

4 THE NEED FOR IMPROVEMENT

4.1 INTRODUCTION

- 4.1.1. This chapter covers Step 3 of the Transport Appraisal Process, as defined in WebTAG, to establish the need for intervention. Here we summarise the current and future problems identified in the preceding chapters and their underlying causes.

4.2 CURRENT TRANSPORT-RELATED PROBLEMS

- 4.2.1. The current and ongoing transport related problems, as identified in the preceding chapters, that need to be addressed are:
- i Traffic congestion in Sudbury town centre due the nature of the current road network. In the absence of an alternate route for strategic traffic, including goods vehicles, these trips are currently travelling through the constrained network in the town leading to congestion and its associated impacts. The issues related to goods vehicles are of particular concern for safety and the impact on heritage buildings located along narrow streets and tight bends around the town.
 - i Unreliable journey times and delays occurring during the peak periods, especially through key junctions along A131 and A134.
 - i Key locations around the town centre are noted to have higher than acceptable levels of NO₂. Traffic congestion is the main contributor of this and needs to be addressed in light of expected increases in traffic in the future.
 - i Lack of alternate routes for strategic traffic results in low network resilience. In the case of unforeseen circumstances, including issues on M11/A11, there is the potential for impacts on the traffic volume passing through Sudbury.
- 4.2.2. If transport issues in Sudbury are not addressed it will likely lead to increased congestion through the town centre, including an increase in HGV traffic. This will cause an increase in peak hour delays, extending these over a longer peak period, both at the junctions around the town centre, and near the proposed housing and employment sites.
- 4.2.3. The resultant impacts are likely to be detrimental to safety in the town centre, impacting on walking and cycling.
- 4.2.4. Over a longer term, this would certainly impact the opportunity for growth in the area and its reliable connectivity with the neighbouring growth centres.

5 OBJECTIVES

5.1 INTRODUCTION

- 5.1.1. This chapter covers Step 4a of the Transport Appraisal Process, as defined in WebTAG, identification of intervention-specific objectives to address the identified need.
- 5.1.2. DfT guidance outlines how a clear set of objectives designed to address the identified problems should be set. The guidance indicates that the objectives should be consistent with the following criteria:
- ┆ Be informed by a realistic appreciation of the issues and context and informed by an appropriate level of stakeholder engagement.
 - ┆ Reflect the opportunities and constraints.
 - ┆ Reflect the underlying causes.
 - ┆ Be consistent with wider local regional and national objectives.
 - ┆ Avoid indications of preferred solutions.
 - ┆ Enable specific targets to be set in due course.
- 5.1.3. The objectives have therefore been developed in response to the problems and opportunities identified, agreed with Suffolk County Council, and presented to a range of stakeholders as part of the community forum in July 2018. In doing this, a distinction has been drawn between primary and secondary objectives:

5.2 PRIMARY OBJECTIVES

- 5.2.1. The **primary** objectives are to:
- ┆ Enable growth within Sudbury and surrounding areas.
 - ┆ Improve conditions in Sudbury town centre and surrounding areas.
 - ┆ Reduce congestion.
 - ┆ Address concerns relating to freight traffic (HGVs in particular).
 - ┆ Improve connectivity of Sudbury.

5.3 SECONDARY OBJECTIVES

- 5.3.1. The **secondary** objectives are to:
- ┆ Facilitate the delivery of new homes and jobs within Suffolk and Essex.
 - ┆ Improve the quality of life for residents, workers and shoppers by:
 - Reducing carbon emissions, air and noise pollution from road traffic.
 - Reducing severance issues due to traffic levels within the town centre.
 - Improving the historic setting of Sudbury through removal of road traffic.
 - ┆ Ensure any negative impacts outside Sudbury are minimised.
 - ┆ Improve journey times and journey time reliability for travellers in Sudbury and the surrounding area.
 - ┆ Reduce the number of freight vehicles passing through Sudbury, improving conditions in the town centre.
 - ┆ Improve attractiveness of Sudbury as a destination.
 - ┆ Improve access for businesses to wider labour markets etc.



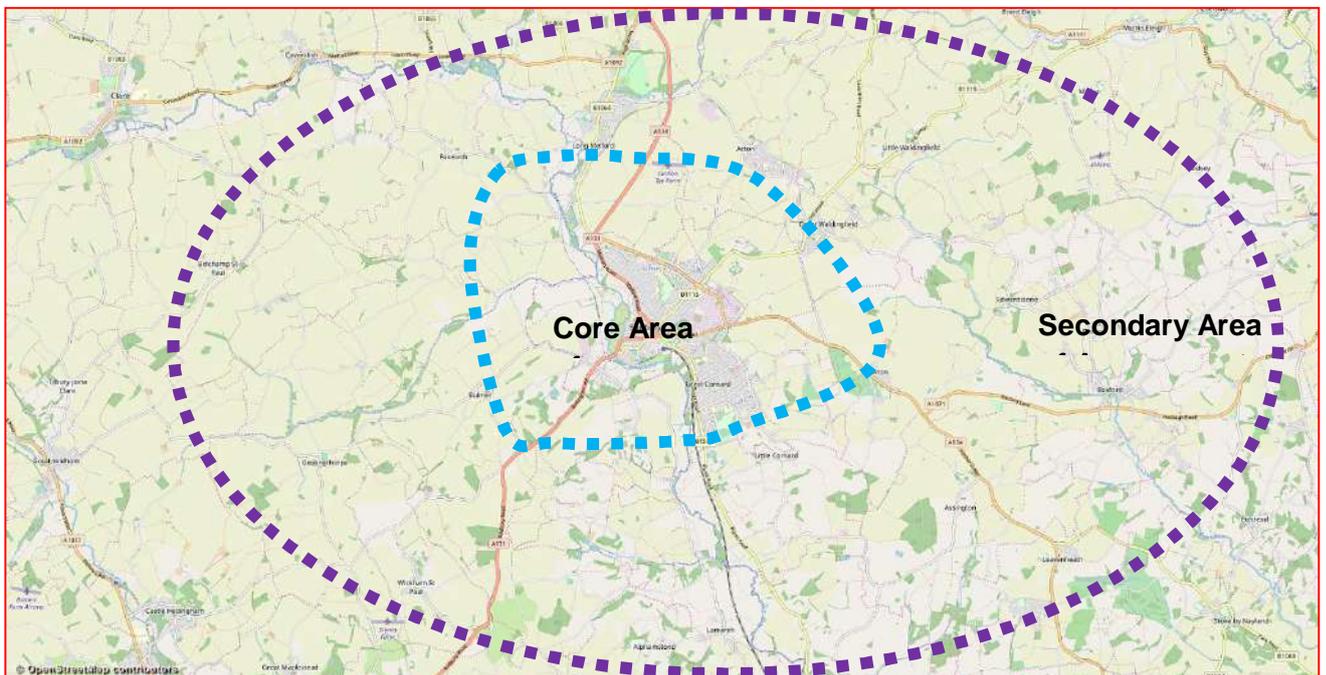
i Reduce transport costs for businesses.

6 AREA OF IMPACT

6.1 AREA OF IMPACT

- 6.1.1. The geographical area of impact of potential options aiming to mitigate the observed and future impacts around Sudbury has been informed through the evidence reviewed in sections 2, 3 and 4. These sections have identified the key origins and destinations for trips using the network through Sudbury, the extent of current and future transport problems, as well as the extent of development proposed in the vicinity.
- 6.1.2. The expected area of impact of the options are shown in Figure 64.

Figure 64 – Area of Impact



- 6.1.3. The options being considered as part of Sudbury Transport Study will aim to improve connectivity for Sudbury and also reduce congestion through the town. The options considered are likely to have impacts primarily in the immediate vicinity of Sudbury. However, based on the proposed housing and employment developments as part of the local plans, there are also certain secondary impacts expected in the adjacent areas.

Another key issue for consideration is the impact of the through traffic, especially HGV trips, which are currently passing through Sudbury, using its one-way system.

7 OPTION GENERATION

7.1 INTRODUCTION

- 7.1.1. This chapter covers Step 4 of the Transport Appraisal Process as described in WebTAG, the generation of options reflecting a range of modes, approaches and scales of intervention. The options offer alternative ways to address the identified problems and deliver the specified scheme objectives.
- 7.1.2. In order to develop the options, all the current as well as historic options addressing the objectives identified in Chapter 5 were considered. These were discussed in a workshop which included all concerned local authorities, and combined into the following two categories of intervention:
- i Non-road options: a range of measures which could reduce traffic, or reduce the growth in traffic; and
 - i Road options: alternative routes for a bypass to remove through traffic from the centre of Sudbury, and improvements to existing roads and junctions within Sudbury.
- 7.1.3. The options considered in each category were:

Non-road options

- i SM1 Sustainable travel initiatives.
- i P1 Road pricing.
- i PT1 Bus improvements.
- i PT2 Rail improvements.

Road options

- i W1 Western bypass (long).
- i W2 Western bypass (short).
- i S1 Southern bypass (long).
- i S2 Southern bypass (short).
- i E1 Eastern bypass (long).
- i E2 Eastern bypass (short).
- i L1 Ring road – a bypass on the west, south and eastern sides of Sudbury.
- i J1 Junction improvements.

7.2 NON-ROAD OPTIONS

SM1. Sustainable travel initiatives

- 7.2.1. A package of sustainable travel initiatives, designed to encourage people to make fewer journeys by private car. If successful in reducing car use, or the growth in car use, such initiatives could help to reduce the problems associated with traffic congestion and lack of road capacity.

P1. Road pricing

- 7.2.2. Increasing the cost of car use, for example by increasing parking charges, to reduce the number of journeys by car.

PT1. Bus improvements

- 7.2.3. Improvements to local bus services, for example by increasing frequencies, to encourage more people to use public transport to reduce the number of journeys made by car.

PT2. Rail improvements

- 7.2.4. Improvements to the overall rail “offer”, with the aim of encouraging more rail use, to reduce the number of journeys made by car.

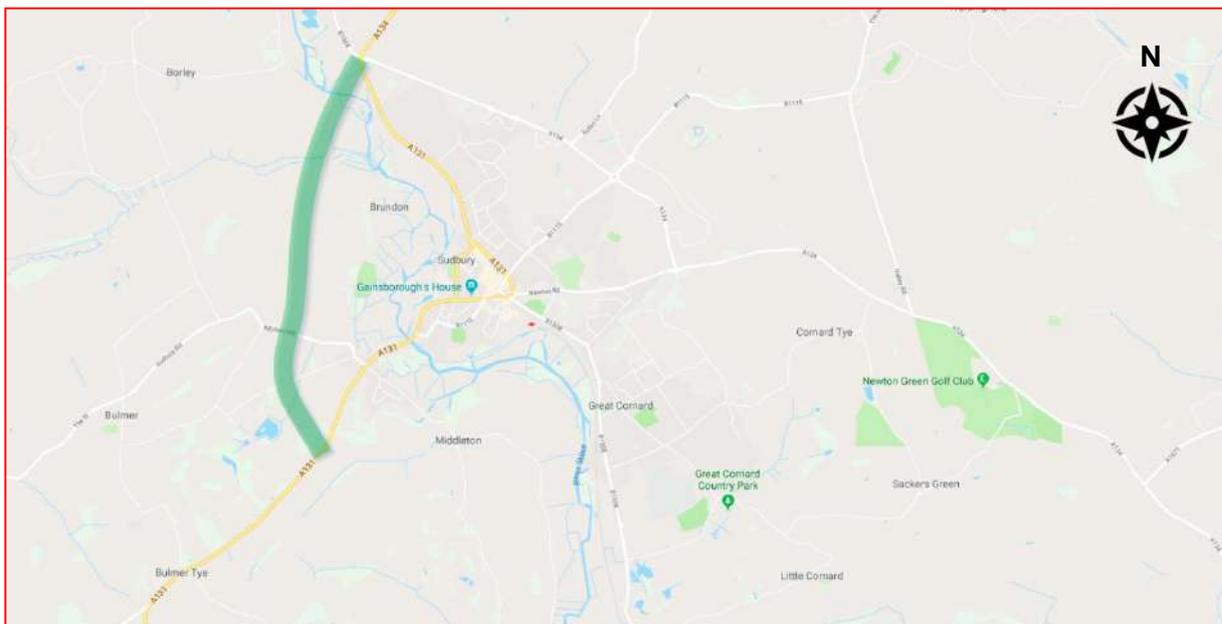
7.3 ROAD OPTIONS

- 7.3.1. Seven route options for a bypass were considered. These are illustrated and described below:

W1. Western bypass (long)

- 7.3.2. A new 3.5km long single carriageway road from the A134 north of Sudbury to the A131 south of Sudbury, including a junction with Kitchen Hill.

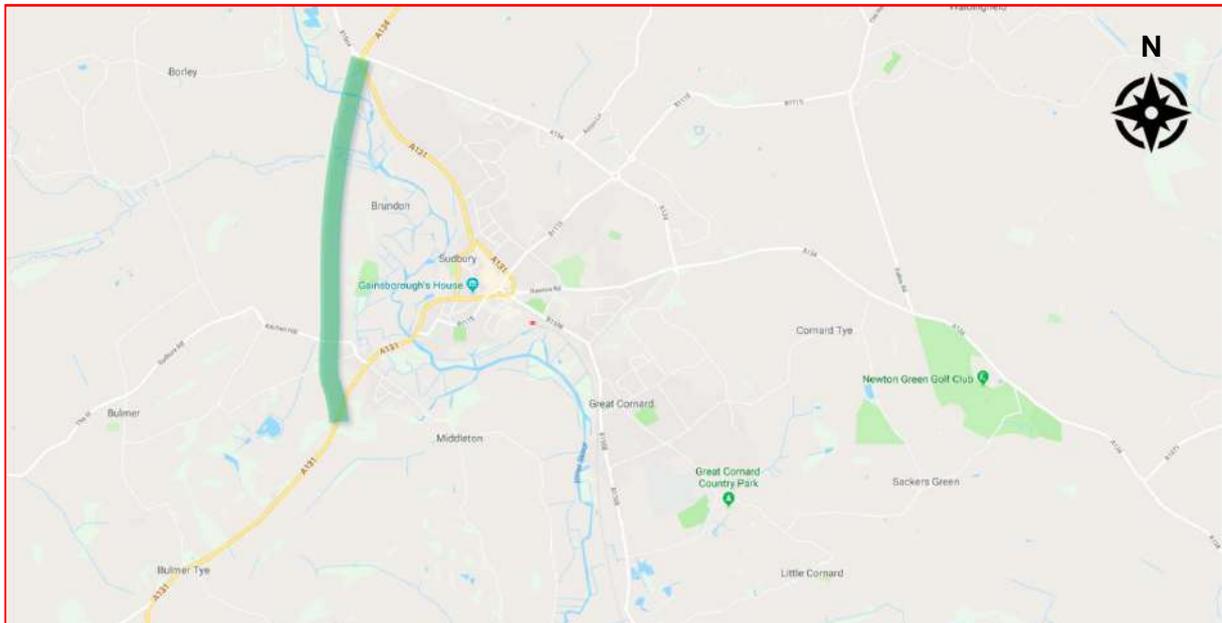
Figure 65 – Option W1. Western bypass (long)



W2. Western bypass (short)

- 7.3.3. A new 3km long single carriageway road from the A134 north of Sudbury to the A131 south of Sudbury straighter than W1, including a junction with Kitchen Hill.

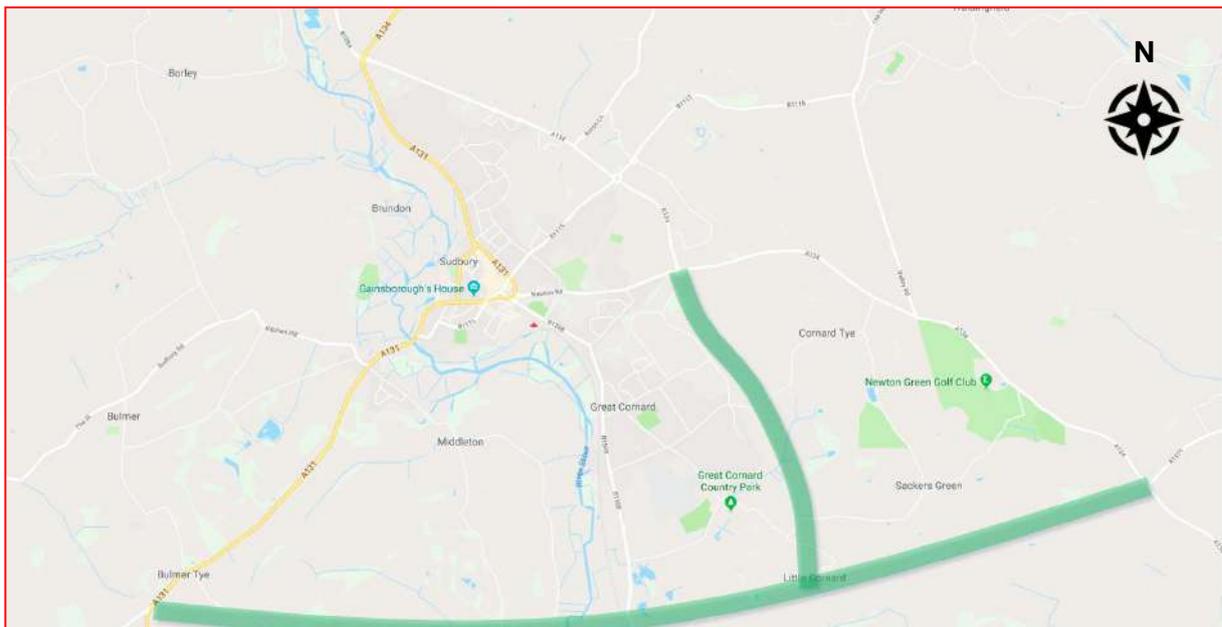
Figure 66 – Option W2. Western bypass (short)



S1. Southern bypass (long)

- 7.3.4. A new 8.5km single carriageway road from Bulmer Tye to the A134/A1071. The bypass would also be connected near Little Cornard by a 3km north-south link to the Shawlands Retail Park roundabout.

