Grizebeck transport improvement

Preferred route report

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Executive Summary

i. The Grizebeck transport improvement study is undertaking scheme development and appraisal for potential transport improvements to the A595 at Grizebeck. The study will produce an outline business case to secure delivery funding from the Department for Transport.

ii. The first stage of the study produced a long list of potential intervention options that could meet the scheme objectives. The options were then sifted using the Department for Transport's Early Assessment and Sifting Tool, to identify options to be taken forward for further appraisal.

iii. Two options were identified: the red route (Option 1), which consists of online widening and a new link to the west of Grizebeck; and the blue route (Option 2), which consists of a new link to the east of the farm and the west of Grizebeck.

iv. A public consultation exercise was undertaken in Autumn 2018 to seek stakeholder feedback on the two options. As part of this exercise, a public desire for two new options was identified. These options included a widened route along Buckhorn Lane, and a new route to the west of the farm and Bank End.

v. Scheme development and appraisal was undertaken on these additional two options. The results of this work demonstrated that both options would only achieve poor value for money, and as such could not be considered further as a potential option.

vi. A decision framework was developed to determine the preferred option. The framework scored options against criteria aligned to the following categories: strategic objectives, stakeholder feedback, environmental impacts, engineering assessment, economic appraisal, and deliverability. Both the red route and the blue route were scored using the framework.

vii. The outcome of the decision framework is that the Blue Route (Option 2) is the preferred route.

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1 Introduction

1.1 Grizebeck transport improvement study

1.1.1 The Grizebeck transport improvement study consists of scheme development and appraisal for a potential transport improvement to the A595 at Grizebeck. The study is being undertaken by technical consultants AECOM on behalf of Cumbria County Council. The study will culminate with the production of an outline business case, which will be used to secure delivery funding from the National Roads Fund administered by the Department for Transport (DfT).

1.1.2 The project is building on work from the West of M6 Strategic Connectivity Study. It aims to develop a scheme which removes transport constraints relating to capacity, connectivity, safety and resilience to help support economic growth in Cumbria. The schemes identified in the West of M6 study were developed further, and the Grizebeck improvement was identified as a priority short-term scheme in the subsequent A595 and A66 Strategic Outline Business Case.

1.1.3 As part of scheme development, different scheme options have been considered. However, before a business case can be submitted to the DfT, a preferred option needs to be selected.

1.2 Scheme options

1.2.1 The first stage of the study included setting the objectives for the scheme, and producing and sifting a long list of potential intervention options to meet the identified objectives and resolve the issues in this area.

1.2.2 Nine potential intervention options were identified.

1.2.3 The potential interventions were compared and prioritised based on a methodology aligned with the DfT's Early Assessment and Sifting Tool (EAST). This prioritisation methodology allows the options to be compared across the five cases of the transport business case model: strategic, economic, commercial, financial and managerial.

1.2.4 Further details of the scheme sifting are provided in the Stage 1 report (AECOM, June 2018).

1.3 Discounted options

1.3.1 The prioritisation methodology considered and discounted the following options:

- Traffic signals at the farm pinchpoint – discounted due to not meeting scheme objectives for whole area of search, and introducing additional delays
- Routes to west of the farm – discounted due to environmental impact on the flood plain and poor ground conditions
- Routes terminating to the south of Grizebeck – discounted due to not meeting scheme objectives for whole area of search

1.4 Identified options

1.4.1 The prioritisation methodology identified three options to be taken forward for further appraisal:

- The red route (Option 1): widening of existing road and new link to west of Grizebeck
- The blue route (Option 2): full bypass to east of farm and new link to west of Grizebeck
- Buckhorn Lane (Option 3): Upgrading the existing Buckhorn Lane

1.4.2 However, following further scheme development and appraisal work, the Buckhorn Lane option (Option 3) was discounted prior to public consultation. This is because the economic appraisal showed that it could only achieve poor value for money, due to providing only minor journey time savings for the predominant south-east traffic flow. The option would therefore not meet the scheme objectives.

