultural Heritage	Moderate Adverse	Minor Adverse

The ***main points*** from the assessment are as follows:

- The A709 (southern option) is offline and therefore has greater overall potential for environmental impacts than the proposed dualling of the existing A75(T).
- The A709 corridor is environmentally more sensitive and will required significant survey and assessment – the major issues being ecology and nature conservation, landscape and visual and water quality.
- Both schemes would likely require Statutory EIA under the Environmental Impact Assessment (Scotland) Regulations 1999, as amended.
- Both schemes would likely require Appropriate Assessment under the Conservation (Natural Habitats &c) Regulations 2004.

3.10.1 Recommendations for Further Environmental Assessment

Both Dumfries to A74 (M) route proposals would likely require further environmental assessment at project level through the Environmental Impact Assessment (Scotland) Regulations 1999.

In addition, the proximity of both routes to European designated sites, Castle Loch SPA (for the A709 (South) option) and Inner Solway Flats & Marshes SPA (for the A75 Dualling option), results in the potential for likely significant effects on the qualifying interests of the Natura 2000 sites. In light of this, the A709 (South) Option and possibly the A75 Option will be subject to Appropriate Assessment under The Conservation (Natural Habitats, &c.) Regulations 1994 ("the Habitats Regulations").

APPENDIX 1

Environmental Consultation Responses

RSPB

From: Rollie, Chris
Sent: 30 March 2009 17:14
To: Christopher Paterson (MVA Consultancy)
Cc: Jonathan Warren (SNH)
Subject: Dumfries and Galloway fast links to the motorway stakeholder consultation

Dear Mr Paterson,

I refer to your e-mail of 18 March 2009.

Apologies for the brief reply, but I was anxious to make your deadline. As Area manager for the RSPB in Dumfries & Galloway, I will restrict my comments to potential impacts on birds.

I believe your paper broadly summarises the respective environmental constraints of the two potential routes. Although the Lockerbie A709 link is shorter, it passes very close to Castle Loch SPA, with all the potential implications for problems with disturbance to qualifying interests (geese) and hydrology of Castle and Hightae Lochs. An appropriate assessment (EU Birds Directive) would certainly be required for this route.

However, we also believe that an appropriate assessment would also be required for the longer A75 route, given the potential for disturbance of feeding geese (principally barnacle and pink-footed) that roost on the inner Solway Flats & Marshes SPA). With regard to earlier upgrades of the A75 at Dunragit (near Stranraer), potential conflict with Annex 1 Greenland white-fronted geese was avoided by careful time-scheduling of works to avoid the period when the geese were present - ie work was undertaken on the most sensitive areas between May-September inclusive. It may be that this mitigation could be employed in this case, or indeed it may be that surveys indicate that there is unlikely to be potential conflict, but certainly we feel that an appropriate assessment would be required to establish this.

In conclusion, with regard to wild birds, the two major constraints on these proposals are respectively Castle Loch SPA re A709 up-grade, and Inner Solway Flats and Marshes SPA re A75 link up-grade, with overwintering geese feeding and roosting areas being the major concerns in both areas. Survey work may also reveal additional wild bird interest along both routes, but this is likely to be with regard to breeding woodland or wading birds and of less concern given our existing knowledge of the areas and the potential for mitigation to avoid significant damage.

I hope these comments are helpful and I look further to further consultation in the future. Meanwhile, should you require further information or clarification, then please do not hesitate to get in touch.

Yours sincerely,

Chris Rollie,
RSPB Area Manager,
Dumfries & Galloway.

Scottish Natural Heritage
All of nature for all of Scotland

Chris Paterson
MVA Consultancy
7th Floor
78 St Vincent Street
GLASGOW
G2 5UB

Your Ref: C37601

Our Ref: PUB AEI A&E 53848

Date: 31 March 2009

Dear Sirs

DUMFRIES AND GALLOWAY FAST ROUTES LINKS TO THE MOTORWAY NETWORK C37601

Thank you for your email of 18 March 2009 consulting Scottish Natural Heritage (SNH) on the above proposed road links.

As you are probably aware SNH's remit includes responsibility for giving advice on the possible impact of development on sites and species protected for their local, national and international biodiversity value, landscape value and recreational interest. The impact the two proposed routes described in your email may have on such sites is outlined below. It should be noted that because the details of the routes that you sent are so brief and because maps of the routes were omitted there may be further issues which come to light if and when any detailed proposals are issued to SNH for consultation.

Protected Sites

The proposed routes do not appear from the brief route description you give to cross any designated sites for which SNH is responsible, however option 2 – Lockerbie to Dumfries (South) Corridor will, it appears, be located immediately adjacent to Castle Loch which is designated as a Special Protection Area (SPA), Ramsar Site, Site of Special Scientific Interest (SSSI), and Local Nature Reserve. This area is of European importance because of its outstanding aggregations of non-breeding Pink-footed geese and of national importance because of its Pink-footed geese, Greylag geese and Goosander non-breeding aggregations.

The proposed route will also lie adjacent to Hightae Mill Loch which is a Local Nature Reserve with areas of open water, wetland and woodland and access for local residents from the B7020.