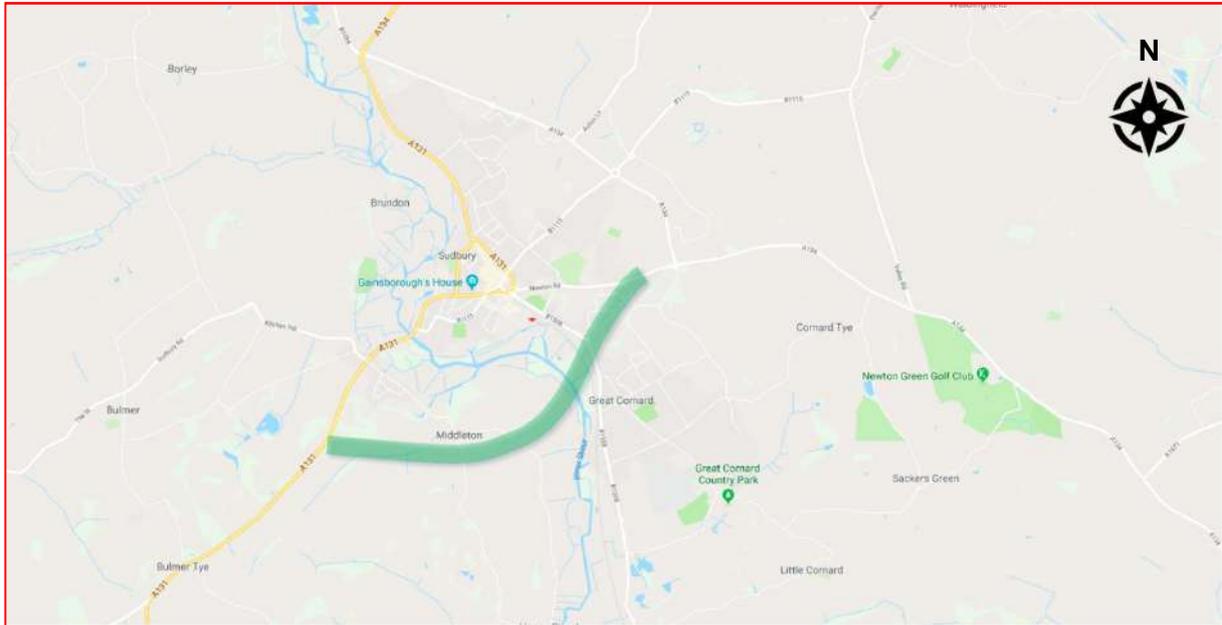
Figure 67 – Option S1. Southern bypass (long)



S2. Southern bypass (short)

- 7.3.5. A new 3km long single carriageway road from the Newton Road/Cats Lane junction to the A131 south of Sudbury, including a junction with B1508.

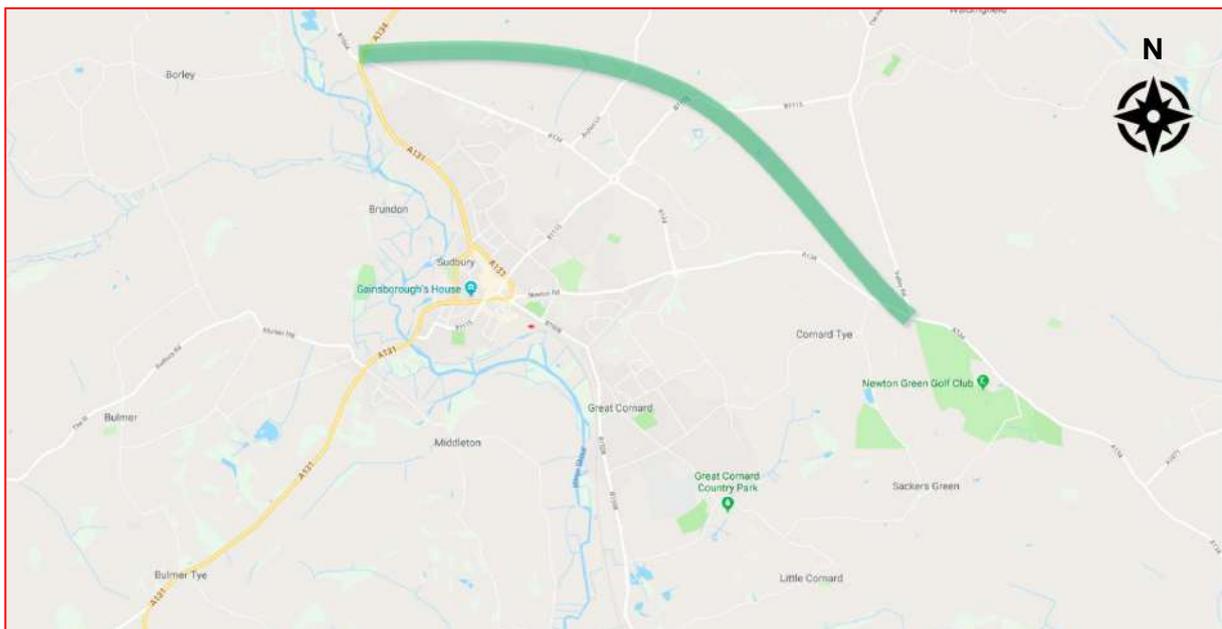
Figure 68 – Option S2. Southern bypass (short)



E1. Eastern bypass (long)

- 7.3.6. A new 5.5km long single carriageway road from the A134/B1064 roundabout to the A134/Valley Road junction, including junctions with Acton Lane and B1115.

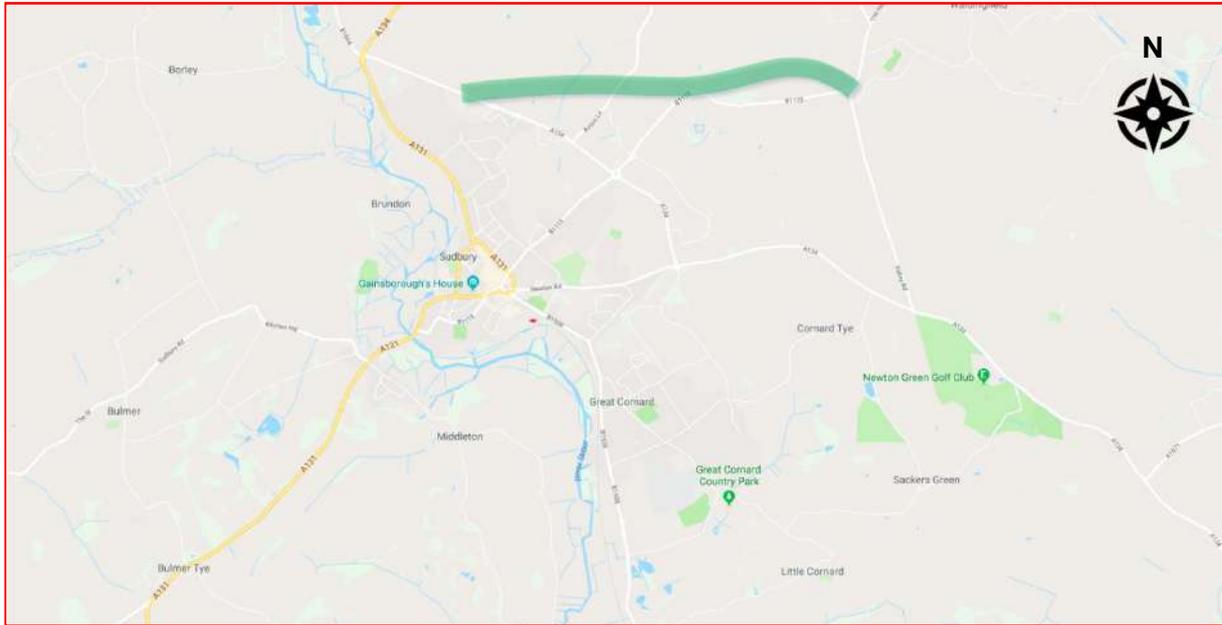
Figure 69 – Option E1. Eastern bypass (long)



E2. Eastern bypass (short)

7.3.7. A new 3km long single carriageway road from the A134 (north of the Claremont Avenue roundabout) to the B1115/Valley Road junction, including a junction with Acton Lane.

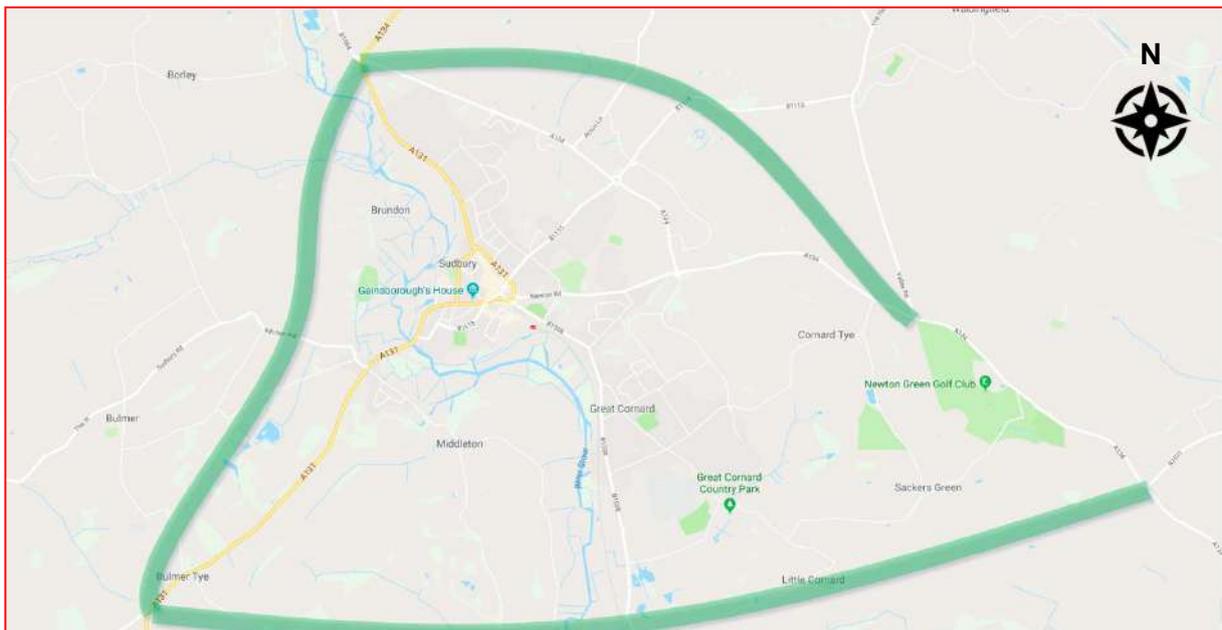
Figure 70 – Option E2. Eastern bypass (short)



L1. Ring road – a bypass on the west, south and eastern sides of Sudbury

7.3.8. A new 22km single carriageway road. It would be a combination of option S1 (southern link only), option W1 (southern section from A131 – Hendingham Road Junction), and option E1.

Figure 71 – Ring Road Option – L1

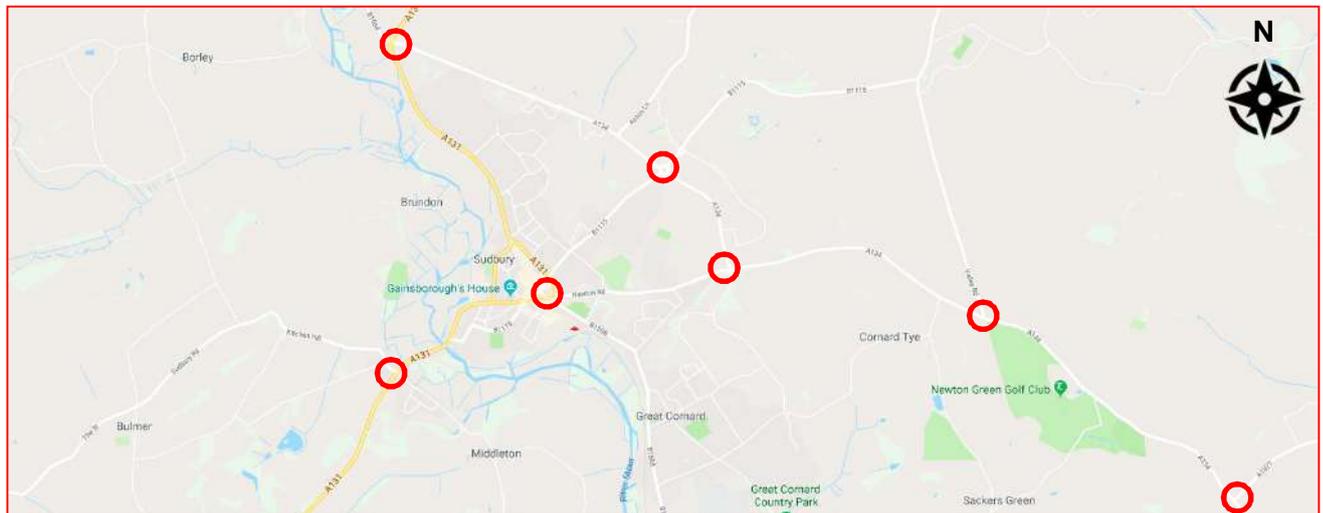


J1. Junction improvements

7.3.9. A package of measures to increase capacity and improve traffic flow at problem junctions throughout Sudbury without a Relief Road. Based on the traffic analysis discussed earlier, and from taking feedback from SCC, initially, seven junctions were considered for improvement:

- ┆ A134 / A131 / B1064
- ┆ A134 / B1115
- ┆ A134 / Newton Road / Shawlands Avenue
- ┆ A131 / Newton Road / Cornard Road / Great Eastern Road
- ┆ A131 Ballingdon Hill / Bulmer Road
- ┆ A134 / A1071
- ┆ A134 / Valley Road

Figure 72 – Option J1. Low cost option (junction improvements)



7.3.10. Going forward, further analysis may be required to identify and assess the worst performing junctions.

7.3.11. Having identified twelve options, the next stage was to sift these to identify the best performing ones for further analysis. The sifting process is described in Chapter 8

8 INITIAL SIFT OF OPTIONS

8.1 INTRODUCTION

- 8.1.1. This chapter describes the process by which each identified option was assessed against defined criteria. Based on the findings from the process, options were taken forward for further, more detailed assessment.
- 8.1.2. The sifting process was undertaken using the Department for Transport’s Early Assessment and Sifting Tool (EAST). The full results of the EAST assessment are set out in Appendix B.

8.2 CRITERIA USED IN THE EAST ASSESSMENT

- 8.2.1. The EAST assessment considers each option from six perspectives, which are aligned to the DfT Transport Business Case guidance and reporting structure (with ‘environmental’ identified as a specific category in light of its importance in the context of Sudbury). The six areas considered are as follows:
- Strategic;
 - Economic;
 - Managerial;
 - Commercial;
 - Financial; and
 - Environmental.
- 8.2.2. Within each category, the EAST assessment considers how well each option is likely to perform against a set of criteria (listed below) and where possible a numerical score is given against each of the criteria.

Strategic criteria			
Scale of impact	(5 point scale, low to high)	Weighting 2	The scale of impact and primary objectives have been given a higher weighting to reflect their relative importance..
Fit to primary objectives	(5 point scale, low to high)	Weighting 2	
Fit to secondary objectives	(5 point scale, low to high)	Weighting 1	
Consensus over outcomes	(5 point scale, little to majority)	Weighting 1	
Economic criteria			
Economic growth	(5 point scale, low to high)	Weighting 2	Since the detailed air quality assessment of schemes has not yet been undertaken, Carbon Emissions has a lower weighting than the other criteria. The value for money criteria, which would govern the feasibility of developing an option, has been given a higher weighting than other elements.
Carbon emissions	(5 point scale, high to low)	Weighting 1	
Well being	(5 point scale, little to majority)	Weighting 2	
Expected value for money	(5 point scale, poor to very high)	Weighting 4	
Managerial criteria			
Implementation timetable	(7 point scale)	Weighting 1	Practical feasibility looks at a number of structural, environmental and design

Public acceptability	(5 point scale, low to high)	Weighting 1	considerations for the options which impact other factors, and hence has been given a higher weighting.
Practical feasibility	(5 point scale, low to high)	Weighting 2	
Financial criteria (1)			
Affordability	(5 point scale, from not affordable to affordable)	Weighting 2	If the scheme is affordable, only then would other cost considerations become important, and hence a higher weighting has been given to that element.
Overall cost risk	(5 point scale, high to low)	Weighting 1	
Financial criteria (2)			
Capital cost	(10 point scale)	Weighting 1	
Commercial criteria			
Flexibility of the option	(5 point scale, static to dynamic)	Weighting 1	The higher weighting on Identification and securing of funding reflects the relative importance of this element.
Source of funding	(5 point scale, from 'not known' to 'from MRN')	Weighting 4	
Environmental criteria			
Air quality	(7 point scale, from large adverse to large beneficial)	Weighting 1	
Noise	(7 point scale, from large adverse to large beneficial)	Weighting 1	
Historic environment	(7 point scale, from large adverse to large beneficial)	Weighting 1	
Biodiversity	(7 point scale, from large adverse to large beneficial)	Weighting 1	
Landscape	(7 point scale, from large adverse to large beneficial)	Weighting 1	
Water Environment	(7 point scale, from large adverse to large beneficial)	Weighting 1	

APPROACH TO ASSESSMENT AND SCORING

- 8.2.3. The evidence used to assess a number of the options was based on benchmarking from similar interventions elsewhere (e.g. the potential for mode shift due to sustainable travel interventions, and the likelihood of such changes meeting objectives), with some consideration given to the local context. For the proposed highway infrastructure interventions, the assessment included an estimate of the potential demand attracted to the new route (and subsequent relief to Sudbury), based on the latest SCTM evidence of origins and destinations of traffic in Sudbury.
- 8.2.4. Benchmarking from similar schemes was also used to assess the structural requirements, cost of schemes, cost risks, potential environmental impacts of the options, etc. For criteria such as source

of funding for the options and affordability, the assessment included an understanding of the sources of funding likely to be available for each of the options.