1.4.3 The red and blue routes were taken forward to public consultation. These routes are shown in Figure 1.1 overleaf.

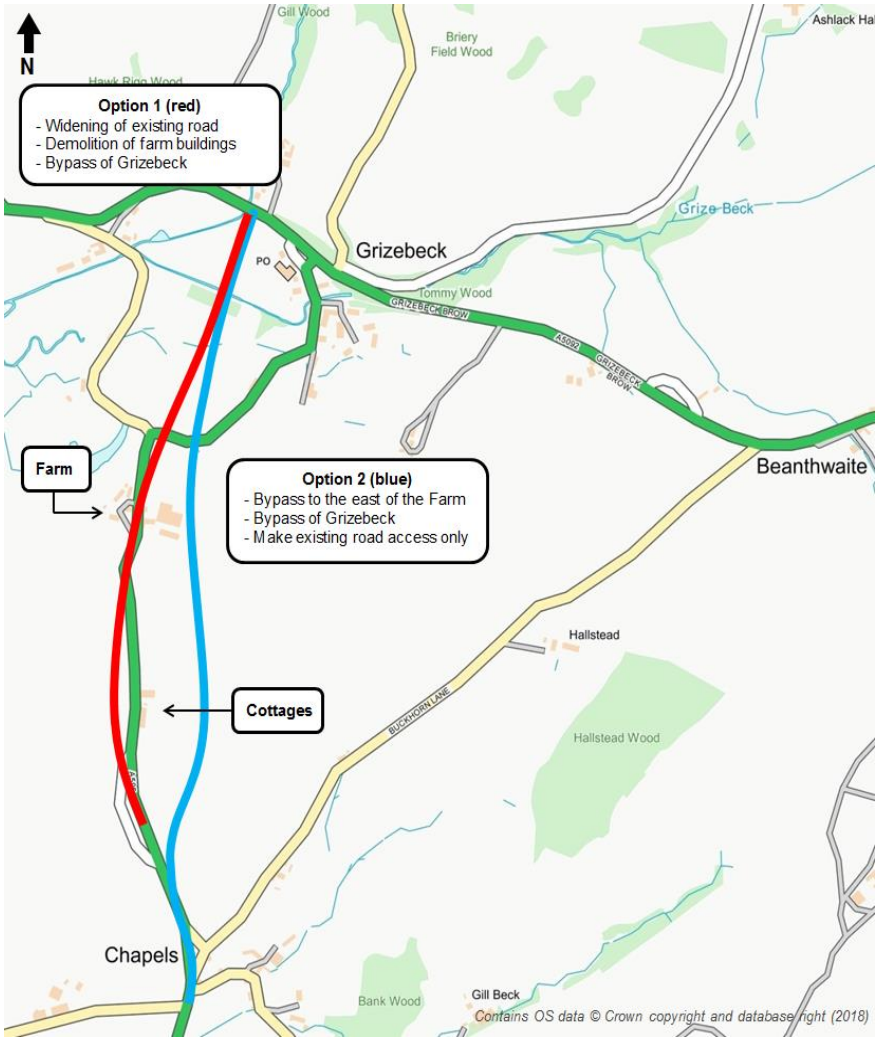

Figure 1.1: Routes for Consultation

1.5 Consultation

1.5.1 A public consultation exercise was undertaken in Autumn 2018. Two drop-in events were held in Grizebeck, and feedback from a range of stakeholders was sought through a feedback form. Further information on the public consultation is provided in the Consultation feedback report (Cumbria County Council, January 2019).

1.5.2 The consultation feedback shows that there is opposition against the red route, but support for the blue route.

1.5.3 The consultation feedback identified a public desire to consider routes both further to the east along Buckhorn Lane, and further to the west. Whilst a route to the west was sifted out at the first stage, further scheme development work was subsequently undertaken as a response to this feedback. The Buckhorn Lane option, which was developed but discounted before the consultation, was also revisited.

1.6 Additional routes

1.6.1 The conclusions relating to the Buckhorn Lane option were summarised in the Stage 2 report. The report concluded that this option would not achieve the objective of improving journey times, due to the increased length of the route for the predominant south-west traffic movements. This means that this option could only achieve poor value for money; therefore, the option could not secure delivery funding due to the business case not being able to demonstrate value for money.

1.6.2 Despite the route offering some benefits in terms of environmental impacts and deliverability when compared to the red and blue routes, the conclusions regarding the economic appraisal showing poor value for money are unchanged. Whilst the route would have a beneficial impact on some properties by rerouting traffic, it would also have negative impacts on different residential properties

1.6.3 More detailed scheme development work was undertaken on a route to the west, which is subsequently referred to as the ‘purple’ route. This work brought the option to the same level of design and appraisal as the other three routes. This work is summarised in the Stage 2 addendum report (AECOM, December 2018).