Option 1 will lie within 1.4km of the Solway Firth Estuary which is designated as an SPA for its aggregations of non-breeding birds, a Special Area of Conservation (SAC) for its coastal, estuarine and marine habitats, associated plant communities and two

fish species known as River Lamprey and Sea Lamprey, and a SSSI for a variety of interests including its non-breeding bird aggregations, breeding bird interest and Natterjack toad populations. Areas inland of the estuary are used for feeding by bird species such as the Barnacle goose which is a qualifying feature of the Reserve and SNH has land management agreements with landowners who routinely host feeding geese at certain locations. The estuaries lamprey population spend a large proportion of their life cycle in the rivers feeding the estuary and this should be taken into account when planning any works likely to impact on watercourses in the catchment.

Option 1 will also lie approximately 3.5km from Longbridge Muir SSSI/SAC designated for its extensive lowland raised bog habitat. Although the SAC is some distance from the proposed route the developer should be aware that the peatland habitat extends up towards the route and may therefore be impacted upon by the new route. Raised bogs are a European priority habitat and are one of the local priority habitats included within the Dumfries and Galloway Local Biodiversity Action Plan (LBAP).

Other habitats of local and national importance may be impacted on by the proposed routes for example woodland which appears on the Inventory of Ancient Woodland and habitats which appear in the Dumfries and Galloway LBAP. Comprehensive habitat surveys should be carried out an appropriate time of year, by suitably qualified persons, to inform you of the impact your proposed routes will have on semi- natural habitats and the extent and type of mitigation that may be required.

The legislative requirements for European Protected Sites are summarised in Circular 6/1995 as amended June 2000. Annex A of this letter provides further details of the legislative requirements.

It should be noted that these areas can be impacted upon by development outside of their boundaries.

Protected Species

Both option 1 and option 2 have the potential to impact on a number of protected species. SNH is obliged to inform developers about protected species, including 'European Protected Species' (EPS), which may be affected by certain proposals. Otter, bats and Great crested newts are afforded full protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are further protected as 'European Protected Species' under Regulations 39 and 43 of the Conservation (Natural Habitats &c.) Regulations 1994.

More information regarding the protection offered to European Protected species is outlined within annex B of this letter.

Other protected species which may be impacted upon which are present in the area are badger, red squirrel, water vole, and breeding birds. Comprehensive species surveys for any new road corridors carried out at an appropriate time of year by a suitably qualified person will be required to inform you whether any licences and/or mitigation for protected species will be required.

Further information regarding habitats and species recorded in the local area can be obtained from the Dumfries and Galloway Environmental Records Centre (DGERC).

Access
Dumfries and Galloway are currently carrying out core path planning, both existing routes and routes likely to be adopted in the core path plans by the Council should be taken account of whilst looking at the impacts of the proposed routes on recreation and access.

If you have any questions regarding this response please do not hesitate to contact me at the address shown on the front of this letter.

Yours faithfully

BETH WILSON
Area Officer
East Dumfries

Annex A
Legislative Requirements for European Sites

Castle Loch is classified as an SPA under the EC Directive 79/409/EEC on the Conservation of Wild Birds (the "Birds Directive"), this means that the Conservation (Natural Habitats, &c.) Regulations 1994 as amended 2004, (the "Habitats Regulations") apply. The requirements are summarised in SE Circular 6/1995 as amended June 2000 and include, at paragraph 12,

> "The Regulations (*48*) require that, where an authority concludes that a development proposal unconnected with the nature conservation management of a Natura 2000 site is likely to have a significant effect on that site, it must undertake an appropriate assessment of the implications for the conservation interests for which the area has been designated".

The need for appropriate assessment extends to plans or projects outwith the boundary of the site in order to determine their implications for the interest protected within the site.

Under Regulation 48 of the Habitats Regulations, the competent authority, has a duty to:

- determine whether the proposal is directly connected with or necessary to site management for conservation; and, if not,
- determine whether the proposal is likely to have a significant effect on the site either individually or in combination with other plans or projects; and, if so, then
- make an appropriate assessment of the implications (of the proposal) for the site in view of that site's conservation objectives.

The competent authority can only agree to the proposal under Regulation 48 after having ascertained that it will not adversely affect the integrity of the site. If this is not the case, and there are no alternative solutions, the proposal can only be allowed to proceed if there are imperative reasons of overriding public interest, which in this case can include those of a social or economic nature. If you propose to approve the plan on the grounds of imperative reasons of overriding public interest then Regulation 49 states that you must inform Scottish Ministers and you must not issue approval for a period of 21 days after receipt by Scottish Ministers unless notified otherwise. If proposals are allowed to proceed in accordance with Regulation 49 then it should be noted that Regulation 53 requires that Scottish Ministers shall secure that any necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000 is protected.

The legislative requirements are summarised in SE Circular 6/1995 as amended June 2000.

Annex B

Legal Position – European Protected Species (EPS)

Regulations 39 and 43 of The Conservation (Natural Habitats &c.) Regulations 1994 (as amended) (Habitats Regulations) provide full protection for certain animal and plant species. The species identified above are referred to as European protected species and are listed on Schedules 2 (animals) and 4 (plants) of the Habitats Regulations.