- 8.2.5. Inevitably, the assessment is in part subjective, either because of the lack of detailed data at this stage of the assessment, or because of the nature of the option or impact being assessed. This is especially true of the non-road options, which are less fully defined than the road options, and whose impacts will often be more difficult to quantify.
- 8.2.6. The six elements of the EAST assessment are made up of a varying number of components, and therefore just considering total scores would not provide an accurate comparison. A sum of the scores would also bias analysis to lower cost schemes which may not meet objectives.
- 8.2.7. To address this, the calculated scores for each element of EAST were converted to a 10-point scale for all options. This was undertaken using two different approaches. The approaches were:
- i Approach 1: Score Options by giving a higher weight to options which meet the scheme objectives.
 - i Approach 2: Two-Stage Sifting approach, where:
 - Stage 1: Initial Sift to assess schemes which options meet the objectives.
 - Stage 2: Overall unweighted score for options that meet the scheme objectives.

8.3 RESULTS OF THE EAST ASSESSMENT

Scoring of Options

- 8.3.1. The following approach was taken for the non-road options:

Option SM1. Sustainable Travel Initiatives

- 8.3.2. The scale of impact for SM1 (Sustainable Travel Initiatives) was taken from the 2017 DfT LSTF evaluation which suggests that the impact of such measures is likely to be 5% or less overall in terms of reduction in car traffic. This option is considered likely to achieve High Value for Money (VfM³³) given the low costs involved and the relative benefit it would produce, though this is dependent on the local travel characteristics. However, the scale of impact from this kind of measure would be unlikely to lead to a significant reduction in traffic volumes in Sudbury town centre, nor would it specifically target HGV reduction, and therefore unlikely to deliver a number of the associated scheme objectives.

Option P1. Pricing Options

- 8.3.3. For Option P1 (Pricing Options), detailed case studies are not readily available, nor has the specific scheme related to this option been clearly defined, although it is likely to include, for example, changes to parking charges within the town. In terms of VfM there is significant uncertainty on this within the local context of Sudbury. The assumption has been made that such an option would produce High VfM on the basis of the likely low cost to implement and that it is a revenue raising option. However, the impact on the wider economy as a result of consumers and businesses potentially being deterred from the area due to higher travel costs could have an influence on the VfM, alongside the cost of enforcing such a scheme.

Option PT1. Bus improvements

- 8.3.4. For Option PT1 (Bus), analysis was undertaken of the 2011 census Journey to Work data which shows a low bus mode share of 2% in Sudbury, compared to a national average of 7%. It is considered a bus option would be likely to achieve only Medium VfM given the relatively rural setting of Sudbury and lower levels of patronage. The likely impact of any mode shift away from car from this option is unlikely to deliver a number of associated scheme objectives, also the local authority would have limited control of bus options given it would be operator led.

Option PT2. Rail improvements

- 8.3.5. For Option PT1 (Rail), it is assumed this option would focus on improving accessibility to Sudbury rail station such as improving walking and cycle provision. Extending the rail line beyond Sudbury would result in a prohibitively high cost and environmental impact and therefore this level of intervention was not included for consideration as part of the rail improvement option. There is currently a 2% mode share for rail within Sudbury based on the 2011 census Journey to Work, below the national average of 5%. It is considered that, given the limited market for rail within Sudbury, such an intervention is likely to achieve Medium VfM at best. The likely impact of any mode shift away from car from this option is unlikely to deliver a number of associated scheme objectives.

ROAD BASED OPTIONS

- 8.3.6. For all the other road based options, the results were based on the estimated impacts of the road options on trips through Sudbury. For example, the western alignment is estimated to influence around 20% of the daily HGVs movements within Sudbury. These trips represent 40% of the total daily HGV movements which pass through Sudbury town centre.
- 8.3.7. Overall, approximately 12% of total traffic in Sudbury are strategic trips (i.e. not localised trips within Sudbury). The western alignment is estimated to relieve approximately 45% of strategic daily total traffic instead of passing through Sudbury town centre. This alignment is also estimated to influence around 60% of the daily HGV movements within Sudbury.
- 8.3.8. The assessment of the scale of impact of the junction improvement option is based on benchmarking of the impact of similar schemes (e.g. pinch point schemes), which often deliver high or very high value for money. Although the proposal will address to an extent some of the primary and secondary objectives, including reduced congestion and improving traffic flow through Sudbury, there are a number of objectives that will not be addressed by the scheme, including addressing the impact of HGV through-town movements.
- 8.3.9. The assumptions for the other road options are presented in Appendix B.

RESULTS - APPROACH1

- 8.3.10. The full, detailed, results of the EAST analysis are set out in Appendix B. The overall results for each option are set out in Table 4.
- 8.3.11. To obtain the scores in Table 4, the weighted scores for each category were adjusted to give a score out of ten, with the financial category split into “affordability and cost risk” and “cost”. Weighting was applied as follows to represent the importance of the strategic and economic cases in identifying the best performing options and the strength of evidence for these elements:

- i Strategic case Weight 4

| Economic case Weight 3
| Other cases Weight 1

Table 4 - Overall results of EAST assessment (weighted) – Approach 1

Option	Strategic Case	Economic Case	Managerial Case	Financial Case: Affordability & Cost Risk	Financial Case: Cost	Commercial Case	Environment Case	Total Score
J1	6	9	8	9	10	7	9	94
SM1	4	10	10	9	10	8	10	93
P1	4	9	9	10	10	7	9	88
PT1	4	9	8	8	10	6	8	83
PT2	4	8	8	9	9	5	9	80
W1	9	6	8	6	6	10	7	91
W2	9	6	8	8	6	10	7	93
S1	10	6	5	5	4	8	6	86
S2	9	5	4	8	6	10	7	86
E1	6	5	7	6	7	10	8	77
E2	5	5	8	8	8	10	8	77
L1	10	6	3	4	4	2	3	74

RESULTS - APPROACH 2

8.3.12. For Approach 2 an initial sifting exercise was undertaken to identify the options which met the scheme objectives. The financial category was again split into “affordability and cost risk” and “cost”.

Table 5 – Initial Sifting of Options Based on Meeting Scheme Objectives

Option	Strategic Case	Economic Case	Managerial Case	Financial Case: Affordability & Cost Risk	Financial Case: Cost	Commercial Case	Environment Case	Does the Scheme Meet the Objective?
J1	14	32	10	12	9	15	34	Y
SM1	10	36	12	12	9	16	39	N
P1	9	34	11	14	9	15	37	N
PT1	10	32	10	11	9	12	33	N
PT2	10	30	10	12	8	11	36	N
W1	23	21	9	9	5	21	28	Y

Option	Strategic Case	Economic Case	Managerial Case	Financial Case: Affordability & Cost Risk	Financial Case: Cost	Commercial Case	Environment Case	Does the Scheme Meet the Objective?
W2	23	21	9	11	5	21	28	Y
S1	24	23	6	7	4	17	24	Y
S2	23	19	5	11	5	21	27	Y
E1	15	19	8	9	6	21	33	Y
E2	13	19	10	11	7	21	32	N
L1	25	22	3	5	4	5	10	Y

8.3.13. Having sifted out the options that did not sufficiently meet the scheme objectives, the remaining options were scored as shown in Table 6, the scores for each category adjusted to give a score out of ten.

Table 6 - Overall Results of EAST Assessment – Approach 2

Option	Strategic Case	Economic Case	Managerial Case	Financial Case: Affordability & Cost Risk	Financial Case: Cost	Commercial Case	Environment Case	Total Score
J1	6	9	8	9	10	7	9	58
W1	9	6	8	6	6	10	7	52
W2	9	6	8	8	6	10	7	54
S1	10	6	5	5	4	8	6	44
S2	9	5	4	8	6	10	7	49
E1	6	5	7	6	7	10	8	49
L1	10	6	3	4	4	2	3	32

8.4 OPTIONS TAKEN FORWARD FOR FURTHER ASSESSMENT

8.4.1. Based on both the approaches outlined above, the highest scoring option is the Junction Improvement Option, although it is noted it does not address a number of objectives, especially those related to through traffic.

Amongst the options that meet the objectives in a more comprehensive manner, i.e. the relief road options, the Western Bypass (Short) is the highest scoring option, followed by the Southern (Short) option. These options taken have been taken forward for some further assessment and the findings from this is presented in the next chapter.

9 OPTION DEVELOPMENT AND ASSESSMENT

9.1 INTRODUCTION AND OVERVIEW

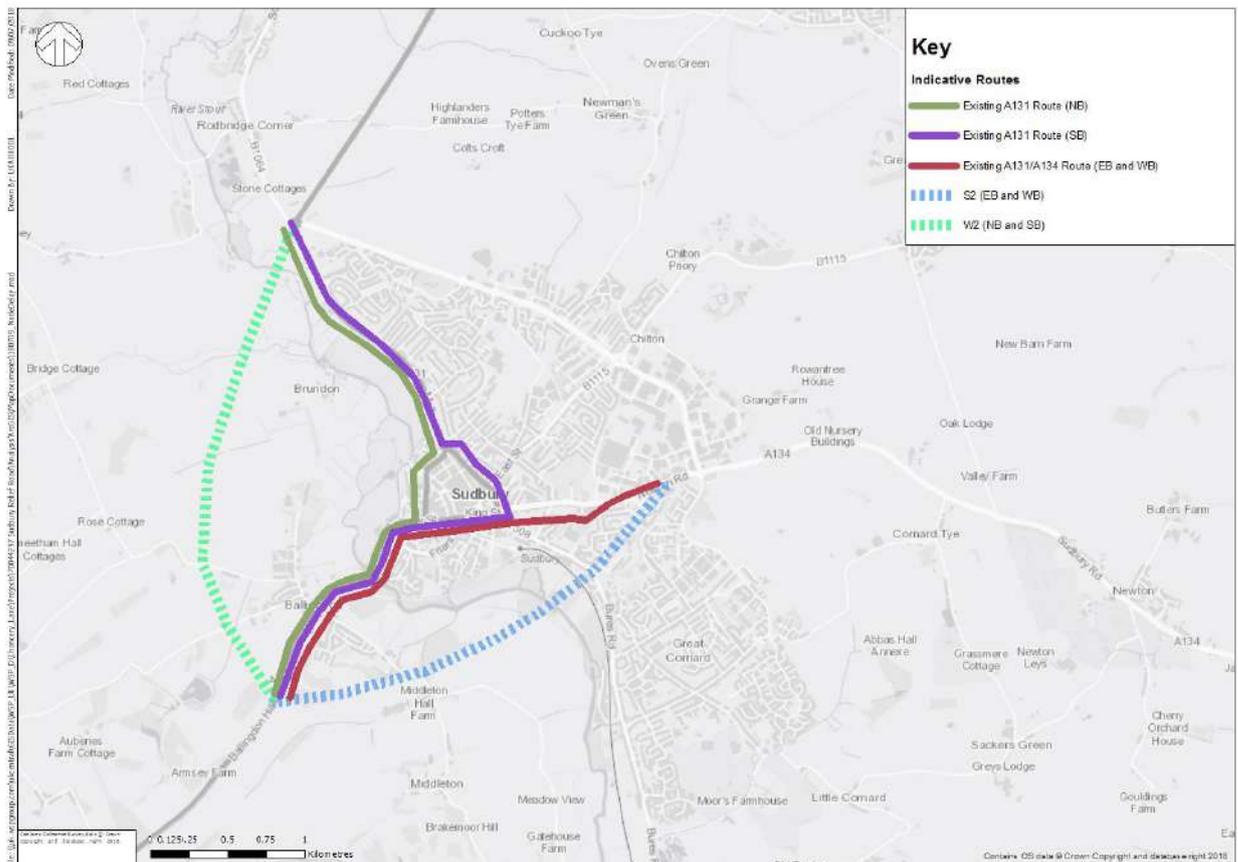
9.1.1. This section of the report presents the findings from the assessment of the options W2 (Western Option, short) and S2 (Southern Option, Short) in more detail to confirm the potential cost, value for money and environmental impacts.

9.2 TRAFFIC IMPACTS OF THE ROAD OPTIONS

JOURNEY TIME IMPACTS

9.2.1. An analysis of journey time savings was undertaken for both S2 and W2 options in order to understand the journey time improvements against competing routes through Sudbury town centre. The journey time routes that were compared are shown in Figure 73 below.

Figure 73 - Journey Time Routes



W2 Option

9.2.2. W2 option was compared against its competing route on the A131 northbound / southbound route in 2023 and 2038 AM, Inter Peak and PM peak. Due to the faster speed and shorter length of W2 option, there is an average journey time savings of almost three minutes, which is approximately 54% faster than the A131 northbound route.

W2 Option

9.2.12. Figure 74 to Figure 81 show the impact of the W2 option would have on the traffic flow.

Figure 74 – 2023 Flow Difference (W2 - DM) - AADT



9.2.13. Figure 74 shows that for an average day there is expected to be significant re-routing of through trips away from A131 (and the town centre) in 2023 as a result of the proposed option. This impact is seen for 2038 and over all time periods in the figures below.

Figure 75 – 2023 Flow Difference (W2 - DM) - AM Peak



Figure 76 – 2023 Flow Difference (W2 - DM) - Inter Peak



Figure 77 – 2023 Flow Difference (W2 - DM) - PM Peak



Figure 78 – 2038 Flow Difference (W2 - DM) - AADT

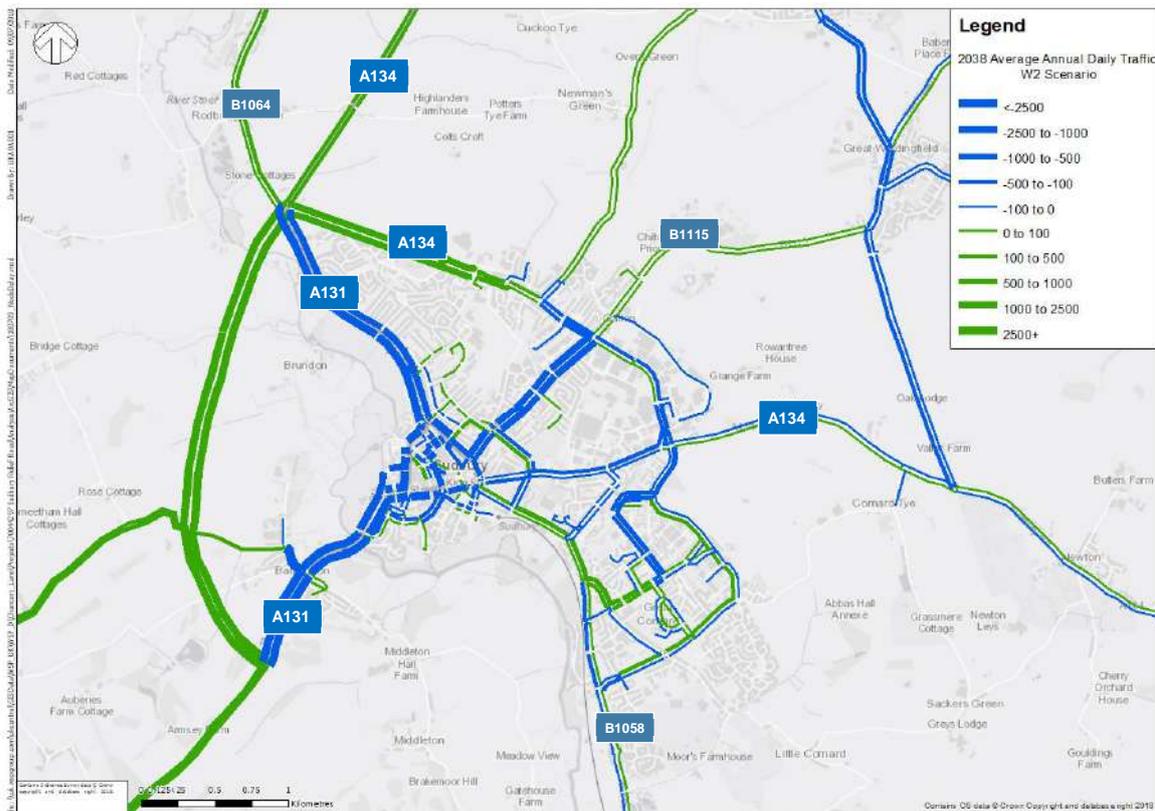


Figure 79 – 2038 Flow Difference (W2 - DM) - AM Peak



Figure 80 – 2038 Flow Difference (W2 - DM) – Inter Peak



Figure 81 – 2038 Flow Difference (W2 - DM) – PM Peak



S2 – Short Southern Relief Road Option

9.2.14. Figure 82 to Figure 89 show the impact of the S2 option on the traffic flow.

Figure 82 – 2023 Flow Difference (S2 - DM) – AADT



Figure 83 – 2023 Flow Difference (S2 - DM) - AM Peak



Figure 84 – 2023 Flow Difference (S2 - DM) - Inter Peak



Figure 85 – 2023 Flow Difference (S2 - DM) - PM Peak



Figure 86 – 2038 Flow Difference (S2 - DM) - AADT



Figure 87 – 2038 Flow Difference (S2 - DM) - AM Peak



Figure 88 – 2038 Flow Difference (S2 - DM) - Inter Peak



Figure 89 – 2038 Flow Difference (S2 - DM) - PM Peak



- 9.2.15. The above figures show that majority of the east-west movement on the A131 through Sudbury town centre has re-routed to S2. Therefore, S2 has the potential to cause a significant reduction in traffic on the A131 King Street section of the town centre gyratory.
- 9.2.16. There is also a re-route in traffic to the north-east of Sudbury to now use A134 and Valley Road via S2.
- 9.2.17. Due to W2 being primarily for north-south traffic on the A131, the S2 scheme has more impact on the A131 King Street section of the town centre gyratory.