1.6.4 This work concluded that a purple route would provide a higher level of transport benefits (around 30 per cent higher) compared to the red and blue routes, and would more strongly meet the scheme objectives. However, the scheme was assessed to cost significantly more than the other options, mainly due to the extensive earthworks required at the northern end of the route due to differences in ground level and conditions. As such, it would still only achieve poor value for money as the increase in cost is much greater than the increase in monetised benefits. The purple route was also assessed to have more significant environmental impacts, crossing a large proportion of flood zone.

1.6.5 These reasons mean that neither of these two options can be progressed further or selected as the preferred option for the outline business case. Neither the purple nor Buckhorn Lane options can demonstrate value for money in the economic appraisal; in addition, the purple option would have significant delivery risks in the management case.

2 Decision framework

2.1 Summary

2.1.1 A decision framework was developed to determine the preferred option. The decision framework provides an evidence-based and logical methodology for appraising the options and selecting the preferred option. The decision framework has been developed so it considers evidence from a number of areas, whilst keeping the methodology proportionate to the scale of the scheme.

2.1.2 A number of criteria are considered. These are broken down into the following six categories:

1. Strategic objectives
2. Stakeholder feedback
3. Environmental impacts
4. Engineering assessment
5. Economic appraisal
6. Deliverability

2.1.3 Each category has three criteria. Each scheme is scored against each criteria on a five-point scale. All criteria will be weighted equally.

2.1.4 The options were scored by the Project Review Group. The scores were then validated and approved by senior managers via the Project Board.

2.1.5 The preferred option is the highest scoring option. The preferred option will form the basis of the proposed business case.

2.1.6 Further details on the criteria within each of the six categories is detailed in the following sections. The scoring methodology is provided in Appendix A.

2.2 Strategic objectives

2.2.1 The criteria in the strategic objectives category will be scored against how strongly the option hinders or achieves three of the scheme objectives.

2.2.2 The three criteria in the strategic objectives category are:

1. Improve journey times: reduces delay and improves journey speeds on the A595
2. Improve route resilience: ensuring the A595 is of an appropriate standard for when it is used as a diversion route for the A590
3. Reduce severance: reduces the impact of the A595 on severance of Grizebeck

2.2.3 The options will be scored on how strongly they hinder or achieve the above objectives.

2.3 Stakeholder feedback

2.3.1 The criteria in the stakeholder feedback category will be scored against how strongly stakeholders support or oppose that option in feedback from the public consultation.

2.3.2 The three criteria in the stakeholder feedback category are:

1. Authority stakeholders: feedback from authorities and statutory stakeholders
2. Interest organisations: feedback from interest organisations
3. General public: feedback from the general public

2.3.3 The options will be scored on how strongly the stakeholders oppose or support the objectives.

2.4 Environment impacts

2.4.1 The criteria in the environmental impacts category will be scored against the significance of the adverse and beneficial environmental impacts of each option.

2.4.2 The three criteria in the environmental impacts category are:

1. Natural environment: ecology, flood risk, geology
2. People: air quality, noise, visual impact
3. Physical environment: landscape character, cultural heritage, outdoor access

2.4.3 The options will be scored on the significance of the adverse or beneficial impacts on the environment.

2.5 Engineering assessment

2.5.1 The criteria in the engineering assessment category will be scored against the significance of the adverse and beneficial engineering impacts of each option.

2.5.2 The three criteria in the engineering assessment category are:

1. Safety: the nature of safety impacts of the option
2. Buildability: the nature of impacts resulting from construction of the option
3. Maintenance: the nature of impacts resulting from maintaining the option once operational

2.5.3 The options will be scored on how strongly the stakeholders oppose or support the objectives.

2.6 Economic appraisal

2.6.1 The criteria in the economic appraisal category will be scored against the potential economic benefits of each option.

2.6.2 The three criteria in the economic appraisal category are:

1. Transport benefits: the impact of the scheme on transport user benefits
2. Wider benefits: the impact of the scheme on wider economic benefits
3. Other impacts: the impact of the scheme on other benefits, including reliability and safety

2.6.3 The options will be scored on the potential scale of the benefits and how they would influence the value for money for that option.

2.7 Deliverability

2.7.1 The criteria in the deliverability category will be scored against the potential risks and affordability of each option.