This means it is illegal to:

- Deliberately or recklessly capture, injure or kill a European protected species of wild animal or to deliberately or recklessly (i) harass an animal or group of animals; (ii) disturb an animal while it's occupying a structure or place used for shelter or protection; (iii) disturb an animal while it's rearing or otherwise caring for its young; (iv) obstruct access to a breeding site or resting place, or otherwise deny the animal use of the breeding site or resting place; (v) disturb an animal in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species to which it belongs; (vi) disturb an animal in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young

- Deliberately or recklessly take or destroy its egg

- Deliberately or recklessly disturb any cetacean

- Damage or destroy the breeding sites or resting places of such animals

- Deliberately or recklessly pick, collect, cut, uproot or destroy European protected species of wild plant

Where it is proposed to carry out works which will affect European protected species or their shelter/breeding places, whether or not they are present in these refuges, a licence is required from the licensing authority (in this case likely to be Scottish Executive). It is strongly advised that you refer to the Scottish Executive information on the current interim licensing arrangements, which can be found in the document European Protected Species, Development Sites and the Planning System: Interim Guidance for Local Authorities on Licensing Arrangements (October 2001) before applying for a licence. Copies of this are available at http://www.scotland.gov.uk/library3/environment/epsg-00.asp or by writing to the Species Licensing Team, Countryside & Natural Heritage Unit, 1 H South, Victoria Quay, Leith Edinburgh, EH6 6QQ or by telephoning 0131 244 7381.

As highlighted in the Interim Guidance, three tests must be satisfied before the licensing authority can issue a licence under Regulation 44(2) of the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) to permit otherwise prohibited acts. An application for a licence will fail unless all of the three tests are satisfied. The three tests involve the following considerations:

- Test 1 - The licence application must demonstrably relate to one of the purposes specified in Regulation 44(2) (as amended). For development proposals, the relevant purpose is likely to be Regulation 44(2)(e) for which Scottish Executive is currently the licensing authority. This regulation states that licences may be granted by Scottish Executive only for the purpose of "preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment."

- Test 2 - Regulation 44(3)(a) states that a licence may not be granted unless Scottish Executive is satisfied "that there is no satisfactory alternative".

- Test 3 - Regulation 44(3)(b) states that a licence cannot be issued unless Scottish Executive is satisfied that the action proposed "will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range" (Scottish Executive will, however, seek the expert advice of SNH on this matter).

Consideration of European protected species must be included as part of the planning application process, not as an issue to be dealt with at a later stage. Any planning consent given without due consideration to these species is likely to breach European Directives with the possibility of consequential delays or the project being halted by the EC, as has happened previously.

APPENDIX 2

Environmental
Appraisal Summary Tables

APPRAISAL SUMMARY TABLE – NOISE AND VIBRATION

A74 (M) Proposal Option	CRITERIA & KEY ISSUE	SCALE / DURATION /NATURE	SIGNIFICANCE	Overall Summary of Impact with Mitigation	COMMENTS
A709 (South) Option	Noise and Vibration	Local-regional/ Long term/ Changes in levels of noise and vibration	Moderate/ Substantial Adverse	Moderate Adverse	Assumes appropriate mitigation is implemented. Introduction of a new road result in changes to the baseline for noise and vibration. There are likely to be moderate increases in local noise and vibration levels. However, these impacts will have to be assessed against a likely decrease in noise and vibration levels on the existing A709 as motorists divert to new road and therefore away from existing settlements. Additional environmental assessment will be required to further determine the likely impacts to noise and vibration levels.
A74 (M) Proposal Option	**CRITERIA & KEY ISSUE**	**SCALE / DURATION /NATURE**	**SIGNIFICANCE**	**Overall Summary of Impact with Mitigation**	**COMMENTS**
A75 Dualling Option	Noise and Vibration	Local-regional/ Long term/ Changes in levels of noise and vibration	Slight Adverse	Negligible	Assumes appropriate mitigation is implemented. Physical improvements are unlikely to significantly increase the existing levels of noise and vibration experienced on the A75. Further assessment is required to further determine the likely impacts to noise and vibration levels.

APPRAISAL SUMMARY TABLE – AIR QUALITY

A74 (M) Proposal Option	CRITERIA & KEY ISSUES	SCALE / DURATION /NATURE	SIGNIFICANCE	Overall Summary of Impact with Mitigation	COMMENTS
A709 (South) Option	Local and Global Air Quality	Local/ long term/ mitigated	Slight Positive	Slight Positive	New route will shorten journey distances, in particular to central Scotland and the A74 (M) and improve traffic flow rates, both of which are likely to reduce emissions. The new route will esentially transfer existing traffic to a new route. As a result, residents of Lochmaben may experience a slight improvement in air quality due to motorists opting to use new A709 route. Further assessment is required to better determine the impacts to air quality.
A74 (M) Proposal Option	**CRITERIA & KEY ISSUES**	**SCALE / DURATION /NATURE**	**SIGNIFICANCE**	**Overall Summary of Impact with Mitigation**	**COMMENTS**
A75 Dualling Option	Local and Global Air Quality	Local/ long term/ mitigated	Slight Negative	Negligible/ Neutral	Potential for higher emissions due to increased speeds as road is widened and improved. Same number of people /properties will be affected. Further assessment is required to better determine the impacts to air quality.