Journey Time Benefits

- 9.2.18. An analysis of the journey time saving benefits shows that the W2 scheme provides a higher benefit for long distance trips, which are currently experiencing a higher delay in the network than those trips which benefit from the S2 scheme. Also, while W2 provides a complete by-pass option for north-south movements, in case of S2 north-south trips still have to use parts of the existing network of Sudbury, especially A134 via Cats Lane. In light of this, the overall journey time benefits for W2 are higher than S2.

9.3 BENEFITS COST RATIO (BCR) FOR THE OPTIONS

Cost Estimation

- 9.3.1. As part of this this assessment, a more detailed (but still preliminary) assessment was made of the potential cost for the two best performing relief road options, taking into account:
 - ┆ The scale of flood plain impacts and the necessary mitigations to build over this; and
 - ┆ The land-take required for the options.
- 9.3.2. Based on the available secondary information sources, a very preliminary flood plain assessment identified a 'best' case and 'worst' case scenario, with the 'best' case indicating lowest expected structures required to build over the flood plain.
- 9.3.3. For estimating the structures required for the 'worst' case, the assumption is that embankments can be built on only 20% of the floodplain, while for the 'best' case, the assumption is that embankments can be built over 60% of the floodplain. Note, provided the scheme is taken forward for further refinement, it would need a more robust flood plain assessment and discussions with the Environment Agency.
- 9.3.4. The proposed cross-section for the structures of the relief road are urban single carriageways, rather than rural single carriageways. This is a cross-section that has been successfully used on other schemes (but not necessarily in Suffolk). The proposed overall width of the relief road is 12.9m for Western Relief Road, and 12.3m for Southern Relief Road.
- 9.3.5. The Southern Relief Road, which would be connected to Sudbury via Cats Lane would be complicated from a land and property perspective as it would require:
 - ┆ Outright acquisition of properties;
 - ┆ Partial acquisition of properties; and
 - ┆ Compensation claims for diminution of value arising from the development.
- 9.3.6. Furthermore, while the street is predominantly residential in nature, there could well be other property types which would need to be acquired to facilitate the scheme.

- 9.3.7. At this stage, this detailed assessment has not been undertaken to estimate the land take, but an assumption has been made about the high land acquisition cost for this option.
- 9.3.8. Using the assumptions mentioned above, cost estimates were completed and are shown in Table 6 below.

Table 8 – Cost Estimates

Ref	Option	Cost	
		Best	Worst
1	Southern Relief Road (S2) - Short	£57,000,000	£74,000,000
2	Western Relief Road (W2) – Short	£59,000,000	£70,000,000

The assumptions in arriving at the costs are:

- ┆ Base Estimates are based at 3rd Quarter 2018.
- ┆ Estimates have been based upon preliminary sketch plans.
- ┆ Best case /worst case based on early assessment of structures required.
- ┆ Urban land costs for Southern Relief Road Option (S2) allowed at £5m (best Case) and at £10m (worst case).
- ┆ Future Construction Inflation assumed at 3% per annum to calculate the outturn costs.
- ┆ The cost currently does not include any mitigation that may be required based on the findings from the Gainsborough sightlines assessment.

- 9.3.9. As recommended by the DfT’s Transport Appraisal Guidance (WebTAG) for Stage 1 road schemes (so that we can compare costs with those presented at SOBC), the costs reported above were adjusted by 44% to include optimism bias, rebased to 2010, discounted to 2010 with a market prices adjustment applied. This was applied to both the Western (W2) and Southern (S2) Relief Road options, and considered alongside the benefits to calculate the Benefit Cost Ratios (BCR).

Benefit Cost Ratio

- 9.3.10. The economic appraisal was undertaken using TUBA v1.9.11 to output the forecast benefits over a standard 60-year appraisal period. Benefits were only considered for a 12-hour weekday (3hrs AM, 6hrs Inter peak and 3 hrs PM). No off-peak (19:00-07:00) benefits were calculated or applied.
- 9.3.11. The peak hour flows from the traffic model were converted to the above-mentioned periods by multiplying the AM, IP and PM flows by 3, 6 and 3 respectively. An annualisation factor of 253 was used in TUBA representing the number of working days in a year – i.e. no claim is made for weekend or bank holiday periods. All monetary values are quoted in 2010 prices that form the common cost base for transport scheme economic appraisal. TUBA v1.9.11 is consistent with WebTAG Data Book (v1.10) May 2018 guidance.

9.3.12. The Benefit Cost Ratios (BCR) for the S2 and W2 options are shown in the table below.

Table 9 – Benefit Cost Ratio (TUBA only)

Options	Benefits (£ '000)	Cost (£ '000)		BCR	
		Worst Case	Best Case	Worst Case	Best Case
W2	42,766	50,230	59,556	0.85	0.72
S2	29,477	49,291	63,400	0.60	0.46

- 9.3.13. The above analysis is still at a high level and more refinement of the estimation of benefits and costs would be required to provide a more robust outcome. It is also the case that the above analysis only includes direct journey time and operating cost benefits and does not capture all the benefits/disbenefits related to these scheme (e.g. accidents, wider economic benefits, air, noise impacts, landscape, etc.).
- 9.3.14. Notwithstanding the point made above, the BCRs shown in Table 7 show the benefits of both schemes do not outweigh the costs, and from the evidence currently available would be likely to be categorised as ‘poor’ value for money as defined by the DfT Value for Money Framework³³.
- 9.3.15. Based on the current evidence, the bypass options are shown the have a poor VfM, and hence are unlikely to attract DfT funding. While there are possible improvements that could be made regarding the scheme costs by undertaking more detailed costing work, based on the current results it appears that the best result these options are likely to offer are ‘low’ VfM.

³³ <https://www.gov.uk/government/publications/dft-value-for-money-framework>

10 SUMMARY AND CONCLUSIONS

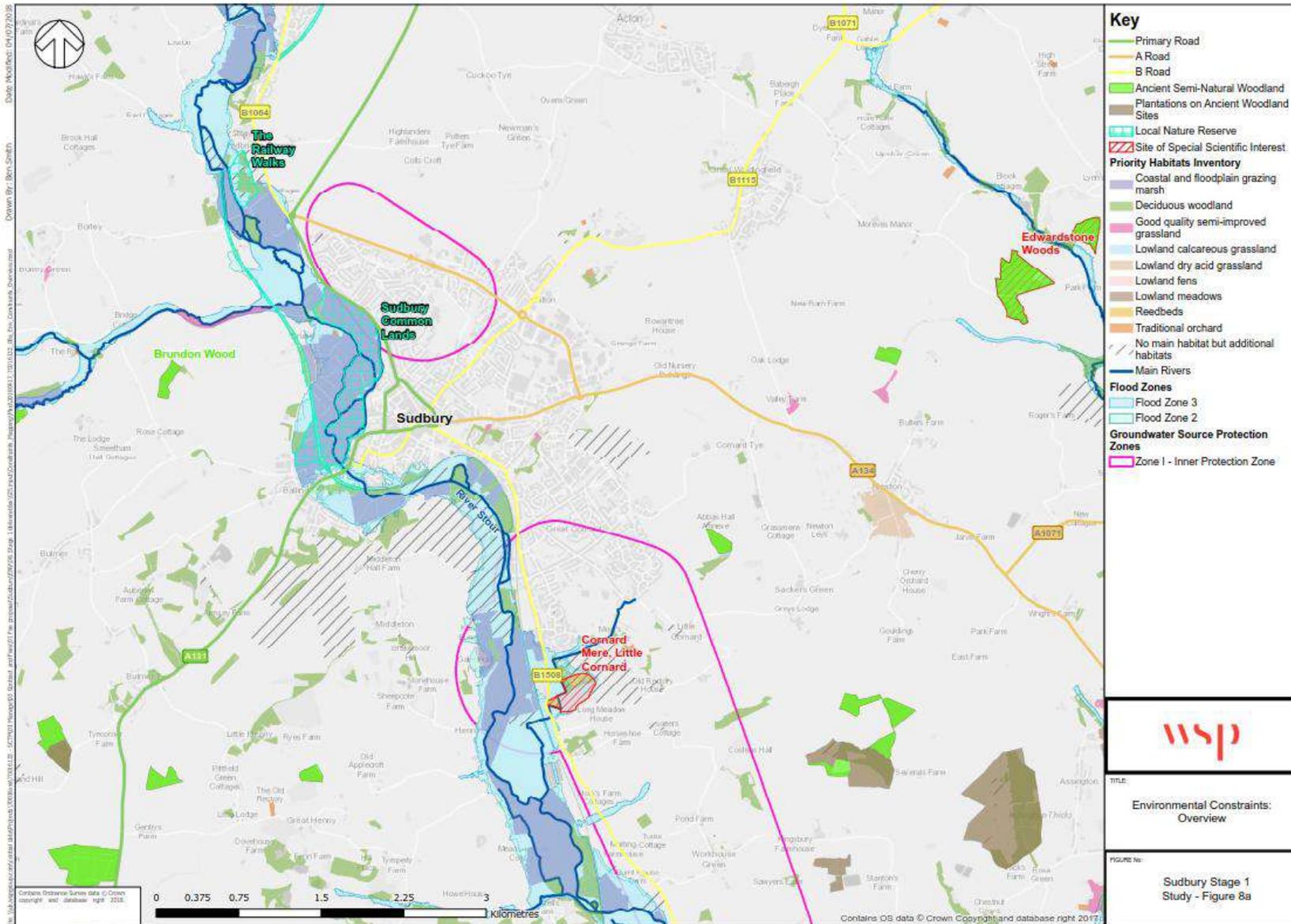
- 10.1.1. This OAR has reported the results of the Sudbury Transport study commissioned by Suffolk County Council to identify transport solutions to the traffic problems of Sudbury.
- 10.1.2. The report has been prepared in accordance with the Department for Transport's Transport Analysis Guidance (WebTAG), covering the following steps:
- ┆ Understand the current context and conditions in the study area;
 - ┆ Understand the future conditions in the study area;
 - ┆ Establish the need for the intervention;
 - ┆ Identify intervention-specific objectives to address the identified need;
 - ┆ Define the geographical area for the intervention to address;
 - ┆ Generate options reflecting a range of modes, approaches and scales of intervention;
 - ┆ Undertake initial sift. Discard options that would fail to address key objectives or are unlikely to pass key viability and acceptability criteria;
 - ┆ Develop and assess potential options to identify the better performing ones; and
 - ┆ Document the option development process in an Option Assessment Report (OAR) or similar.
- 10.1.3. The analysis of the current and ongoing transport related problems highlighted the following areas that needed to be addressed:
- ┆ Traffic congestion in Sudbury town centre due the nature of the current road network. In the absence of an alternate route for strategic traffic, including those for goods vehicles, these trips are currently travelling through the constrained network in the town leading to congestion and its associated impacts.
 - ┆ Unreliable journey times and delays witnessed during the peak periods, especially through key junctions such as along A131 and A134.
 - ┆ Key locations around the town centre are noted to have higher than acceptable levels of NO₂. Traffic congestion is the main contributor of this and needs to be addressed in light of expected increase in traffic in the future.
 - ┆ Lack of alternate routes for strategic traffic results in low network resilience. In the case of unforeseen circumstances, including issues on M11/A11, there is the potential for impacts on the traffic volume passing through Sudbury.
- 10.1.4. To address the identified problems and help deliver the specified scheme objectives, a 'long list' of options for interventions was developed. Each of these options were assessed against defined criteria to help determine which options should be taken forward for further, more detailed assessment. The sifting process was undertaken using the Department for Transport's Early Assessment and Sifting Tool (EAST).
- 10.1.5. The highest scoring option from the EAST assessment was the Junctions Improvement Option, though it does not address a number of scheme objectives, especially those related to through traffic. Amongst the options that meet the objectives in a more comprehensive manner, i.e. the relief road options, the Western Bypass (Short) was the highest scoring option, followed by the Southern (Short) option. The area where all the above options scored well were the Strategic and Commercial cases.
- 10.1.6. These options were identified to take forward for further detailed assessment. Due to the limitation of the current traffic model, the detailed option assessments were limited to the bypass options.

- 10.1.7. An analysis of journey time savings was undertaken for both southern and western options in order to understand the journey time improvements against competing routes through Sudbury town centre. Both the bypass options showed significant reduction in journey time due to faster speed and shorter distance of both alignments compared to existing routes on the A131 and A134. The largest journey time improvement was the southbound movement on the western option, with a saving of almost five minutes or 65% compared to the A131 southbound route. This showed that there is a clear benefit of the scheme for trips, especially those which are travelling through Sudbury.
- 10.1.8. However, the scheme cost, estimated to be between £50m-£70m, results in a low benefit cost ratio, and hence low value for money. The opportunity for funding a scheme through central government funds is therefore limited as there would be an expectation for higher VfM returns (noting the DfT would consider all 5 cases and not just the VfM).
- 10.1.9. Based on current evidence, the conclusion of the option assessment process is that the junction improvement works would be the most cost-effective way to address the transport problems of Sudbury at this time, although it is noted that this option does not address all the objectives set out in the study.
- 10.1.10. It is recommended that further analysis and design work should be undertaken to identify appropriate detailed junction improvement proposals, together with identification of potential funding streams, to support delivery of this option.