2.7.2 The three criteria in the economic appraisal category are:

1. Affordability: how affordable is the option in terms of the proposed funding source, the National Roads Fund
2. Cost risk: level of cost risk associated with the option
3. Delivery risk: level of delivery risk associated with the option

2.7.3 The options will be scored on the significance of the impact on affordability or risk.

3 Preferred route decision

3.1 Red route

3.1.1 The scoring of the red route is summarised in the following section.

Strategic objectives

3.1.2 The red route scored five for *improving journey times*. This is because the new widened carriageway and new link would remove the identified pinchpoints and reduce delays.

3.1.3 The red route scored five for *improving route resilience*. This is because the new widened carriageway and new link would provide a road designed to modern standards that could accommodate heavy goods vehicles and avoid delays when the A590 is closed.

3.1.4 The red route scored three for *reduces severance*. This is because whilst traffic is removed from east of Grizebeck village, the road still bisects farm buildings and farm traffic would still be required to cross the road.

Stakeholder feedback

3.1.5 The red route scored three for *authority stakeholders*. This is because the stakeholders stated no clear preference between the red and blue routes.

3.1.6 The red route scored two for *interest organisations*. This is because the route registered minor opposition from stakeholders.

3.1.7 The red route scored one for *general public*. This is because the route was overwhelmingly opposed by the public.

Environmental impacts

3.1.8 The red route scored two for *natural environment*. This is because the route crosses through the edge of a flood zone, and would require compensatory storage to be provided; the route also crosses water courses and would have an ecological impact.

3.1.9 The red route scored four for *people*. This is because it would provide noise and air quality benefits for the east of Grizebeck village.

3.1.10 The red route scored two for *physical environment*. This is because the road alignment would result in a loss of landscape features, along with the visual impact of new structures.

Engineering assessment

3.1.11 The red route scored two for *safety*. This is because the improved, widened road removes safety issues at numerous pinch points, but private accesses would remain at the farm.

3.1.12 The red route scored one for *buildability*. This is because the construction of the route would require extensive traffic management, including the potential for lengthy diversion routes for larger vehicles.

3.1.13 The red route scored five for *maintenance*. This is because the provision of a wider road designed to current standards would allow for easier maintenance in the future.

Economic appraisal

3.1.14 The red route scored three for *transport benefits*. This is because the transport modelling showed that the scheme could achieve transport user benefits that could lead to a medium to good value for money.

3.1.15 The red route scored three for *wider benefits*. This is because the improved connectivity is expected to have a moderate impact on agglomeration, labour supply and productivity.

3.1.16 The red route scored three for *other impacts*. This is because the route can be expected to provide reasonable journey time reliability impacts in conjunction with the transport user benefits.

Deliverability

3.1.17 The red route scored five for *affordability*. This is because it has been assessed as the cheapest of all the options, and it within the available funds from the National Roads Fund.

3.1.18 The red route scored two for *cost risk*. This is because further work is required on accommodation works, land access, structures and junction design, and the cost of the farm buildings is currently unknown.

3.1.19 The red route scored one for *delivery risk*. This is because of the sensitive negotiations required for farm buildings, as well as third-party land.

Summary

3.1.20 The red route scored a total of 52. The red route scoring is provided in Appendix B.

3.2 Blue route

3.2.1 The scoring of the blue route is summarised in the following section.

Strategic objectives

3.2.2 The blue route scored five for *improving journey times*. This is because the new widened carriageway and new link would remove the identified pinchpoints and reduce delays.

3.2.3 The blue route scored five for *improving route resilience*. This is because the new widened carriageway and new link would provide a road designed to modern standards that could accommodate heavy goods vehicles and avoid delays when the A590 is closed.

3.2.4 The blue route scored four for *reduces severance*. This is because traffic is removed from east of Grizebeck village and from the vicinity of the farm buildings.

Stakeholder feedback

3.2.5 The blue route scored three for *authority stakeholders*. This is because the stakeholders stated no clear preference between the red and blue routes.

3.2.6 The blue route scored three for *interest organisations*. This is because the route was not offered clear support from stakeholders, with further consultation highlighted.

3.2.7 The blue route scored five for *general public*. This is because the route was overwhelmingly supported by the public.

Environmental impacts

3.2.8 The blue route scored two for *natural environment*. This is because the route crosses through the edge of a flood zone, and would require compensatory storage to be provided; the route also crosses water courses and would have an ecological impact.

3.2.9 The blue route scored three for *people*. This is because it would provide noise and air quality benefits for the east of Grizebeck village, although there are potential impacts at Dove Bank.