APPRAISAL SUMMARY TABLE - WATER QUALITY, DRAINAGE AND FLOODING

A74 (M) Proposal Option	CRITERIA	KEY ISSUE	SCALE / DURATION /NATURE	SIGNIFICANCE	Overall Summary of Impact with Mitigation	COMMENTS
A709 (South) Option	Water and Drainage	Surface water quality, in particular: • River Annan • Lochar Water • Lochmaben Lochs • Castle Loch	Local/ temporary/ mitigated/High Risk	Major Adverse	Moderate/ Major Adverse	Assumes detailed consultation with SEPA and full compliance with pollution prevention guidelines and appropriate use of SUDS. A strategy for a sustainable urban drainage system (SUDS) will inform the road design. The aim is to provide a full level of attenuation and treatment in accordance with SEPA requirements.
		Groundwater Quality	Regional/ temporary/ mitigated/ High Risk	Major Adverse	Moderate/ Major Adverse	
		Flooding	Regional/ temporary/ mitigated/ Moderate Risk	Major Adverse	Moderate/ Major Adverse	Assumes flood risk assessment recommendations are adopted.
		Drainage	Regional/ temporary/ mitigated/ Moderate Risk	Moderate/ Major Adverse	Minor/ Moderate adverse	Assumes full compliance with pollution prevention guidelines and appropriate use of SUDS. A strategy for a sustainable urban drainage system (SUDS) will inform the road design. The aim is to provide a full level of attenuation and treatment in accordance with SEPA requirements.

A74 (M) Proposal Option	CRITERIA	KEY ISSUE	SCALE / DURATION /NATURE	SIGNIFICANCE	Overall Summary of Impact with Mitigation	COMMENTS
A75 Dualling Option	Water and Drainage	Surface water quality, in particular: • River Annan • Lochar Water • Kirtle Water	Regional/temporary/mitigated/Minor Risk	Moderate Adverse	Minor Adverse	Assumes detailed consultation with SEPA and full compliance with pollution prevention guidelines and appropriate use of SUDS. A strategy for a sustainable urban drainage system (SUDS) will inform the road design. The aim is to provide a full level of attenuation and treatment in accordance with SEPA requirements.
		Groundwater Quality	Regional/temporary/mitigated/Minor Risk	Minor/ Moderate Adverse	Negligible	AS ABOVE
		Flooding	Local/temporary /mitigated/ Minor Risk	Negligible	Negligible	Assumes flood risk assessment recommendations are adopted.
		Drainage	Local / temporary/ mitigated/ Minor Risk	Negligible	Negligible	Assumes full compliance with pollution prevention guidelines and appropriate use of SUDS. A strategy for a sustainable urban drainage system (SUDS) will inform the road design. The aim is to provide a full level of attenuation and treatment in accordance with SEPA requirements.

APPRAISAL SUMMARY TABLE – GEOLOGY AND SOILS

A74 (M) Proposal Option	CRITERIA	KEY ISSUE	SCALE / DURATION /NATURE	SIGNIFICANCE	Overall Summary of Impact with Mitigation	COMMENTS
A709 (South) Option	Geology	Solid and Drift Geology	Local Regional/ Permanent/ direct impacts	Moderate/ Major Adverse	Moderate Adverse	Assumes compliance with best practice procedures.
		Floodplains	Local/ long term/ direct impacts/ mitigated	Major Adverse	Moderate Adverse	Assumes compliance with best practice and use of SUDS where required
		Protected sites	N/A	N/A	N/A	No designated sites
		Topography	Regional/ Long term/ Direct impacts	Major Adverse	Moderate Adverse	Assumes compliance with best practice.
A74 (M) Proposal Option	**CRITERIA**	**KEY ISSUE**	**SCALE / DURATION /NATURE**	**SIGNIFICANCE**	**Overall Summary of Impact with Mitigation**	**COMMENTS**
A75 Dualling Option	Geology	Solid and Drift Geology	Local/ temporary/ direct impacts	Moderate Adverse	Minor Adverse	Assumes compliance with best practice procedures.
		Floodplains	Local/ temporary/ direct	Moderate Adverse	Minor Adverse	Assumes compliance with best practice and use of SUDS where required
		Protected sites	N/A	N/A	N/A	No designated sites
		Topography	Regional/temporary/ direct impact	Moderate Adverse	Minor/ Moderate Adverse	Assumes compliance with best practice.

APPRAISAL SUMMARY TABLE – ECOLOGY, BIODIVERSITY AND NATURE CONSERVATION

Note. This appraisal is based on available data and may be subject to change after site specific surveys.