Appendix A

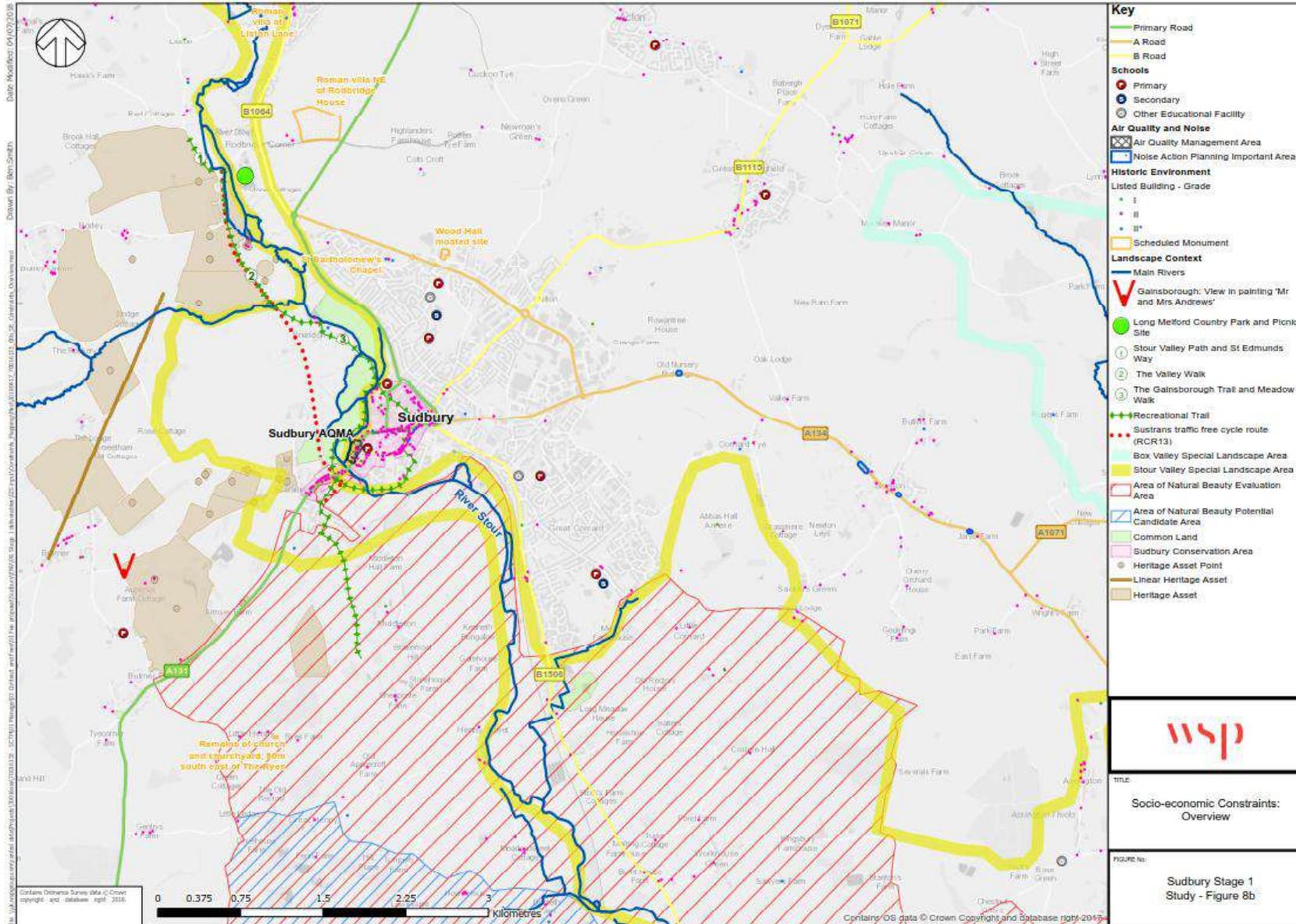
ENVIRONMENT CONSTRAINT MAPS





TITLE:
Environmental Constraints:
Overview

FIGURE No:
Sudbury Stage 1
Study - Figure 8a



Appendix B

EAST ASSESSMENT



Overall																		
Measure Ref. No.	Name/No.	Description	Identified problems and objectives of the option	Scale of impact	Scale of impact - Comments	Fit with primary objectives	Fit with secondary objectives	Fit with Objectives - Comments	Key uncertainties	Degree of consensus over outcomes?	Degree of consensus over outcomes? - Comments	Economic Growth	Economic growth - Comments	Carbon emissions	Carbon emissions - Comments	Air Quality - Score	Air Quality - Comments	Noise - Score
Option J1 - Traffic Management		A package of measures to increase capacity and improve traffic flow at problem junctions throughout Sudbury without a Relief Road. Seven junctions in total would be considered for improvement: 1. A134 / A131 / B1064 2. A134 / B1115 3. A134 / Newton Road / Shawlands Avenue 4. A131 / Newton Road / Cornard Road / Great Eastern Road 5. A131 Ballington Hill / Bulmer Road 6. A134 / A1071 7. A134 / Valley Road	Likely to have a localised impact. May reduce congestion and improve traffic flow within Sudbury town centre, but will not lead to any reduction overall traffic and will not significantly alter route choice for through traffic.	2		3	2	Likely to meet primary objectives relating to reduced congestion and improved connectivity. Will not meet objectives related to concerns about HGV traffic. Likely to meet secondary objectives related to improved journey times to an extent. Unlikely to contribute to improved quality of life objectives and reduction in HGV traffic through the town centre.	Numerous case studies available from around the UK in terms of Junction improvements by bypass options. Junctions selected for mitigation are based on existing congestion, location of future developments may mean different locations in the local network come under pressure.	2	Assumed likely to be difficult in reaching an agreement with all stakeholders on the nature of interventions. Any scheme of this nature is unlikely to fulfil a number of the primary scheme objectives and only has more localised benefits - therefore assumed to be more difficult to get stakeholder buy in.	3	Will improve local Sudbury economy by improved efficiency for those travelling around Sudbury. Will have minor benefits to wider regional economy and will have a small impact on journey times and reliability for strategic traffic. 2014 Babergh Core Strategy states Sudbury / Great Cornard is a key growth location. Chilton Woods Strategic Land Allocation North of Sudbury (1,050 houses & 20% of employment land) and East of Sudbury / Great Cornard (500 homes) are named as specific policies. Junction improvements would, to an extent, help facilitate these developments coming forward	4	Relatively limited construction required, as a result, there will be limited impact from construction. Ease of traffic flow will see local area emissions reductions.	5	Slight positive impact of reduced congestion. Potential increase in the number of cars due to increased capacity at the proposed junction(s). Hence, this option may also have a neutral to slight adverse impact.	4
Option SM1 - Sustainable Travel Initiatives		A package of Sustainable Travel Initiative measures, to encourage people to make fewer journeys by private car.	Likely to have an impact on local traffic within Sudbury (by targeting local traffic generators), but unlikely to have a significant impact on strategic traffic. Evidence from DfT LSTF evaluation (2017) would suggest impacts of less than 5% in overall car traffic reduction would be expected from such measures therefore unlikely to significantly affect town centre congestion.	1		2	2	Likely to partially meet primary objectives related to congestion reduction and improvements to conditions in Sudbury town centre. Unlikely to significantly impact on HGV traffic. Likely to partially meet secondary objectives related to quality of life and improving the attractiveness of Sudbury. Unlikely to impact on freight traffic.	Numerous case studies detailing likely magnitude of benefits from Sustainable Travel interventions (e.g. LSTF evaluation).	2	As the proposal is unlikely to fulfil some primary and secondary scheme objectives, especially in relation to removal of HGV traffic, it is assumed this proposal is unlikely to get agreement with a number of stakeholders.	3	Will improve local Sudbury economy by improved efficiency for those travelling around Sudbury. May help facilitate some local developments to an extent - but unlikely to contribute to wider regional economic benefits.	4	Very limited or no construction expected and hence there will be no emissions impact from construction. Operation expected to reduce traffic numbers and ease of traffic flow will see local area emissions reductions.	5	Benefits overall due to the reduction of vehicles users on local highway network.	5
Option P1 - Pricing Options		Introduction of, for example, parking charges to discourage car use.	Likely to reduce car traffic with a destination in the town centre to an extent - therefore reducing congestion. The level of overall impact is not certain but will not impact through traffic. May result in loss of business by making travel more expensive and may require some ongoing revenue support for enforcement.	1		2	2	Likely to partially meet primary objectives related to congestion reduction and improvements to conditions in Sudbury town centre. Unlikely to significantly impact on HGV traffic. Likely to partially meet secondary objectives related to quality of life and improving the attractiveness of Sudbury. Unlikely to impact on freight traffic.	The likely magnitude of benefits from changing town centre parking charging is not fully clear. Limited case study evidence available.	2	It is assumed that this proposal is likely to be unpopular with a number of key stakeholders, especially businesses, who could see this as a threat in terms of reduced footfall. Also does not fulfil some of the primary and secondary scheme objectives.	3	Reduced traffic will lead to improved efficiency for those travelling around Sudbury. Could potentially have negative impact in economic growth if businesses and road users opt to avoid the area altogether due to parking charges.	4	Expected reduction in traffic numbers and ease of traffic flow will see local area emissions reductions.	5	Positive impact through overall reduction of vehicles users on the local highway network.	5
Option PT1 - Public Transport Options (Bus)		Improvement to local bus services (increase frequency, etc.) to encourage more trips by public transport (leading to fewer journeys by private car).	Scale of impact is likely to be small given low levels of current bus patronage in Sudbury (2% of journey to work mode share for bus - significantly below national average of 7%). Even a doubling of current patronage is unlikely to impact significantly on traffic levels through Sudbury and infrastructure interventions and increase to service frequency to improve bus services are normally better suited to larger, more populous, urban areas. Some intervention are likely to need ongoing revenue support.	1		2	2	Likely to partially meet primary objectives related to congestion reduction and improvements to conditions in Sudbury town centre as well as growth and connectivity objectives. Unlikely to significantly impact on HGV traffic. Likely to partially meet secondary objectives related to quality of life and improving the attractiveness of Sudbury. Unlikely to impact on freight traffic.	Impact of improved bus services / access to services in local context not fully clear - evidence on low existing patronage based on census and observed bus usage.	2	Assumed that may not get buy in from some key stakeholders as the highway congestion problems will not be fully removed and does not fulfil some primary and secondary scheme objectives.	3	Will improve local Sudbury economy by improved efficiency for those travelling around Sudbury. May help facilitate some local developments to an extent - but unlikely to contribute to wider regional economic benefits.	4	Minimal construction expected, as a result there will be limited impact from construction. Operation would expect to reduce traffic numbers and ease of traffic flow will see local area emissions reductions.	5	Slight positive impact of reduced congestion due to uptake in public transport users over private vehicle use. Any construction for associated infrastructure will have a temporary adverse impact.	5
Option PT2 - Public Transport Options (Rail)		Improvement to the overall rail 'offer' to encourage people to make fewer journeys by private car.	Extending the rail line beyond Sudbury is a 'non starter' due to the very high cost and environmental impact of re-opening the line north of Sudbury, therefore rail options are limited to improving services and accessibility to the station. The scale of impact is therefore likely to be small given current levels of rail usage (2% of journey to work mode share for rail - significantly below national average of 5%) and areas served by the current rail line, and even a significant increase in existing patronage is unlikely to affect traffic levels through Sudbury. Brantes Local Plan details entire new fleet of trains for Greater Anglia will be in service by 2020 adding capacity to the network with Sudbury specifically mentioned - however any impact of increased rail use will only benefit trips with an origin or destination in Sudbury given it is the last stop on a branch line.	1		2	2	Likely to partially meet primary objectives related to congestion reduction and improvements to conditions in Sudbury town centre as well as growth and connectivity objectives for some movements. Unlikely to significantly impact on HGV traffic. Likely to partially meet secondary objectives related to quality of life and improving the attractiveness of Sudbury. Unlikely to impact on freight traffic.	Impact of improved rail services not fully clear - low existing patronage based on census data.	2	Assumed that may not get buy in from some key stakeholders as the highway congestion problems will not be fully removed and does not fulfil some primary and secondary scheme objectives.	3	Will improve local Sudbury economy by improved efficiency for those travelling to/from Sudbury. Unlikely to have an impact on local developments but could have limited impact on wider regional economic benefits.	4	Minimal construction expected, as a result there will be limited impact from construction. Operation would expect to reduce traffic numbers and ease of traffic flow will see local area emissions reductions.	5	Slight positive impact of reduced congestion due to uptake in public transport users over private vehicle use. An increase in service numbers may see an adverse local impact on receptors adjacent to the railway.	5
Western Option - Long 6 - W1		New 3.5km long single carriageway road from the A134 north of Sudbury to A131 south of Sudbury. To include a junction with Kitchen Hill.	PRIMARY OBJECTIVES: 1. Enable growth within Sudbury and surrounding areas. 2. Improve conditions in Sudbury town centre and surrounding areas. 3. Reduce congestion. 4. Address concerns relating to freight traffic (HGVs in particular). 5. Improve connectivity of Sudbury. SECONDARY OBJECTIVES: 1. Facilitate the delivery of new homes and jobs within Suffolk and Essex. 2. Improve the quality of life for residents, workers and shoppers by: • Reducing carbon emissions, air and noise pollution from road traffic. • Reducing severance issues due to traffic levels within the town centre. • Improving the historic setting of Sudbury through removal of road traffic. 3. Ensure any negative impacts outside Sudbury are minimised. 4. Reduce the number of freight vehicles passing through Sudbury, improving conditions in the town centre. 5. Improve attractiveness of Sudbury as a destination. 6. Improve access for businesses to wider labour markets etc. 7. Reduce transport costs for businesses.	3	Likely to lead to quicker and more reliable north-south movements through Sudbury. Latest version of the model indicates a journey time saving of 50% - 60%, saving 3-4 minutes of travel time compared to travelling through the town centre. Between 1100/1200 vehicles are expected to be attracted to the relief road by 2038 in the AM and PM peak hours. Around 12% of daily traffic movements in Sudbury estimated as likely to use the bypass, around 20% of daily traffic which currently routes through the town centre will re-route onto the bypass. In terms of HGVs, the scheme would attract around 20% of daily HGV trips across Sudbury, removing around 40% of the total daily HGV trips passing through the town centre. Would add to overall network resilience in the region, e.g. during high congestion situations on the A1111 and A12, this could become viable route as far as Thetford to/from Chelmsford.	3	5	The removal of a significant amount of through traffic from Sudbury would deliver the primary objectives related to reduction in congestion, improvement to connectivity and conditions in Sudbury and facilitation of growth. The proposal would also meet a number of secondary objectives, including reduction freight movements through Sudbury, improving journey times and business access. The scheme is likely to impact negatively on areas outside Sudbury and may lead to an increase carbon emissions.	Traffic analysis is based on the SCTM strategic traffic model. The model demonstrated low VIM for the scheme. No detailed validation of the model has yet been undertaken for the Sudbury area.	3	Public consultation took place in October 2002 where the western relief road received the most support out of the proposed options. Likely to be a relatively high number of objections to the scheme due to environmental impacts.	4	Facilitates local and regional economic growth along the A131 / A134 corridor. Western bypass is referenced in 2014 Core Strategy as previous part of 2006 Local Plan Policy TP10 and in 2011 Suffolk Local Transport Plan.	3	Construction: Significant emissions associated with materials and equipment usage required in construction. Operation: Overall the emissions in the area are likely to increase if the overall traffic increases.	3	Option W1 does not run through an AQMA, the nearest being Sudbury AQMA located in the town itself. Sensitive ecological and human receptors are likely to exist along the proposed option route. Construction: Potential adverse impacts from dust and exhaust emission on nearby human and ecological receptors may result from construction works. Operation: Increased emissions in immediate and surrounding areas to the option corridor due to traffic flow from the proposed scheme, overall emissions likely to remain similar. Likely to have adverse impacts on human and ecological receptors.	2
Western Option - Short - W2		New 3km long single carriageway road from the A134 north of Sudbury to A131 south of Sudbury (lower curve than W1). To include a junction with Kitchen Hill.	Likely to lead to quicker and more reliable north-south movements through Sudbury. Latest version of the model indicates a journey time saving of 50% - 60%, saving 3-4 minutes of travel time compared to travelling through the town centre. Between 1100/1200 vehicles are expected to be attracted to the relief road by 2038 in the AM and PM peak hours. Around 12% of daily traffic movements in Sudbury estimated as likely to use the bypass, around 20% of daily traffic which currently routes through the town centre will re-route onto the bypass. In terms of HGVs, the scheme would attract around 20% of daily HGV trips across Sudbury, removing around 40% of the total daily HGV trips passing through the town centre. Would add to overall network resilience in the region, e.g. during high congestion situations on the A1111 and A12, this could become viable route as far as Thetford to/from Chelmsford.	3		3	4	The removal of a significant amount of through traffic from Sudbury would deliver the primary objectives related to reduction in congestion, improvement to connectivity and conditions in Sudbury and facilitation of growth. The proposal would also meet a number of secondary objectives, including reduction freight movements through Sudbury, improving journey times and business access. The scheme is likely to impact negatively on areas outside Sudbury and may lead to an increase carbon emissions.	Traffic analysis is based on the SCTM strategic traffic model. The model demonstrated low VIM for the scheme. No detailed validation of the model has yet been undertaken for the Sudbury area.	3	Public consultation took place in October 2002 where the western relief road received the most support out of the proposed options. Likely to be a relatively high number of objections to the scheme due to environmental impacts.	4	Facilitates local and regional economic growth along the A131 / A134 corridor. Western bypass is referenced in 2014 Core Strategy as previous part of 2006 Local Plan Policy TP10 and in 2011 Suffolk Local Transport Plan.	3	Construction: Significant emissions associated with materials and equipment usage required in construction. Operation: Overall the emissions in the area are likely to increase if the overall traffic increases.	3	Option W2 does not run through an AQMA, the nearest being Sudbury AQMA located in the town itself. Sensitive ecological and human receptors are likely to exist along the proposed option route. Construction: Potential adverse impacts from dust and exhaust emission on nearby human and ecological receptors may result from construction works. Operation: Increased emissions in immediate and surrounding areas to the option corridor due to traffic flow from the proposed scheme, overall emissions likely to remain similar. Likely to have adverse impacts on human and ecological receptors.	2
Southern Option - Long - S1		New 8.3km single carriageway road from Bulmer Tye to the A134/A1071. This carriageway will also be connected near Little Cornard by a 3km north-south link to the Shawlands Retail Park roundabout.	Likely to benefit traffic on A134, A1071 and B1068 wishing to travel to/from Sudbury. Estimated this route will attract 34% of daily traffic in Sudbury. It is estimated 30% of daily traffic travelling through Sudbury town centre would re-route onto this option. The scheme would attract the greatest proportion of HGVs, around 56% of daily HGV traffic in Sudbury, with 51% of daily HGV traffic which routes via the town centre likely to opt to use this scheme option as an alternative. Will add to overall network resilience.	4		3	4	The removal of a significant amount of through traffic from Sudbury would deliver the primary objectives related to reduction in congestion, improvement to connectivity and conditions in Sudbury and facilitation of growth. The proposal would also meet a number of secondary objectives, including reduction freight movements through Sudbury, improving journey times and business access. The scheme is likely to impact negatively on areas outside Sudbury and may lead to an increase carbon emissions.	Sectoral analysis and desire lines carried out for Do Minimum scenario from the SCTM. Uncertainty in relation to this scheme alignment not tested previously in the SCTM, therefore detailed reassignment of traffic not known.	2	Public consultation took place in October 2002 and a short southern relief road received very little acceptance from the local community. This is a longer route and it is uncertain what level of acceptance this would receive - it is likely to provide higher benefits and is further from the built up area of Sudbury - however will likely have more significant environmental impacts.	3	Facilitates local and regional economic growth along the A131 / A134 corridor. 2014 Babergh Core Strategy states Sudbury / Great Cornard is a key growth location. Chilton Woods Strategic Land Allocation North of Sudbury (1,050 houses & 20% of employment land) and East of Sudbury / Great Cornard (500 homes) are named as specific policies. Scheme would help with delivery of these local growth locations.	3	Construction: Significant emissions associated with materials and equipment usage required in construction. S1 being a longer scheme than others, it is likely to generate more carbon emissions. Operation: Overall the emissions in the area are likely to increase if the overall predicted traffic increases.	3	Option E1 does not run through an AQMA, the nearest being Sudbury AQMA located in the town itself. Sensitive ecological and human receptors are likely to exist along the proposed option route. Construction: Potential adverse impacts from dust and exhaust emission on nearby human and ecological receptors may result from construction works. Operation: Increased emissions in immediate and surrounding areas to the option corridor due to traffic flow from the proposed scheme, overall emissions likely to remain similar. Likely to have adverse impacts on human and ecological receptors.	2