3.2.10 The blue route scored one for *physical environment*. This is because the road alignment would result in a loss of landscape features as it is through greenfield land for its entire length, along with the visual impact of new structures.

Engineering assessment

3.2.11 The blue route scored four for *safety*. This is because the improved, widened road removes safety issues at numerous pinch points.

3.2.12 The blue route scored three for *buildability*. This is because the route is offline, so construction would have little impact on existing traffic; however, impacts on properties during construction would need to be considered and mitigated where possible.

3.2.13 The blue route scored five for *maintenance*. This is because the provision of a wider road designed to current standards would allow for easier maintenance in the future.

Economic appraisal

3.2.14 The blue route scored three for *transport benefits*. This is because the transport modelling showed that the scheme could achieve transport user benefits that could lead to a medium to good value for money.

3.2.15 The blue route scored three for *wider benefits*. This is because the improved connectivity is expected to have a moderate impact on agglomeration, labour supply and productivity.

3.2.16 The blue route scored three for *other impacts*. This is because the route can be expected to provide reasonable journey time reliability impacts in conjunction with the transport user benefits.

Deliverability

3.2.17 The blue route scored four for *affordability*. This is because it is within the available funds from the National Roads Fund.

3.2.18 The blue route scored three for *cost risk*. This is because further work is required on accommodation works, land access, structures and junction design.

3.2.19 The blue route scored two for *delivery risk*. This is because of the negotiations required for third-party land.

Summary

3.2.20 The blue route scored a total of 61. The blue route scoring is provided in Appendix B.

3.3 Scores

3.3.1 Both the red route and the blue route scored similarly for the strategic objectives of the scheme. The blue route scored slightly higher as it provides a higher reduction in severance impacts by bypassing the farm buildings.

3.3.2 The blue route scored higher than the red route for stakeholder feedback. This is due to the consultation demonstrating opposition to the red route, but strong support for the blue route.

3.3.3 The red route scored higher than the blue route for environmental impact. This is because the red route closely follows the existing highway to the south of the scheme, and would not introduce significant changes in traffic movements or result in a significant loss of greenfield land in this area.

3.3.4 The blue route scored higher than the red route for engineering assessment. This is because the blue route scored higher for safety, due to removing conflict between vehicles and farm vehicle and animal movements at the farm buildings; it also scored higher for buildability, as the blue route is mostly offline, whereas the red route is online and would require extensive traffic management and potential diversion routes.

3.3.5 Both the red route and the blue route scored identically for economic appraisal. This is because both routes provide very similar transport and wider economic benefits.

3.3.6 The blue route scored marginally higher than the red route for deliverability. Despite the red route being slightly more affordable as it is slightly cheaper, the blue route was determined to have less cost and delivery risk as it does not directly impact on private properties.

3.3.7 The total scores show that the blue route scores 61 points, while the red route scores 52. A summary of the route scores is provided in Table 3.1.

Table 3.1: Route scoring summary

Criteria		Red route (Option 1)	Blue route (Option 2)
Strategic	Journey times	5	5
	Resilience	5	5
	Severance	3	4
Stakeholder	Authority	3	3
	Interest	2	3
	Public	1	5
Environment	Natural environs	2	2
	People	4	3
	Physical environs	2	1
Engineering	Safety	2	4
	Buildability	1	3
	Maintenance	5	5
Economic	Transport benefits	3	3
	Wider benefits	3	3
	Other impacts	3	3
Delivery	Affordability	5	4
	Cost risk	2	3
	Delivery risk	1	2
TOTAL		**52**	**61**

4 Conclusions

4.1 Summary

4.1.1 A decision framework was development to provide a logical and evidence-based methodology for appraising scheme options and selecting the preferred option. The decision framework considers a number of criteria and scores these criteria on a five-point scale.

4.1.2 The decision framework has been applied to the red route and the blue route, and the scores have been ratified by the Project Review Group and the Project Board.