A74 (M) Proposal Option	FEATURE	KEY ISSUE	SCALE / DURATION/ NATURE	SEVERITY	Overall Summary of Impact with Mitigation	COMMENTS
A709 (South) Option	**Designated sites of nature conservation importance**	Impacts on European and UK designated sites, including: • Castle Loch SPA • Lochmaben Lochs SSSI	International - national/ short and long term/ indirect	Extremely Severe	Moderate	Potential for impacts and disturbance to Natura 2000 and nationally designated sites and/or species. Magnitude of potential impacts are high due to construction of a new road. Assumes implementation of all appropriate mitigation measures and full consultation with SNH and appropriate statutory bodies. A precautionary approach has been taken at this stage due to lack of detailed design information and survey data. An EIA and Appropriate Assessment would be required for the A709 scheme.
	Protected species	Impacts on European & UK Protected Species:	International - National/ short term/ direct & indirect	Extremely Severe	Moderate	Detailed protected species surveys should be undertaken at the project level. In particular features which are likely to support species including trees/ buildings acting as roosts for bats, wooded habitat for badgers and scrub for birds etc. Mitigation to reduce severance issues, such as maintenance of foraging corridors for bats and physical structures such as bridges to allow free animal movement across carriageway. An EIA and Appropriate Assessment would be required for the A709 scheme.
	Habitat	Direct loss or indirect	International/ short-medium	Extremely	Moderate	The corridor contains areas of protected ancient woodland and runs close to designated and

A74 (M) Proposal Option	FEATURE	KEY ISSUE	SCALE / DURATION/ NATURE	SEVERITY	Overall Summary of Impact with Mitigation	COMMENTS
		disturbance to priority habitat	term/ direct	Severe		protected habitats including, wetlands, rivers and streams. A precautionary approach has been taken at this stage due to lack of detailed design information and survey data. An EIA and Appropriate Assessment would be required for the A709 scheme.

A74 (M) Proposal Option	FEATURE	KEY ISSUE	SCALE / DURATION/ NATURE	SEVERITY	Overall Summary of Impact with Mitigation	COMMENTS
A75 Dualling Option	**Designated sites of nature conservation importance**	Impacts on European and UK designated sites, including: • Solway Mosses SAC • Upper Solway Flats and Marshes SPA • Longbridge Muir SSSI • Royal Ordnance Powfoot SSSI	International - national/ short term/ indirect	Severe	Slight-Moderate/ Negligible.	Potential for impacts to Natura 2000 and nationally designated sites and/or species. However, A75 is already in existence. Assessment assumes implementation of all appropriate mitigation measures and full consultation with SNH and appropriate statutory bodies. A precautionary approach has been taken at this stage due to lack of detailed design information and survey data. An EIA and Appropriate Assessment would likely be required for the A709 scheme.
	Protected species	Impacts on European & UK Protected Species	International - National/short term/ direct & indirect	Severe	Slight-Moderate/ Negligible.	Potential for impacts to international and nationally protected species. However, A75 is already in existence. Detailed protected species surveys should be undertaken at the project level. In particular features which are likely to support species including trees/ buildings acting as roosts for bats,

A74 (M) Proposal Option	FEATURE	KEY ISSUE	SCALE / DURATION/ NATURE	SEVERITY	Overall Summary of Impact with Mitigation	COMMENTS
						wooded habitat for badgers and scrub for birds etc. Mitigation to reduce severance issues, such as maintenance of foraging corridors for bats and physical structures such as bridges to allow free animal movement across carriageway. An EIA and Appropriate Assessment would likely be required for the A709 scheme.
	Habitat	Direct loss or indirect disturbance to priority habitat	International/ short-medium term/ direct	Severe	Slight-Moderate/ Negligible.	Potential for habitat loss due to land take, however the A75 is already in existence. The corridor contains areas of protected ancient woodland and runs close to designated and protected habitats including, wetlands, rivers and streams. An EIA and Appropriate Assessment would likely be required for the A709 scheme.

APPRAISAL SUMMARY TABLE – LANDSCAPE AND VISUAL AMENITY

A74 (M) Proposal Option	CRITERIA	KEY ISSUE	SCALE / DURATION /NATURE	SIGNIFICANCE	Overall Summary of Impact of after Mitigation	COMMENTS
A709 (South) Option	Landscape & Visual	Impacts on landscape character and designations	Regional/ Permanent/ Direct & Indirect and adverse	Major Adverse	Major Adverse	Assumes all appropriate mitigation measures are implemented. Significant cut and fill works are unavoidable, which will have significant impacts on both landscape and visual amenity.
		Visual Impacts	Regional/ Permanent/ Direct & Indirect and adverse	Major Adverse	Major Adverse	
A74 (M) Proposal Option	**CRITERIA**	**KEY ISSUE**	**SCALE / DURATION /NATURE**	**SIGNIFICANCE**	**Overall Summary of Impact of after Mitigation**	**COMMENTS**
A75 Option	Landscape & Visual	Impacts on landscape character and designations	Regional/ Permanent/ Direct & Indirect and adverse	Moderate Adverse	Minor Adverse	Assumes all appropriate mitigation measures are implemented. A75 already exists and widening will have relatively low impacts as majority of infrastructure is in place.
		Visual Impacts	Regional/ Permanent/ Direct & Indirect and adverse	Moderate/ Major Adverse	Minor Adverse	