Overall																		
Under Ref. No.	Name/No.	Description	Identified problems and objectives of the option	Scale of impact	Scale of impact - Comments	Fit with primary objectives	Fit with secondary objectives	Fit with Objectives - Comments	Key uncertainties	Degree of consensus over outcomes?	Degree of consensus over outcomes? - Comments	Economic Growth	Economic growth - Comments	Carbon emissions	Carbon emissions - Comments	Air Quality - Score	Air Quality - Comments	Noise - Score
	Southern Option - 9 Short - S2	New 3km long single carriageway road from the Newton Road-Cats Lane junction to A131 south of Sudbury. To include a junction with B1508.		4	Likely to mainly benefit trips on the A134 east to/from A131 south which is not a dominant movement. Estimated the scheme will attract around 20% of the daily traffic within Sudbury, with 36% of traffic which currently routes through the town centre shifting onto the bypass. Around 27% of daily HGV traffic in Sudbury likely to opt to use the bypass, with 57% of daily HGV traffic passing through the town centre switching to the route. Will add to overall network resilience.	5	5	The removal of a significant amount of through traffic from Sudbury would deliver the primary objectives related to reduction in congestion, improvement to connectivity and conditions in Sudbury and facilitation of growth. The proposal would also meet a number of secondary objectives, including reduction in freight movements through Sudbury, improving journey times and business access. The scheme is likely to impact negatively on areas outside Sudbury and may lead to an increase carbon emissions.	Sectoral analysis and desire lines carried out for Do Minimum scenario from the SCTM. Uncertainty in relation to this scheme alignment not tested previously in the SCTM, therefore detailed reassessment of traffic not known.	5	Public consultation took place in October 2002 and a southern relief road received very little acceptance from the local community.	3	Main benefit is to local economy within Sudbury, unlikely to have significant wider economic impact. 2014 Babergh Core Strategy states Sudbury / Great Cornard is a key growth location. Chilton Woods Strategic Land Allocation North of Sudbury (1,050 houses & 20ha of employment land) and East of Sudbury / Great Cornard (500 homes) are named as specific policies, scheme would help with delivery of these local growth locations	3	Construction: Significant emissions associated with materials and equipment usage required in construction. Operation: Overall the emissions in the area are likely to increase if the overall predicted traffic increases.	3	Option S2 does not run through an Air Quality Management Area (AQMA); the nearest being Sudbury AQMA located in the town itself. Sensitive ecological and human receptors are likely to exist along the proposed option route. Construction: Potential adverse impacts from dust and exhaust emissions on nearby human and ecological receptors may result from construction works. Operation: Increased emissions in immediate and surrounding areas to the option corridor due to traffic flow from the proposed scheme, overall emissions likely to remain similar. Likely to have adverse impacts on human and ecological receptors	5
	Eastern Option - Long 10 E1	New 5.5km long single carriageway road from the A134-B1064 roundabout to A134-Valley Road junction. To include junctions with Acton Lane and B1115.		1	Likely to have a relatively small impact, limited to east-west traffic. Main impact expected on trips between A134 north to/from A134 east which is not a dominant movement. Estimated 5% of daily traffic in Sudbury will opt to use the scheme and provides no relief to traffic which currently uses the town centre. 11% of daily HGV traffic likely to use the scheme, schemes does not provide relief from HGV traffic which currently routes via the town centre.	4	3	The removal of some through traffic from Sudbury would help to an extent in delivering the primary objectives related to reduction in congestion, improvement to connectivity and conditions in Sudbury and facilitation of growth. The proposal would also help to an extent in achievement of a number of secondary objectives, including some limited reduction in freight movements through Sudbury, and improving journey times and business access. The scheme is likely to impact negatively on areas outside Sudbury and may lead to an increase carbon emissions.	Sectoral analysis and desire lines carried out for Do Minimum scenario from the SCTM. Uncertainty in relation to this scheme alignment not tested previously in the SCTM, therefore detailed reassessment of traffic not known.	3	Not addressing the impacts of the most dominant through trips, so assumed to be unlikely to receive significant support.	3	Likely to provide local economic benefit. 2014 Babergh Core Strategy states Sudbury / Great Cornard is a key growth location. Scheme would run directly through Chilton Woods Strategic Land Allocation North of Sudbury (1,050 houses & 20ha of employment land) and benefit East of Sudbury / Great Cornard (500 homes) which are named as specific policies, scheme would help with delivery of these local growth opportunities most directly of all options available	3	Construction: Significant emissions associated with materials and equipment usage required in construction. Operation: Overall the emissions in the area are likely to increase if the overall predicted traffic increases.	3	Option E1 does not run through an AQMA; the nearest being Sudbury AQMA located in the town itself. Sensitive ecological and human receptors are likely to exist along the proposed option route. Construction: Potential adverse impacts from dust and exhaust emissions on nearby human and ecological receptors may result from construction works. Operation: Increased emissions in immediate and surrounding areas to the option corridor due to traffic flow from the proposed scheme, overall emissions likely to remain similar. Likely to have adverse impacts on human and ecological receptors	3
	Eastern Option - Short 11 E2	New 3km long single carriageway road from the A134 (north of Claremont Ave roundabout) to B1115-Valley Road junction. To include a junction with Acton Lane.		1	Likely to have a local impact - would take traffic away from A134 and B1115 but this is not a dominant movement, would only attract around 2% of the daily traffic within Sudbury, and 1% of daily HGV traffic. Scheme will not provide any relief in terms of routing traffic away from town centre.	3	3	The removal of a limited amount of traffic from the Sudbury network would help in some way in delivering primary objectives related to reduction in congestion, improvement to connectivity and conditions in Sudbury and facilitation of growth. The proposal would also help to an extent in achievement of a number of secondary objectives, including some very limited reduction in freight movements through Sudbury, and improving journey times and business access. The scheme is likely to impact negatively on areas outside Sudbury and may lead to an increase carbon emissions.	Sectoral analysis and desire lines carried out for Do Minimum scenario from the SCTM. Uncertainty in relation to this scheme alignment not tested previously in the SCTM, therefore detailed reassessment of traffic not known.	2	Not addressing the impacts of the most dominant through trips, so assumed to be unlikely to receive significant support.	3	Likely to have some local economic benefit given Sudbury town centre not directly relieved. 2014 Babergh Core Strategy states Sudbury / Great Cornard is a key growth location. Scheme would run directly through Chilton Woods Strategic Land Allocation North of Sudbury (1,050 houses & 20ha of employment land) and benefit East of Sudbury / Great Cornard (500 homes) which are named as specific policies, scheme would help with delivery of these local growth opportunities	3	Construction: Significant emissions associated with materials and equipment usage required in construction. Operation: Overall the emissions in the area are likely to increase if the overall traffic increases.	3	Option E2 does not run through an AQMA; the nearest being Sudbury AQMA located in the town itself. Sensitive ecological and human receptors are likely to exist along the proposed option route. Construction: Potential adverse impacts from dust and exhaust emissions on nearby human and ecological receptors may result from construction works. Operation: Increased emissions in immediate and surrounding areas to the option corridor due to traffic flow from the proposed scheme, overall emissions likely to remain similar. Likely to have adverse impacts on human and ecological receptors.	2
	12 Ring Road Option - L1	A new 22km single carriageway road. Alignment a combination of Option S1 (southern link only) + Option W1 (southern section from A131 - Hendingham Road Junction) + E1		5	Likely to provide significant benefits to a range of traffic movements around the town, estimated the scheme will attract 42% of daily traffic within Sudbury, 37% of daily traffic which passes through Sudbury town centre likely to re-route onto the scheme. Likely to have a significant impact in terms of removal of HGVs from the town centre, resulting in 61% of daily HGV trips which use the town centre routing onto the scheme. 57% of all daily HGV traffic in Sudbury would use the scheme. Scheme would offer increased resilience to the network in Sudbury and more widely.	5	5	The removal of a significant amount of through traffic from Sudbury would deliver the primary objectives related to reduction in congestion, improvement to connectivity and conditions in Sudbury and facilitation of growth. The proposal would also meet a number of secondary objectives, including in reduction freight movements through Sudbury, improving journey times and business access. The scheme is likely to impact negatively on areas outside Sudbury and may lead to an increase carbon emissions.	Sectoral analysis and desire lines carried out for Do Minimum scenario from the SCTM. Uncertainty in relation to this scheme alignment not tested previously in the SCTM, therefore detailed reassessment of traffic not known.	5	Unlikely to receive significant support given the likely large environmental impact and prohibitively high scheme cost.	5	Facilitates local and regional economic growth along the A131 / A134 corridor. 2014 Babergh Core Strategy states Sudbury / Great Cornard is a key growth location. Chilton Woods Strategic Land Allocation North of Sudbury (1,050 houses & 20ha of employment land) and East of Sudbury / Great Cornard (500 homes) are named as specific policies. Scheme would help facilitate these developments coming forward, as well as potential growth areas in Essex (Halstead and North Braintree). Provides the greatest potential for economic growth in Sudbury of all the highway options.	2	Construction: Significant emissions associated with materials and equipment usage required in construction. L1 being a longer scheme than others, it is likely to generate more carbon emissions. Operation: Overall the emissions in the area are likely to increase if the overall traffic increases.	3	Option L1 does not run through an AQMA; the nearest being Sudbury AQMA located in the town itself. Sensitive ecological and human receptors are likely to exist along the proposed option route. Construction: Potential adverse impacts from dust and exhaust emissions on nearby human and ecological receptors may result from construction works. Operation: Increased emissions in immediate and surrounding areas to the option corridor due to traffic flow from the proposed scheme, overall emissions likely to remain similar. Likely to have adverse impacts on human and ecological receptors	5

Overall		Economic												
Measure Ref. No.	Name/No.	Description	Noise - Comments	Historic Environment - Score	Historic Environment - Comments	Biodiversity - Score	Biodiversity - Comments	Landscape - Score	Landscape - Comments	Water Environment - Score	Water Environment - Comments	Well being	Well being - Comments	Expected VM Category
	Option J1 – Traffic Management	A package of measures to increase capacity and improve traffic flow at problem junctions throughout Sudbury without a Relief Road. Seven junctions in total would be considered for improvement: 1. A134 / A131 / B1064 2. A134 / B1115 3. A134 / Newton Road / Shawlands Avenue 4. A131 / Newton Road / Cornard Road / Great Eastern Road 5. A131 Ballington Hill / Bulmer Road 6. A134 / A1071 7. A134 / Valley Road	Slight positive impact of reduced congestion. Potential increase in the number of cars due to increased capacity at the proposed junction(s). Hence, this option may also have a slight adverse impact.		No impact as setting and conditions for heritage assets will not change significantly.		Potential increase in the number of cars due to increased capacity at the proposed junction(s). This may alter air and/or increase noise pollution on sensitive receptors. This could result in potential slight adverse impacts on sensitive ecological receptors, if present.		4 No impact as physical conditions will be unchanged.		4 No impact as physical conditions and traffic numbers are not anticipated to change.		Physical Activity: Limited impact on physical activity is anticipated. Injury or death (safety): Potential increase in traffic numbers may lead to increase in accidents although impact relatively limited - likely to be improved junction design to mitigate any issues. Severe: Option will have limited impact on severance. Crime: No impact on crime anticipated. Accessibility: Option will likely improve accessibility through easing of congestion.	4
	Option SM1 – Sustainable Travel Initiatives	A package of Sustainable Travel Initiative measures, to encourage people to make fewer journeys by private car.	Slight benefits due to reduced traffic numbers in Sudbury.		Slight benefits due to decrease in traffic in Sudbury leading to improvement in the setting of a number of heritage assets in the town.		No impact anticipated as land-take will not be required. Improvement of air quality and ambient noise: this is likely to result in negligible benefits for sensitive receptors, if present. This option is likely to be mainly implemented in an urban environment.		4 No impact as physical conditions will be unchanged.		5 Slightly beneficial as pollution risks from traffic flow will be reduced as fewer journeys take place.		Physical Activity: As option aims to reduce vehicle use an increase in physical activity is anticipated. Injury or death (safety): Reduction in traffic numbers will likely see a safer local environment. Severe: Option will have slight positive impact on severance by reducing town centre traffic. Crime: No impact on crime anticipated. Accessibility - options will likely improve accessibility through and easing of congestion.	4
	Option P1 – Pricing Options	Introduction of, for example, parking charges to discourage car use.	Slight benefits due to reduced traffic numbers in Sudbury.		4 No impact as setting and conditions for heritage assets will not change.		No impact anticipated as land-take will not be required. Improvement of air quality and ambient noise: this is likely to result in negligible benefits for sensitive receptors, if present. This option is likely to be mainly implemented in an urban environment.		4 No impact as physical conditions will be unchanged.		5 Slightly beneficial as pollution risks from traffic flow will be reduced as fewer journeys take place.		Physical Activity: As option aims to reduce vehicle use an increase in physical activity is anticipated. Injury or death (safety): Reduction in traffic numbers will likely see a safer local environment. Severe: Option will have slight positive impact on severance by reducing town centre traffic. Crime: No impact on crime anticipated. Accessibility: Option will likely improve accessibility through easing of congestion.	4
	Option PT1 – Public Transport Options (Bus)	Improvement to local bus services (increase frequency, etc.) to encourage more trips by public transport (leading fewer journeys by private car).	Slight benefits due to reduced traffic numbers. Any construction for associated infrastructure required will have a temporary adverse impact.		Potential adverse impact of construction and operation of associated infrastructure.		Slight benefits due to reduction of traffic numbers and easing of associated air and noise pollution pressures on sensitive receptors. Any construction requirements for associated infrastructure may have temporary and/or permanent adverse impacts.		3 Slight adverse impact as the construction and operation of associated infrastructure will impact visual amenity.		5 Slightly beneficial as pollution risks from traffic flow will be reduced as fewer journeys take place. Any construction of infrastructure required will have temporary risks of pollution and flood risk associated with it.		Physical Activity: As option aims to reduce vehicle use an increase in physical activity is anticipated. Injury or death (safety): Reduction in traffic numbers will likely see a safer local environment. Severe: Option will have slight positive impact on severance by reducing town centre traffic. Crime: No impact on crime anticipated. Accessibility: Option will likely improve accessibility through improved public transport provision and easing of congestion.	3
	Option PT2 – Public Transport Options (Rail)	Improvement to the overall rail 'offer' to encourage people to make fewer journeys by private car.	Slight benefits due to reduced traffic numbers. An increase in service numbers may see an adverse local impact on receptors adjacent to the railway.		Slight benefits due to decrease in traffic in Sudbury leading to improvement in the setting of a number of heritage assets in the town.		Slight benefits due to reduction of traffic numbers and easing of associated air and noise pollution pressures on sensitive receptors. Increased service numbers may have an adverse local impact on receptors adjacent to the railway.		5 No impact as physical conditions will be unchanged.		5 Slightly beneficial as pollution risks from traffic flow will be reduced as fewer journeys take place.		Physical Activity: As option aims to reduce vehicle use an increase in physical activity is anticipated. Injury or death (safety): Reduction in traffic numbers will likely see a safer local environment. Severe: Option will have slight positive impact on severance by reducing town centre traffic. Crime: No impact on crime anticipated. Accessibility: Option will likely improve accessibility through improved public transport provision and easing of congestion.	3
	Western Option - Long 6 - W1	New 3.5km long single carriageway road from the A134 north of Sudbury to A131 south of Sudbury. To include a junction with Kitchen Hill.	Operation: Significant increase in noise and vibration due to the increased traffic presence resulting from the scheme.		Multiple heritage asset points lie in the Option W1 area. Three scheduled monuments (within 2km) and multiple listed buildings (within 1km) are near scheme area. There are also buried heritage assets located on the option corridor. W1 falls within the context of the historic view in the Gainsborough painting. Construction: Potential adverse impacts on heritage assets/buildings and visual amenity of historic buildings/assets during construction. Operation: Potential permanent impacts on heritage assets/buildings and visual amenity and integrity of historic buildings/assets. A reduction in traffic is likely to improve the setting and experience of Sudbury Conservation Area, and those heritage assets within it, however the setting of other designated assets and a number of historic landscapes will be adversely affected.		Brundon Wood Ancient Woodland is approximately 500m from the Option W1 route. The option corridor intersects The Railway Walks LNR, and is within 500m of the Sudbury Common Lands LNR. Deciduous woodland and priority habitats also intersect the option corridor. Construction: Potential adverse effects on ecological receptors through increased disturbance such as lighting, noise, change in hydrology and disturbance resulting from the new land-take and vehicle use during construction period. Operation: Potential adverse impacts on ecological receptors through increased disturbances from noise, lighting, air pollution, land-take and increased traffic presence.		1 The area around the option route is marsh, water, agricultural land and woodland. Most of the scheme lies within the Stour Valley special landscape area, within 500m of the Sudbury Conservation Area, crosses existing footpaths and is adjacent to an AONB review area. W1 falls within the context of the historic view in the Gainsborough painting. Construction: Temporary impacts from the construction of the scheme. Potential constraints for construction sites location and areas for the storage of equipment and materials. Operation: Potential effects on landscape character (e.g. removal of vegetation and trees) and by the construction of permanent infrastructure. Sensitive receptors (i.e. residential properties, farms, parks etc.) are present along the proposed route and will be impacted adversely.		2 The River Stour runs across the path of Option W1, as a result parts of the option lie in flood zone 2 (0.1-1% annual chance of flooding) and flood zone 3 (>1% annual chance of flooding). The option route lies in the Stour Catchment Area within close proximity to the Zone I – Inner Protection Zone and within Zone II – Outer protection zone for groundwater sources. Construction: The construction of the new roads, bridges and associated infrastructure will have permanent and temporary adverse effects on surface water quality. The construction works may also expose construction workers and/or infrastructure to flood risk and cause pollution of the water source. Operation: Potential adverse effects on surface water quality and drainage (e.g. increased suspended sediment during heavy rainfall, accidental release of contaminants into surface waters, etc.). Subsequent adverse effects on soil quality and groundwater resources.		Physical Activity: Option will reduce access to the natural environment and footpath/cycleways. Physical activity will likely reduce as a result. Injury or death (safety): Increase in higher speed limit roads may reduce the safety of vehicles users, pedestrians and animals. Safety improvements may occur as a result of easing congestion at junctions. Severe: Options will reduce accessibility to the natural environment, reduce access to footpaths and cycleways and urban segments will make street access more difficult. The reduction in town centre traffic will lead to an improvement in severance at that location. Crime: No impact on crime anticipated. Accessibility: Option will improve road accessibility, reducing stress on internal road systems.	1
	Western Option - Short - W2	New 3km long single carriageway road from the A134 north of Sudbury to A131 south of Sudbury (lower curve than W1). To include a junction with Kitchen Hill.	Operation: Significant increase in noise and vibration due to the increased traffic presence resulting from the scheme.		Multiple heritage asset points lie in the Option W2 area. Three scheduled monuments (within 2km) and multiple listed buildings (within 500m) are near the scheme area. There are also buried heritage assets located on the option corridor. W2 falls within the context of the historic view in the Gainsborough painting. Construction: Potential adverse impacts on heritage assets/buildings and visual amenity of historic buildings/assets during construction. Operation: Potential permanent impacts on heritage assets/buildings and visual amenity and integrity of historic buildings/assets. A reduction in traffic is likely to improve the setting and experience of Sudbury Conservation Area, and those heritage assets within it, however the setting of other designated assets and a number of historic landscapes will be adversely affected.		Brundon Wood Ancient Woodland is approximately 700m from the Option W2 route. The option route intersects The Railway Walks LNR, and is within 500m of the Sudbury Common Lands LNR. Deciduous woodland and priority habitats also intersect the option corridor. Construction: Potential adverse effects on ecological receptors through increased disturbance such as lighting, noise, change in hydrology and disturbance resulting from the new land-take and vehicle use during construction period. Operation: Potential adverse impacts on ecological receptors through increased disturbances from noise, lighting, air pollution, land-take and increased traffic presence.		1 The area around Option W2 is marsh, water, agricultural land and woodland. Most of the scheme lies within the Stour Valley special landscape area, is adjacent to Sudbury conservation area crosses existing footpaths and is adjacent to an AONB review area. W2 falls within the context of the historic view in the Gainsborough painting. Construction: Temporary impacts from the construction of the scheme. Potential constraints for construction sites location and areas for the storage of equipment and materials. Operation: Potential effects on landscape character (e.g. removal of vegetation and trees) and by the construction of permanent infrastructure. Sensitive receptors (i.e. residential properties, farms, parks etc.) are present along the proposed route and will be impacted adversely.		2 The River Stour and the Belchamp Brook Tributary run across the path of Option W2, as a result parts of the option lie in flood zone 2 (0.1-1% annual chance of flooding) and flood zone 3 (>1% annual chance of flooding). The option route lies in the Stour Catchment Area, within close proximity to the Zone I – Inner Protection Zone and within Zone II – Outer protection zone for groundwater sources. Construction: The construction of the new roads, bridges and associated infrastructure will have permanent and temporary adverse effects on surface water quality. The construction works may also expose construction workers and/or infrastructure to flood risk and cause pollution of the water source. Operation: Potential adverse effects on surface water quality and drainage (e.g. increased suspended sediment during heavy rainfall, accidental release of contaminants into surface waters, etc.). Subsequent adverse effects on soil quality and groundwater resources.		Physical Activity: Option will reduce access to the natural environment and footpath/cycleways. Physical activity will likely reduce as a result. Injury or death (safety): Increase in higher speed limit roads may reduce the safety of vehicles users, pedestrians and animals. Safety improvements may occur as a result of easing congestion at junctions. Severe: Options will reduce accessibility to the natural environment, reduce access to footpaths and cycleways and urban segments will make street access more difficult. The reduction in town centre traffic will lead to a reduction in severance in the town centre. Crime: No impact on crime anticipated. Accessibility: Option will improve road accessibility, reducing stress on internal road systems.	1
	Southern Option - Long - S1	New 8.5km single carriageway road from Bulmer Tye to the A134/A1071. This carriageway will also be connected near Little Cornard by a 3km north-south link to the Shawlands Retail Park roundabout	Operation: Significant increase in noise and vibration due to the increased traffic presence resulting from the development		Option S1's proposed route intersects one Grade I and seven Grade II listed buildings. A Church and Churchyard scheduled monument is directly adjacent to the option corridor. Additionally, 28 Grade II listed buildings are within ~500m of the option corridor. S1 falls within the context of the historic view in the Gainsborough painting. Construction: Potential adverse impacts on heritage assets/buildings and visual amenity of historic buildings/assets during construction. Operation: Potential permanent impacts on heritage assets/buildings and visual amenity and integrity of historic buildings/assets. A reduction in traffic is likely to improve the setting and experience of Sudbury Conservation Area, and those heritage assets within it, however the setting of other designated assets and a number of historic landscapes will be adversely affected.		Option S1 intersects Conrad Mere, Little Cornard SSSI. It also intersects priority habitat areas (floodplain grazing marsh, no main but additional habitats and deciduous woodland). Eight Ancient Woodland areas are within 1km of the option corridor, the closest being ~200m from the northern segment of the option corridor. Construction: Potential adverse effects on ecological receptors through increased disturbance such as lighting, noise, change in hydrology and disturbance resulting from the new land-take and vehicle use during construction period. Operation: Potential adverse impacts on ecological receptors through increased disturbances from noise, lighting, air pollution, land-take and increased traffic presence.		1 Option S1 is mostly within the Stour Valley Special Landscape Area. The option corridor passes through mostly agricultural land (in the south). It also crosses the river Stour, multiple areas of woodland and grassland and an AONB review area. The route intersects two bridleways and multiple footpaths. S1 falls within the context of the historic view in the Gainsborough painting. Construction: Temporary impacts from the construction of the scheme. Potential constraints for construction sites location and areas for the storage of equipment and materials. Operation: Potential effects on landscape character (e.g. removal of vegetation and trees) and by the construction of permanent infrastructure. Sensitive receptors (i.e. residential properties, farms, parks etc.) are present along the proposed route and will be impacted adversely.		2 The River Stour run across the path of option S1. As a result, a part of the option corridor is in a flood zone 2 (0.1-1% annual chance of flooding) and a flood zone 3 (>1% annual chance of flooding) area. The option is within the Stour Catchment Area, and passes through groundwater source protection zones I, II and III. Construction: The construction of the new roads, bridges and associated infrastructure will have permanent and temporary adverse effects on surface water quality. The construction works may also expose construction workers and/or infrastructure to flood risk and cause pollution of the water source. Operation: Potential adverse effects on surface water quality and drainage (e.g. increased suspended sediment during heavy rainfall, accidental release of contaminants into surface waters, etc.). Subsequent adverse effects on soil quality and groundwater resources.		Physical Activity: Option will reduce access to the natural environment and footpath/cycleways. Physical activity will likely reduce as a result. Injury or death (safety): Increase in higher speed limit roads may reduce the safety of vehicles users, pedestrians and animals. Safety improvements may occur as a result of easing congestion at junctions. Severe: Options will reduce accessibility to the natural environment, reduce access to footpaths and cycleways and urban segments will make street access more difficult. The reduction in town centre traffic will lead to a reduction in severance in this location. Crime: No impact on crime anticipated. Accessibility: Option will improve road accessibility, reducing stress on internal road systems.	1