4.2 Preferred route

4.2.1 The application of the decision framework results in the blue route scoring 61, and the red route scoring 52.

4.2.2 The outcome of the decision framework is that the blue route (Option 2) is the preferred route.

Appendix A: Decision framework

	Scoring / Criteria	1	2	3	4	5
Strategic objectives	Improves journey times	Option significantly hinders objective	Option hinders objective	Option neither achieves nor hinders objective	Option achieves objective	Option significantly achieves objective
	Improves route resilience					
	Reduces severance					
Stakeholder feedback	Authority stakeholders	Significant opposition from a majority of respondents	Minor opposition from a majority of respondents	No clear evidence of support or opposition	Minor support from a majority of respondents	Significant support from a majority of respondents
	Interest organisations					
	General public					
Environmental impacts	Natural environment	Option has large adverse impacts	Option has minor to moderate adverse impacts	Option has a neutral impact	Option has minor to moderate beneficial impacts	Option has large beneficial impacts
	People					
	Physical environment					
Engineering assessment	Safety	Option has large adverse impacts	Option has minor to moderate adverse impacts	Option has a neutral impact	Option has minor to moderate beneficial impacts	Option has large beneficial impacts
	Buildability					
	Maintenance					

	Scoring / Criteria	1	2	3	4	5
Economic appraisal	Transport benefits	Option has potential to only achieve poor value for money	Option has potential to achieve low value for money	Option has potential to achieve medium value for money	Option has potential to achieve good value for money	Option has potential to achieve very good value for money
	Wider benefits					
	Other impacts					
Deliverability	Affordability	Option has a significant impact on affordability or risk	Option has a high impact on affordability or risk	Option has an average impact on affordability or risk	Option has a low impact on affordability or risk	Option has a very low impact on affordability or risk
	Cost risk					
	Delivery risk					

Appendix B: Summary of option scoring

Red route (Option 1)

	Scoring / Criteria	1	2	3	4	5
Strategic objectives	Improves journey times					Option improves journey times between South and West Cumbria
	Improves route resilience					Option provides suitable route for HGVs and for A590 diversion
	Reduces severance			Option removes traffic from east of Grizebeck village, but traffic still bisects farm buildings		
Stakeholder feedback	Authority stakeholders			No preference between routes		
	Interest organisations		Minor opposition from interest groups			
	General public	More than four times as many people oppose compared to support (156 to 37)				

	Scoring / Criteria	1	2	3	4	5
Environmental impacts	Natural environment		Option runs through edge of flood zone and crosses water courses; ecological impact			
	People				Potential noise / air quality benefits to Grizebeck	
	Physical environment		Impact of new structures and loss of landscape features			
Engineering assessment	Safety		Upgraded road removes pinch points; however, private accesses at farm remain			
	Buildability	Requires extensive traffic management and long diversion routes for large vehicles				
	Maintenance					Provision of wider road to standard would allow for easier future maintenance

	Scoring / Criteria	1	2	3	4	5
Economic appraisal	Transport benefits			Scheme provides medium to good transport benefits		
	Wider benefits			Scheme provides medium to good wider economic benefits		
	Other impacts			Journey time reliability impacts		
Deliverability	Affordability					Scheme is cheapest of options and is within budget of NRF
	Cost risk		Further work needed on accommodation works/land access, structures and junction to north; cost of farm buildings unknown			
	Delivery risk	Sensitive negotiation required for farm buildings and third-party greenfield land				

Blue route (Option 2)

	Scoring / Criteria	1	2	3	4	5
Strategic objectives	Improves journey times					Option improves journey times between South and West Cumbria
	Improves route resilience					Option provides suitable route for HGVs and for A590 diversion
	Reduces severance				Option removes traffic from east of Grizebeck village	
Stakeholder feedback	Authority stakeholders			No preference between routes		
	Interest organisations			Clear support not given; need for further consultation		
	General public					Well over three times as many people support compared to oppose (169 to 45)

	Scoring / Criteria	1	2	3	4	5
Environmental impacts	Natural environment		Option runs through edge of flood zone and crosses water courses; ecological impact			
	People			Potential noise / air quality benefits to Grizebeck; impacts at Dove Bank		
	Physical environment	Impact of new structures and loss of landscape features; route goes through greenfield land				
Engineering assessment	Safety				Upgraded road removes pinch points and provides benefit	
	Buildability			Option is offline; impacts on Dove Bank during construction		
	Maintenance					Provision of wider road to standard would allow for easier future maintenance

	Scoring / Criteria	1	2	3	4	5
Economic appraisal	Transport benefits			Scheme provides medium to good transport benefits		
	Wider benefits			Scheme provides medium to good wider economic benefits		
	Other impacts			Journey time reliability impacts		
Deliverability	Affordability				Scheme is within funding available from the NRF	
	Cost risk			Further work needed on accommodation works/land access, structures and junction to north		
	Delivery risk		Negotiation required for greenfield land			