APPRAISAL SUMMARY TABLE – LAND USE

A74 (M) Proposal Option	CRITERIA	KEY ISSUE	SCALE / DURATION /NATURE	Significance	Overall Summary of Impact with Mitigation	COMMENTS
A709 (South) Option	Land Use, Agriculture & Soils	Loss of agricultural use/ farm viability	Local-Regional / Permanent / Direct	Major Adverse	Moderate Adverse	• Consultation with SGRIPID as part of EIA process • Reducing permanent impacts by reinstating all areas of temporary land take on completion of the works • Minimising disruption to farms and ensure loss of land and severance issues are satisfactorily addressed.
		Impacts on Rights of Way/ Community facilities/ Schools	Local/Temporary/small scale	Major Adverse	Minor Adverse	• Identifying and minimising impacts and disruption to sensitive receptors e.g. schools and community facilities • Reducing permanent impacts by reinstating all areas of temporary land take on completion of the works. • Minimising land take in the construction of any junctions with existing roads. • Minimising disruption to existing road infrastructure and ensuring public right of ways/cycle routes are unaffected by construction/operation of the route
		Impact on Infrastructure	Local-Regional / Temporary/ direct and indirect	Moderate/ Major Adverse	Minor Adverse	• Consultation with Utilities companies at detailed design stage. In particular, with regard to mains gas pipelines known to exist in the area.

A74 (M) Proposal Option	CRITERIA	KEY ISSUE	SCALE / DURATION /NATURE	Overall Summary of Impact without Mitigation	Overall Summary of Impact with Mitigation	COMMENTS
A75 Dualling Option	Land Use, Agriculture & Soils	Loss of agricultural use/ farm viability	Local-Regional / Permanent / Direct	Moderate/ Major Adverse	Moderate Adverse	• Consultation with SGRIPID as part of EIA process • Reducing permanent impacts by reinstating all areas of temporary land take on completion of the works • Minimising disruption to farms and ensure loss of land and severance issues are satisfactorily addressed.
		Impacts on Rights of Way/ Community facilities/ Schools	Local/ Temporary/ small scale	Moderate/ Major Adverse	Minor Adverse	• Identifying and minimising impacts and disruption to sensitive receptors e.g. schools and community facilities • Reducing permanent impacts by reinstating all areas of temporary land take on completion of the works. • Minimising land take in the construction of any junctions with existing roads. • Minimising disruption to existing road infrastructure and ensuring public right of ways/cycle routes are unaffected by construction/operation of the route
		Impact on Infrastructure	Local-Regional / Temporary/ direct and indirect	Minor Adverse	Minor/ Negligible Adverse	• Consultation with Utilities companies at detailed design stage. In particular, with regard to mains gas pipelines known to exist in the area.

APPRAISAL SUMMARY TABLE – CULTURAL HERITAGE

A74 (M) Proposal Option	CRITERIA	KEY ISSUE	SCALE / DURATION /NATURE	SIGNIFICANCE	Overall Summary of Impact with Mitigation	COMMENTS
A709 (South) Option	Cultural Heritage	Archaeological sites including SAMs: • Torthorwald Castle • Kirk Loch • Castle Hill • Lochmaben Peel and Castle • Greenhillhead • Hallmuir	Local-National/ permanent/ direct – indirect.	Major Adverse	Moderate Adverse	Assumes implementation of mitigation measures. However, a precaurtionary approach has been taken due to the lack of field survey data and project design at this stage.
A74 (M) Proposal Option	**CRITERIA**	**KEY ISSUE**	**SCALE / DURATION /NATURE**	**SIGNIFICANCE**	**Overall Summary of Impact with Mitigation**	**COMMENTS**
A75 Dualling Option	Cultural Heritage	Archaeological sites including SAMs: • Annan Hill • Hayknowes • Woodland • Blacketlees	Local-National/ permanent/ direct – indirect.	Moderate Adverse	Minor Adverse	Assumes implementation of mitigation measures. However, a precaurtionary approach has been taken due to the lack of field survey data and project design at this stage.

Appendix C – Policy Integration Summary

Policy Reference	Policy Description	Option 1 A75(T)	Option 3 A709
Dumfries & Galloway Structure Plan			
Policy D7	The Council is working with Dumfries and Galloway Enterprise to develop a Joint Economic Strategy* to promote and support economic development in Dumfries and Galloway. Development proposals which assist in the growth and development of the local economy will generally be supported particularly where they would:- 1. develop existing key sectors including agriculture, forestry, plastics, chemicals, food processing, transport and distribution and tourism; or 2. introduce new businesses and inward investment including electronics, or the use of high technology and telecommunications.	□	□
Policy E2	The siting and design of development should respect the special nature of the area. Development within, or which would have a significant impact on Regional Scenic Areas (RSAs), may be permitted where it can be demonstrated that:- 1. the landscape character and scenic interest for which the area has been designated would not be adversely affected; or 2. there is a specific need for the development at that location which could not be located in a less sensitive area.	O	□
Policy S7	The Council will continue to press the Government to undertake a rapid review of its policy for the A75, to reflect its national and international role and resolve deficiencies along the route.	□	O
Policy S11	The Council will continue to co-ordinate, publicise, improve and financially support local public transport services, in response to local needs and development of a sustainable transport strategy.	□	□
Policy C3	The Council when considering development proposals affecting sports facilities and playing fields will take into account:- 1. sporting value to the community and clubs;	O	O