Overall		Economic											Well being		Expected VM Category
Under Ref. No.	Name/No.	Description	Noise - Comments	Historic Environment - Score	Historic Environment - Comments	Biodiversity - Score	Biodiversity - Comments	Landscape - Score	Landscape - Comments	Water Environment - Score	Water Environment - Comments	Well being	Well being - Comments	Expected VM Category	
			Option S2 does not run through an NIA, the nearest being ~1km away at the Old Nursery Buildings on the A134. Sensitive receptors exist near the proposed option route, such as primary school. Construction: Potential significant increase in noise and vibration arising from construction, particularly in Sudbury town itself. The works required to widen the road will be significant and have a major adverse impact on sensitive receptors. Due to the urban nature of part of this scheme this will likely have limited working hours. Operation: Significant increase in noise and vibration due to the increased traffic presence resulting from the development.		Significant urban segment means that many residential and listed (or unlisted) buildings will be on the option corridor or nearby. One Grade II listed building is located within the option corridor and multiple listed buildings of all grades are found nearby. No known buried heritage assets appear to be located on the option corridor. No scheduled monuments are located within or near (>5km) from the option corridor. S2 falls within the context of the historic view in the Gainsborough painting. Construction: Potential adverse impacts on heritage assets/buildings and visual amenity of historic buildings/assets during construction. Operation: Potential permanent impacts on heritage assets/buildings and visual amenity and integrity of historic buildings/assets. A reduction in traffic is likely to improve the setting and experience of Sudbury Conservation Area, and those heritage assets within it, however the setting of other designated assets and a number of historic landscapes will be adversely affected.		Conrad Mere, Little Conrad SSSI lies ~1.4km south-east of the Option S2 route. Approximately 1km north of the option route is the Sudbury Common Lands Local Nature Reserve (LNR). Areas of ancient woodland lie east, west and south of the option route. It also intersects deciduous woodland, priority habitats and Com Bunting priority area. Construction: Potential adverse effects on designated ecological receptors through increased disturbance such as lighting, noise, change in hydrology and disturbance resulting from the new land-take and vehicle use during construction period. Operation: Permanent adverse impacts on ecological receptors through increased disturbances from noise, lighting, air pollution, land-take and increased traffic presence.		The area around the option route is urban, water, agricultural land and woodland. The option route lies within the Stour Valley Special Landscape Area, is within 1km of Sudbury Conservation Area, crosses existing footpaths and an Area of Outstanding Natural Beauty (AONB) review area. S2 falls within the context of the historic view in the Gainsborough painting. Construction: Temporary impacts from the construction of the scheme. Potential constraints for construction sites location and areas for the storage of equipment and materials. Operation: Potential effects on landscape character (e.g. removal of vegetation and trees) and by the construction of permanent infrastructure. Sensitive receptors (i.e. residential properties, farms, parks etc.) are present along the proposed route and will be impacted adversely.		The River Stour runs across the path of Option S2, as a result parts of the option route lie in flood zone 2 (0.1-1% annual chance of flooding) and flood zone 1 (>1% annual chance of flooding). The option route lies in the Stour Catchment Area within close proximity to the Zone I – Inner Protection Zone and within Zone II – Outer protection zone for groundwater sources. Construction: The construction of the new roads, bridges and associated infrastructure will have permanent and temporary adverse effects on surface water quality. The construction works may also expose construction workers and/or infrastructure to flood risk and cause pollution of the water source. Operation: Potential adverse effects on surface water quality and drainage (e.g. increased suspended sediment during heavy rainfall, accidental release of contaminants into surface waters, etc.). Subsequent adverse effects on soil quality and groundwater resources.		Physical Activity: Option will reduce access to the natural environment and footpath/cycleways. Physical activity will likely reduce as a result. Injury or death (safety): Increase in higher speed limit roads may reduce the safety of vehicles users, pedestrians and animals. Safety improvements may occur as a result of easing congestion at junctions. Severance: Options will reduce accessibility to the natural environment, reduce access to footpaths and cycleways and urban segments will make street access more difficult. Crime: No impact on crime anticipated. Accessibility: Option will improve road accessibility, reducing stress on internal road systems.	1	
	Southern Option - 9 Short - S2	New 3km long single carriageway road from the Newton Road-Cats Lane junction to A131 south of Sudbury. To include a junction with B1508.	Option E1 does not run through an NIA, the nearest being ~500m from the southern portion of the option route by the Old Nursery Buildings on the A134. Sensitive receptors exist near the proposed option route. Construction: Potential significant increase in noise and vibration arising from construction. Operation: Significant increase in noise and vibration due to the increased traffic presence resulting from the development.		Three Grade II and one Grade II* listed buildings are within 300m of the E1 option corridor. A further six Grade II, three Grade II* and one Grade I buildings are within ~500m of the option corridor. Wood Hall and Roman Villa (Redbridge house) scheduled monuments are ~500m from the option corridor. Construction: Potential adverse impacts on heritage assets/buildings and visual amenity of historic buildings/assets during construction. Operation: Potential permanent impacts on heritage assets/buildings and visual amenity and integrity of historic buildings/assets. A reduction in traffic is likely to improve the setting and experience of Sudbury Conservation Area, and those heritage assets within it, however the setting of other designated assets and a number of historic landscapes will be adversely affected.		The nearest designated area is The Railway Walk LNR which is ~400m south of the option corridor. Sudbury Common Lands LNR, which is ~600m west of the option corridor. The option route intersects some areas of deciduous woodland. An area of ancient woodland is ~1km east of the southern point of the route option. Construction: Potential adverse effects on ecological receptors through increased disturbance such as lighting, noise, change in hydrology and disturbance resulting from the new land-take and vehicle use during construction period. Operation: Permanent adverse impacts on ecological receptors through increased disturbances from noise, lighting, air pollution, land-take and increased traffic presence.		The option corridor passes through mostly agricultural land, with some areas of woodland. The option route crosses multiple footpaths and bridleways. The western extent of the option corridor is adjacent to the Stour Valley Special Landscape Area. Construction: Temporary impacts from the construction of the scheme. Potential constraints for construction sites location and areas for the storage of equipment and materials. Operation: Potential effects on landscape character (e.g. removal of vegetation and trees) and by the construction of permanent infrastructure. Sensitive receptors (i.e. residential properties, farms, parks etc.) are present along the proposed route and will be impacted adversely.		The River Stour runs across the path of Option S2, as a result parts of the option route lie in flood zone 2 (0.1-1% annual chance of flooding) and flood zone 1 (>1% annual chance of flooding). The option route lies in the Stour Catchment Area within close proximity to the Zone I – Inner Protection Zone and within Zone II – Outer protection zone for groundwater sources. Construction: The construction of the new roads, bridges and associated infrastructure will have permanent and temporary adverse effects on surface water quality. The construction works may also expose construction workers and/or infrastructure to flood risk and cause pollution of the water source. Operation: Potential adverse effects on surface water quality and drainage (e.g. increased suspended sediment during heavy rainfall, accidental release of contaminants into surface waters, etc.). Subsequent adverse effects on soil quality and groundwater resources.		Physical Activity: Option will reduce access to the natural environment and footpath/cycleways. Physical activity will likely reduce as a result. Injury or death (safety): Increase in higher speed limit roads may reduce the safety of vehicles users, pedestrians and animals. Safety improvements may occur as a result of easing congestion at junctions. Severance: Options will reduce accessibility to the natural environment, reduce access to footpaths and cycleways and urban segments will make street access more difficult. Crime: No impact on crime anticipated. Accessibility: Option will improve road accessibility, reducing stress on internal road systems.	1	
	Eastern Option - Long 10 E1	New 5.5km long single carriageway road from the A134-B1064 roundabout to A134-Valley Road junction. To include junctions with Acton Lane and B1115.	Option E2 does not run through an NIA, the nearest being ~1.5km south of the option route by the Old Nursery Buildings on the A134. Sensitive receptors exist near the proposed option route. Construction: Potential significant increase in noise and vibration arising from construction. Operation: Significant increase in noise and vibration due to the increased traffic presence resulting from the development.		Option E2 corridor includes seven Grade II listed buildings within the option boundary. Additionally, two Grade II and three Grade II* listed buildings are within 300m of the proposed route along with Wood Hall and St Bartholomew's Chapel scheduled monuments. Construction: Potential adverse impacts on heritage assets/buildings and visual amenity of historic buildings/assets during construction. Operation: Potential permanent impacts on heritage assets/buildings and visual amenity and integrity of historic buildings/assets. A reduction in traffic is likely to improve the setting and experience of Sudbury Conservation Area, and those heritage assets within it, however the setting of other designated assets and a number of historic landscapes will be adversely affected.		The nearest designated area is Sudbury Common Lands LNR which is ~600m south of the option corridor. The Railway Walk LNR is ~1.2km from the western extent of the option corridor. The option corridor intersects an area of deciduous woodland. Construction: Potential adverse effects on ecological receptors through increased disturbance such as lighting, noise, change in hydrology and disturbance resulting from the new land-take and vehicle use during construction period. Operation: Permanent adverse impacts on ecological receptors through increased disturbances from noise, lighting, air pollution, land-take and increased traffic presence.		The option corridor passes through mostly agricultural land, with some areas of woodland. Additionally, the option route crosses multiple footpaths. Construction: Temporary impacts from the construction of the scheme. Potential constraints for construction sites location and areas for the storage of equipment and materials. Operation: Potential effects on landscape character (e.g. removal of vegetation and trees) and by the construction of permanent infrastructure. Sensitive receptors (i.e. residential properties, farms, parks etc.) are present along the proposed route and will be impacted adversely.		The option route passes through groundwater source protection zones I, II and III. The option route lies in the Stour Catchment Area. The option is not in a flood zone or adjacent to a water source. Construction: The construction of the new roads and associated infrastructure will have permanent and temporary adverse effects on surface water quality. The construction works may also expose construction workers and/or infrastructure to flood risk and cause pollution of the water source. Operation: Potential adverse effects on surface water quality and drainage (e.g. increased suspended sediment during heavy rainfall, accidental release of contaminants into surface waters, etc.). Subsequent adverse effects on soil quality and groundwater resources.		Physical Activity: Option will reduce access to the natural environment and footpath/cycleways. Physical activity will likely reduce as a result. Injury or death (safety): Increase in higher speed limit roads may reduce the safety of vehicles users, pedestrians and animals. Safety improvements may occur as a result of easing congestion at junctions. Severance: Options will reduce accessibility to the natural environment, reduce access to footpaths and cycleways and urban segments will make street access more difficult. Crime: No impact on crime anticipated. Accessibility: Will improve road accessibility, reducing stress on internal road systems.	1	
	Eastern Option - Short 11 E2	New 3km long single carriageway road from the A134 (north of Claremont Ave roundabout) to B1115-Valley Road junction. To include a junction with Acton Lane.	Option E2 does not run through an NIA, the nearest being ~1.5km south of the option route by the Old Nursery Buildings on the A134. Sensitive receptors exist near the proposed option route. Construction: Potential significant increase in noise and vibration arising from construction. Operation: Significant increase in noise and vibration due to the increased traffic presence resulting from the scheme.		Option E2 corridor includes seven Grade II listed buildings within the option boundary. Additionally, two Grade II and three Grade II* listed buildings are within 300m of the proposed route along with Wood Hall and St Bartholomew's Chapel scheduled monuments. Construction: Potential adverse impacts on heritage assets/buildings and visual amenity of historic buildings/assets during construction. Operation: Potential permanent impacts on heritage assets/buildings and visual amenity and integrity of historic buildings/assets. A reduction in traffic is likely to improve the setting and experience of Sudbury Conservation Area, and those heritage assets within it, however the setting of other designated assets and a number of historic landscapes will be adversely affected.		The nearest designated area is Sudbury Common Lands LNR which is ~600m south of the option corridor. The Railway Walk LNR is ~1.2km from the western extent of the option corridor. The option corridor intersects an area of deciduous woodland. Construction: Potential adverse effects on ecological receptors through increased disturbance such as lighting, noise, change in hydrology and disturbance resulting from the new land-take and vehicle use during construction period. Operation: Permanent adverse impacts on ecological receptors through increased disturbances from noise, lighting, air pollution, land-take and increased traffic presence.		The option corridor passes through mostly agricultural land, with some areas of woodland. Additionally, the option route crosses multiple footpaths. Construction: Temporary impacts from the construction of the scheme. Potential constraints for construction sites location and areas for the storage of equipment and materials. Operation: Potential effects on landscape character (e.g. removal of vegetation and trees) and by the construction of permanent infrastructure. Sensitive receptors (i.e. residential properties, farms, parks etc.) are present along the proposed route and will be impacted adversely.		The option route passes through groundwater source protection zones I, II and III. The option route lies in the Stour Catchment Area. The option is not in a flood zone or adjacent to a water source. Construction: The construction of the new roads and associated infrastructure will have permanent and temporary adverse effects on surface water quality. The construction works may also expose construction workers and/or infrastructure to flood risk and cause pollution of the water source. Operation: Potential adverse effects on surface water quality and drainage (e.g. increased suspended sediment during heavy rainfall, accidental release of contaminants into surface waters, etc.). Subsequent adverse effects on soil quality and groundwater resources.		Physical Activity: Option will reduce access to the natural environment and footpath/cycleways. Physical activity will likely reduce as a result. Injury or death (safety): Increase in higher speed limit roads may reduce the safety of vehicles users, pedestrians and animals. Safety improvements may occur as a result of easing congestion at junctions. Severance: Options will reduce accessibility to the natural environment, reduce access to footpaths and cycleways and urban segments will make street access more difficult. Crime: No impact on crime anticipated. Accessibility: Will improve road accessibility, reducing stress on internal road systems.	1	
	12 Ring Road Option - L1	A new 22km single carriageway road. Alignment a combination of Option S1 (southern link only) + Option W1 (southern section from A131 – Hendingham Road Junction) + E1	Option L1 does not run through an NIA, all four NIAs in the study area are within 1km of the option route (in Newton, north-west and south-east of Newton and The Old Nursery Buildings on the A134). Sensitive receptors exist near the proposed option route, namely residential areas and a primary school. Construction: Potential significant increase in noise and vibration arising from construction. Operation: Significant increase in noise and vibration due to the increased traffic presence resulting from the scheme.		Option L1's proposed route intersects nine Grade II and one Grade I listed buildings. It also intersects multiple buried heritage assets. A Church and Churchyard scheduled monument is directly adjacent to the option corridor and three other scheduled monuments are within 1km of the proposed route. L1 falls within the context of the historic view in the Gainsborough painting. Construction: Potential adverse impacts on heritage assets/buildings and visual amenity of historic buildings/assets during construction. Operation: Potential permanent impacts on heritage assets/buildings and visual amenity and integrity of historic buildings/assets. A reduction in traffic is likely to improve the setting and experience of Sudbury Conservation Area, and those heritage assets within it, however the setting of other designated assets and a number of historic landscapes will be adversely affected.		Option L1 intersects Conrad Mere, Little Conrad SSSI. It also intersects multiple priority habitats (floodplain grazing marsh, no main but additional habitats, good quality semi-improved grassland and deciduous woodland). Nine Ancient Woodland areas are within 1km of the option corridor, the closest being Brundon Wood (~900m from proposed route). Construction: Potential adverse effects on ecological receptors through increased disturbance such as lighting, noise, change in hydrology and disturbance resulting from the new land-take and vehicle use during construction period. Operation: Permanent adverse impacts on ecological receptors through increased disturbances from noise, lighting, air pollution, land-take and increased traffic presence.		Option L1 has two segments within the Stour Valley Special Landscape Area. The option corridor passes through mostly agricultural land, crosses the river Stour, grassland, multiple areas of woodland and an AONB review area. Construction: Temporary impacts from the construction of the scheme. Potential constraints for construction sites location and areas for the storage of equipment and materials. Operation: Potential effects on landscape character (e.g. removal of vegetation and trees) and by the construction of permanent infrastructure. Sensitive receptors (i.e. residential properties, farms, parks etc.) are present along the proposed route and will be impacted adversely.		The River Stour intersects the option corridor in multiple places as well as the Belchamp Brook Tributary. As a result, significant portions of the option area are in both flood zone 3 and flood zone 2 areas. The option route is within the Stour Catchment Area, and passes through groundwater source protection zones I, II, and III. Construction: The construction of the new roads, bridges and associated infrastructure will have permanent and temporary adverse effects on surface water quality. The construction works may also expose construction workers and/or infrastructure to flood risk and cause pollution of the water source. Operation: Potential adverse effects on surface water quality and drainage (e.g. increased suspended sediment during heavy rainfall, accidental release of contaminants into surface waters, etc.). Subsequent adverse effects on soil quality and groundwater resources.		Physical Activity: Option will reduce access to the natural environment and footpath/cycleways. Physical activity will likely reduce as a result. Injury or death (safety): Increase in higher speed limit roads may reduce the safety of vehicles users, pedestrians and animals. Safety improvements may occur as a result of easing congestion at junctions. Severance: Options will reduce accessibility to the natural environment, reduce access to footpaths and cycleways and urban segments will make street access more difficult. Reduced traffic in the town centre will reduce severance at that location. Crime: No impact on crime anticipated. Accessibility: Will improve road accessibility, reducing stress on internal road systems.	1	