	to meet strategic development objectives e.g. as part of a long term settlement strategy set out in the development plan…		
26	There are many areas of rural Scotland which are special in terms of the built, historic, and natural environment where change has to be managed with great care. The quality of the country's natural and cultural heritage is especially high. These are a valuable national asset and will prove to be of increasing value in the years ahead. The protection and enhancement of these assets, including the need to further the interests of biodiversity, are important considerations. Many areas, such as those containing protected habitats and landscapes, are special in European and national terms and they have to continue to be cared for as part of the general good stewardship for the wider countryside. One of rural Scotland's special features in the extent to which environmental quality is high outwith protected areas as well as within them. Some parts of these valued environments can accommodate certain types of development, where it can be demonstrated that there will be no adverse environmental impact.	O	☐
PAN75 – Planning for Transport			
53	Circular 15/1999 explains the Environmental Impact Assessment (Scotland) Regulations 1999. The regulations apply to projects which require planning permission, certain trunk road projects comprising construction and improvement authorised under the Roads (Scotland) Act 1984, and drainage works authorised under the Land Drainage (Scotland) Act 1958.	☐	☐
56	It is a requirement of the Scottish Executive that all transport related projects which require its approval or for which it provides funding shall be appraised in accordance with the Scottish Transport Appraisal Guidance: STAG (except for projects which were before Scottish Ministers before July 2001).	☐	☐
PAN59 – Improving Town Centres			
	No relevant policies identified		
PAN66 – Best Practice in Handling Planning Applications Affecting Trunk Roads			
	No relevant policies identified		
SPP3 – Planning for Homes			

No relevant policies identified

SPP8 – Town Centres and Retailing

No relevant policies identified

Policy Reference	Policy Description	Option 1 A75(T)	Option 3 A709
National Transport Strategy			
10 & Chapter 3	Improve journey times and connections, to tackle congestion and the lack of integration and connections in transport which impact on our high level objectives for economic growth, social inclusion, integration, and safety	□	□
10 & Chapter 4	Reduce emissions, to tackle the issues of climate change, air quality and health improvement which impact on our high level objective for protecting the environment and improving health	□	□
10 & Chapter 5	Improve quality, accessibility, and affordability, to give people a choice of public transport, where availability means better quality transport services and value for money or an alternative to the car	□	□
Regional Transport Strategy			
Policy 1	Promote schemes which will not only benefit Dumfries and Galloway but will add value to the broader Scottish economy and underpin increased sustainable national economics growth, aligning to local and national policy objectives	O	O
Policy 2	Support the regional economy in relation to local jobs and also facilitate sustainable connectivity internally as well as externally to key business centres in the central belt and other locations such as Ayrshire and Cumbria	□	□
Policy 3	Improve quality of life by promoting vibrant places which provide access for all to employment, healthcare, education and other services	□	□
Policy 4	Address peripherality between the region's main settlements and outlying areas, and between the region and its external markets	□	□
Policy 5	Adopt a balanced approach to competing needs, recognising the role transport plays in sustaining local economies while at the same time making use of alternative approaches in locations where different transport	□	□

	policies focused on minimising car use are more appropriate and more effective		
Policy 6	Assist the Scottish Government in delivering on its five high level national objectives and the National Transport Strategy. A presumption will be given in favour of transport improvements linked to the strategic vision based on well defined economic, social, and environmental objectives	O	O
Scotland's Transport Future – White Paper (2004)			
2.1	Transport promotes economic growth. We are committed to delivering the infrastructure and services that link people and places to enable the economy to grow and develop. This involves investing in new public transport (buses, rail, ferries, trams and park and ride), better facilities for freight, targeted improvements in the trunk road network, encouraging greater use of sea routes and canals and developing new direct air routes from and to Scotland.	□□	□
4.2	If we are to reduce car dependence and impacts on the environment then we need to continue to shift the balance of spending in favour of public transport. By 2006, 70% of the transport budget will be focused on public transport and this will deliver a major programme of improvements to our public transport infrastructure: increasing capacity, enabling new services and opening up new opportunities for people to use public transport.	□□	□□
Trans-European Transport Network (TEN-T), 2002			
Project 13	Roads in northern and southern Ireland, Scotland, Wales and England are being upgraded to speed transport between Ireland and mainland Europe. This project will improve road transport between Cork, Dublin and Belfast, complementing the development of Ireland's main west coast rail line (see Project 9). It will also provide upgraded links to mainland Europe via ferry links to Scotland and Wales, the A14 and M6 roads across England, and the ferry ports of Felixstowe and Harwich. The 1 500-kilometre route includes a mixture of new roads, mainly in the Republic of Ireland, and the upgrading of existing roads to motorway, expressway, dual-carriageway and high-quality single-carriageway, depending on traffic densities. The project will significantly shorten journey times for passengers and freight between Ireland and the ports of Belgium and the Netherlands, contributing to the economic and social cohesion of one of Europe's peripheral regions. As well as improving safety, it will help to ease congestion on these routes by relieving current traffic bottlenecks.	□□□	□

	2. contribution which they make to open space provision in the locality; 3. whether the development proposed is required at that location; and 4. the provision of new or upgraded facilities in the locality to replace existing facilities. Proposals will not normally be considered favourably unless provision is made for the enhancement or provision of replacement facilities in the locality.		
Policy C4	The Council will seek to protect existing areas of amenity open space and play facilities within towns and villages from development. Local Plans will assess existing open space provision, identify deficiencies and establish standards for the provision of new or the improvement of existing open space. The Council will seek to ensure the long term maintenance of new areas of open space and play facilities provided by a developer.	O	O
SPP17 – Planning for Transport			
15	Growing Scotland's economy relies fundamentally on maintaining and improving its transport infrastructure. Congestion has a major impact on the economy of Scotland. The Scottish Executive is tackling this through a range of interventions, delivering improvements to key congestion points on the road network and enhancing public transport in order to change people's attitudes to their travel choices.	O	O
22	The Scottish Executive and local authorities will promote road improvement schemes on the strategic network. … There is a general presumption against new motorway or trunk road junctions. The Scottish Executive may consider such junctions where nationally significant economic growth or regeneration benefits can be proven.	□	O/□
35	Integrated transport and planning involves recognition of the contribution of the following modes … motorised modes: integrated transport policy takes account of the important role of the car, but it should not assume that cars should have universal freedom of access. Within cities and larger towns, consideration should therefore be given to re-allocating road space to increased footway width, to cycle lanes, to dedicated public transport use, or in appropriate locations use by freight vehicles. Motorised two wheel vehicles have advantages over cars in terms of roadspace used and some environmental impacts.	□	□
71	… Where the planning authority or developers propose new or expanded motorway junctions a full STAG	Not	□

	appraisal will be required.	relevant	
SPP2 – Economic Development			
10	Planning policy should support Scotland's economic competitiveness in a way which is consistent with other policies of the Scottish Executive …	□	□
32	A successful economy requires an effective and efficient transport infrastructure. The Scottish Executive has embarked on a continuing programme of reinvigorating the transport system to meet Scotland's economic and social needs without threatening the health of the environment. In support of the policy, [SPP17] provides for improved integration between transport and land-use planning. It encourages development to be sited where there is a choice of transport and the location is not dependent predominantly on access by car. Whilst it will be more difficult to deal with sustainable transport issues in rural areas, the location of economic development should take account of access to services.	□	□
NPPG14 – Natural Heritage			
International Designations / International Obligations	The Government recognises that effective conservation of our natural heritage cannot depend solely on national action. It therefore attaches great importance to the various international obligations it has assumed in relation to the protection of the natural environment [including] ■ The Ramsar Convention on Wetlands of International Importance, especially as Waterfowl Habitat ■ The EC Council Directive on the Conservation of Wild Birds (the Birds Directive) ■ The EC Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) including Special Areas of Conservation (SACs), Special Protection Areas (SPAs),and Natura 2000 Areas ■ The EC Council Directives on the Assessment of the Effects of certain Public and Private Projects on the Environment (85/337/EC and 97/11/EC)	O	□
SPP15 – Planning for Rural Development			
11	…Agriculture and forestry will continue to be important defining elements of rural life. Prime quality agricultural land should continue to be protected and should not be eroded in a piecemeal way but only used	□	O/□

Scotland's Transport: Delivering Improvements: Transport Indicators for Scotland

Building a Better Scotland		
Increase rail passenger journeys on the ScotRail network by a further 5% by 2006 on 2002-03 levels.	O	O
Increase local bus passenger journeys by 5% by 2006 on 2000-01 levels.	O	O
Increase passenger numbers passing through HIAL airports by 5% by 2006 on 2001-02 levels.	Not Relevant	Not Relevant
Increase the quality and quantity of lifeline ferry services and ensure 98% of planned sailings actually sail and 98% arrive on time, by 2006.	Not Relevant	Not Relevant
Reduce the time taken to undertake trunk road journeys on congested/heavily trafficked sections of the road network by 2006.	□	O
Achieve best value for money by reducing the proportion of the trunk road network that requires close monitoring to 6% for motorways and 8% for dual carriageways by 2006.	□	O
Reduce the number of serious and fatal road accident casualties by 40% by 2010 and by 50% for children over the same period, compared with 1994-98 annual averages.	□□	□□
Traveline Scotland Ltd to answer at least 1 million enquiries per year by 2006 and for performance and output standards to be met.	Not Relevant	Not Relevant
Transport Direct portal to achieve at least 1.5 million visits per annum by 2006 and for performance and output standards to be met.	Not Relevant	Not Relevant
Scottish Climate Change Programme		
Make an equitable contribution to the UK Kyoto target of a 12.5% reduction in 1990 levels of greenhouse gas emissions.	□□□	□□□

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland

To work in partnership with local authorities with the aim of meeting the annual nitrogen dioxide objective by 2005 and the objective for PM10 by 2010 in all areas. □□□ □□□

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