Measure Ref. No.	Overall				Managerial				Financial				Commercial					
	Name/No.	Description	Expected VM Category - Comments	Implementation timetable	Public acceptability	Public acceptability - Comments	Practical Feasibility	Practical feasibility - Comments	Affordability	Affordability - Comments	Capital Cost - Score	Capital Cost (£m)	Capital Cost (£m) - Comments	Overall cost risk	Flexibility of option	Flexibility of option - Comments	Where is funding coming from? - Score	Where is funding coming from?
Option J1 - Traffic Management	1	A package of measures to increase capacity and improve traffic flow at problem junctions throughout Sudbury without a Relief Road. Seven junctions in total would be considered for improvement: 1. A134 / A131 / B1064 A134 / B1115 3. A134 / Newton Road / Shawlands Avenue 4. A131 / Newton Road / Cornard Road / Great Eastern Road 5. A131 Ballington Hill / Bulmer Road 6. A134 / A1071 7. A134 / Valley Road	Junction improvements at congested locations often provide high or very high value for money. The effectiveness of the improvements will however be impacted by the physical constraints on the town centre highway network.	2. 1-6 months	2	Assumed Likely to be difficult in reaching an agreement with all stakeholders on the nature of interventions. Any scheme of this nature is unlikely to fulfil a number of the primary scheme objectives and only has more localised benefit - therefore assumed to be more difficult to get stakeholder buy in.	3	The junction upgrades are expected to take place within existing highway boundary. Likely to be some difficulty in delivery due to the constrained nature of the highway network in Sudbury.	4	Likely to be relatively low cost. Not suitable for MRN or LLM funding would need to be funded through local sources.	9	0.5	Dependent on the scale of the interventions, but scheme costs are likely to be relatively low. Larger scale junction improvements could have significant costs.	4	3	This scheme involves improvements at a number of junctions. While there would be possibility of changing the operations for some junctions, especially ones which involve installation of traffic signals, it is advisable that the details and operation are finalised at design stage.	2	Scale of improvement not eligible for MRN funding. Would need to be funded through local sources.
Option SM1 - Sustainable Travel Initiatives	2	A package of Sustainable Travel Initiative measures, to encourage people to make fewer journeys by private car.	Sustainable travel interventions often provide high or very high value for money - this is however dependent on local travel characteristics.	2. 1-6 months	2	As the proposal is unlikely to fulfil some primary and secondary scheme objectives, especially in relation to removal of HGV traffic, it is assumed this proposal is unlikely to get agreement with a number of stakeholders.	3	No significant barriers to delivery.	4	Likely to be relatively low cost. Not suitable for MRN or LLM funding would need to be funded through local sources.	9	0.5	The cost will depend on the type of schemes and the level of engagement, but expected to be relatively low.	4	4	This is a fairly agile option depending on the approach selected, which can be altered to target particular areas / movement types.	2	Sustainable travel options are not likely to be eligible for MRN funding. Would need to be funded through local sources.
Option P1 - Pricing Options	3	Introduction of, for example, parking charges to discourage car use.	There is significant uncertainty about the VM of parking interventions in Sudbury. Although the cost may be low, especially given the parking revenue raised, this may impact on the wider economy of the area which is difficult to assess. Assume to be high value for money on the basis of low cost/revenue raised.	2. 1-6 months	2	It is assumed that this proposal is likely to be unpopular with a number of key stakeholders, especially businesses, who could see this as a threat in terms of reduced footfall. Also does not fulfil some of the primary and secondary scheme objectives.	3	No significant physical barriers to delivery.	4	Likely to be relatively low cost. Not suitable for MRN or LLM funding would need to be funded through local sources. Potential revenue source from parking charges - although offset to an extent by need for enforcement.	9	0.5	Costs would depend on the size and location of the scheme. Investment costs likely to be relatively low - revenue expected from parking charges.	4	3	This scheme involves some limited infrastructure and there is the possibility of changing the operations only at certain locations - although it would be advisable to consider a coherent policy across the area. Option therefore offers some, but not full, flexibility.	2	Introduction of parking charges are not eligible for MRN funding. Would need to be funded through local sources.
Option PT1 - Public Transport Options (Bus)	4	Improvement to local bus services (increase frequency, etc.) to encourage more trips by public transport (leading to fewer journeys by private car).	Any bus based public transport intervention is likely to be medium VM at best in the context of Sudbury given the relatively rural setting and current patronage levels.	3. 6-12 months	2	Assumed that may not get buy in from some key stakeholders as the highway congestion problems will not be fully removed and does not fulfil some primary and secondary scheme objectives.	3	No significant impact anticipated as physical conditions are expected remain largely unchanged. Some site based analysis will need to be undertaken in case physical bus stops are to be introduced.	4	Likely to be relatively low cost. Not suitable for MRN or LLM funding would need to be funded through local sources.	9	0.5	Costs expected to be low, as the scheme would be assumed to run on a commercial basis, may be some investment costs in infrastructure (e.g. bus stops)	3	4	This option is relatively flexible. While there would be possibility of changing the operations for some of these, such as bus routes and timing, it is advisable that the operation of this is finalised at design stage.	2	Introducing bus services are not eligible for MRN funding. Would need to be funded through local sources.
Option PT2 - Public Transport Options (Rail)	5	Improvement to the overall rail 'offer' to encourage people to make fewer journeys by private car.	Given the limited market served by rail, any form of intervention is likely to be no higher than medium VM.	4. 1-2 years	2	Assumed that may not get buy in from some key stakeholders as the highway congestion problems will not be fully removed and does not fulfil some primary and secondary scheme objectives.	3	No significant impact anticipated as physical conditions are expected remain largely unchanged. Some site based analysis will need to be undertaken in case physical access to station changed.	4	Likely to be relatively low cost. Not suitable for MRN or LLM funding would need to be funded through local sources.	8	5-10	Costs dependent on the scale of the improvements ranging from improving accessibility, and provision of walk/cycle routes to station.	4	3	This option is relatively flexible. While there would be possibility of changing the operations for some of these, such as timing of interventions, it is advisable that the operation of this is finalised at design stage. An infrastructure intervention to improve station accessibility is less flexible.	2	Rail improvements are not eligible for MRN funding. Would need to be funded through local sources.
Western Option - Long W1	6	New 3.5km long single carriageway road from the A134 north of Sudbury to A131 south of Sudbury. To include a junction with Kitchen Hill.	Latest version of the model suggests a benefit of £42.8m would be achieved based on 12 hour period. Assuming an estimated scheme cost of £40m-£50m it is likely this scheme would provide a poor VM.	5. 2-5 years	3	Public consultation took place in October 2002 where the western relief road received the most support out of the proposed options. Likely to be a relatively high number of objections to the scheme due to environmental impacts.	3	Currently no geological issues were identified	4	Funding for this scheme is assumed to be from MRN contribution. MRN provides funding for schemes between £20m to £50m. The construction cost of Option W1 is expected to be in the middle of this range.	5	50-100	Option S1 - Long: Allowed for two River crossing bridges 15m long and three Overbridges 15m long	3	1	This scheme involves building infrastructure. The operation of this will need to be finalised at design stage, as it would not be possible to change it following construction.	2	To be finalised. Most probably from MRN contribution.
Western Option - Short W2	7	New 3km long single carriageway road from the A134 north of Sudbury to A131 south of Sudbury (lower curve than W1). To include a junction with Kitchen Hill.	Latest version of the model suggests a benefit of £42.8m would be achieved based on 12 hour period. Assuming an estimated scheme cost of £40m to £50m it is likely this scheme would provide a poor VM.	5. 2-5 years	3	Public consultation took place in October 2002 where the western relief road received the most support out of the proposed options. Likely to be a relatively high number of objections to the scheme due to environmental impacts.	3	Currently no geological issues were identified	4	Funding for this scheme is assumed to be from MRN contribution. MRN provides funding for schemes between £20m to £50m. The construction cost of Option W2 is expected to be closer to the initial threshold of this range.	5	50-100	The overall general assumptions are the same as Option W1 Option W2 - Short: Allowed for two River crossing bridges 15m long and two Overbridges 15m long	3	1	This scheme involves building infrastructure. The operation of this will need to be finalised at design stage, as it would not be possible to change it following construction.	2	To be finalised. Most probably from MRN contribution.
Southern Option - Long S1	8	New 8.5km single carriageway road from Bulmer Tye to the A134/A1071. This carriageway will also be connected near Little Cornard by a 3km north-south link to the Shawlands Retail Park roundabout	Cost of the scheme is likely to be £120m to £120m in current price. Using previous analysis of western bypass as a benchmark for available benefits (£42.8m), the expectation is that the scheme would deliver circa 2 times this level of benefits as it impacts on around 3 times as much daily traffic (however given the length of the route the benefit per trip is likely to be less). It is therefore likely the scheme would result in a low BCR, and therefore providing a poor VM.	5. 2-5 years	2	Public consultation took place in October 2002 and a short southern relief road received very little acceptance from the local community. This is a longer route and it is uncertain what level of acceptance this would receive - it is likely to provide higher benefits and is further from the built up area of Sudbury however will likely have more significant environmental impacts.	3	Currently no geological issues were identified	4	Funding for this scheme is assumed to be from MRN contribution. MRN provides funding for schemes between £20m to £50m. The construction cost of Option S1 is expected to be higher than this range. However, it can still get funding through MRN if it has a strong enough case.	4	100-250	The overall general assumptions are the same as Option W1 Option S1 - Long: Allowed for two River crossing bridges 15m long and three Overbridges 15m long	3	1	This scheme involves building infrastructure. The operation of this will need to be finalised at design stage, as it would not be possible to change it following construction.	2	To be finalised. Most probably from MRN contribution.

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	Name/No.	Description	Expected VM Category - Comments	Implementation timetable	Public acceptability	Public acceptability - Comments	Practical Feasibility	Practical feasibility - Comments	Affordability	Affordability - Comments	Capital Cost - Score	Capital Cost (£m)	Capital Cost (£m) - Comments	Overall cost risk	Flexibility of option	Flexibility of option - Comments	Where is funding coming from? - Score	Where is funding coming from?		
								Complexity of the proposed route is considered high in comparison to the other options. It would require liaison with third parties, particularly Network Rail as the proposed route crosses the Colchester - Sudbury line. The latter would require the route to go over the railway at a certain height (5.4m preferred clearance if not electrified, but allow for 5.8m to allow future electrification) then tie back down to Conard Rd or Bures Rd. The tie-in would require purchase/demolish of properties. The topography of the area is flat, but the proposed route crosses the River Stour and some drainage canals and therefore it is expected that the ground formation will increase the complexity for the foundation of roads and structures.												
	Southern Option - 9 Short - S2	New 3km long single carriageway road from the Newton Road-Cats Lane junction to A131 south of Sudbury. To include a junction with B1508.	Latest version of the model suggests a benefit of £29m would be achieved based on 12 hour period. Assuming an estimated scheme cost of £49m to £63m it is likely this scheme would provide a poor VM	5, 2-5 years		Public consultation took place in October 2002 and a southern relief road received very little acceptance from the local community.		A lot of these structures are likely to be relatively minor, i.e. those described as being over drains are probably going to end up as pipes or box culverts. However, as Flood Zone 3 for the main River Stour is relatively wide (approx. 440m to 760m), the cautious approach at this stage would be to assume that embankments in Flood Zone 3 cannot be built, and the structures crossing the main River Stour are likely to need to be significantly long multi-span viaducts.					The overall general assumptions are the same as Option W1					This scheme involves building infrastructure. The operation of this will need to be finalised at design stage, as it would not be possible to change it following construction.	To be finalised. Most probably from MRN contribution.	
	Eastern Option - Long 10 E1	New 5.5km long single carriageway road from the A134-B1064 roundabout to A134-Valley Road junction. To include junctions with Acton Lane and B1115.	Benchmarking against the benefit of the western relief road (£42.8m), this scheme is likely to return less benefit given it will attract less than 50% of the traffic of the traffic associated with a western alignment, but with a similar scheme cost of £39m. Unless route becomes integral to delivery of housing sites outlined in the 2014 Core Strategy, it is assumed this scheme would deliver Poor VM.	5, 2-5 years		Not addressing the impacts of the most dominant through trips, so assumed to be unlikely to receive significant support.		Complexity is based on length of the proposed route but although this option is long in comparison to the other road options, there are less structures required and therefore the length of the proposed route will be balanced by a lower complexity and costs associated with structures. The route does not cross the river but passes areas with various land drainage ditches and channels and therefore it is expected that the ground formation will increase the complexity for the foundation of roads and structures. The topography of the area is flat.				The overall general assumptions are the same as Option W1						This scheme involves building infrastructure. The operation of this will need to be finalised at design stage, as it would not be possible to change it following construction.	To be finalised. Most probably from MRN contribution.	
	Eastern Option - Short 11 E2	New 3km long single carriageway road from the A134 (north of Claremont Ave roundabout) to B1115-Valley Road junction. To include a junction with Acton Lane.	Estimated this scheme would only attract 2% of current daily traffic in Sudbury, which is around 1/6 of the traffic which the western relief road would attract, therefore benefit will be significantly below the £42.8m associated with the western alignment. Carries the lowest scheme cost at around £24m, however unless route becomes integral to delivery of housing sites outlined in the 2014 Core Strategy, it is assumed this scheme would deliver Poor VM.	5, 2-5 years		Not addressing the impacts of the most dominant through trips, so assumed to be unlikely to receive significant support.		Complexity is based on length of the proposed route, as this option is the shortest of all road options it involves less structures and less junctions. The route does not cross the river but passes areas with various land drainage ditches and channels and therefore it is expected that the ground formation will increase the complexity for the foundation of roads and structures. The topography of the area is flat.					The overall general assumptions are the same as Option W1					This scheme involves building infrastructure. The operation of this will need to be finalised at design stage, as it would not be possible to change it following construction.	To be finalised. Most probably from MRN contribution.	
	12 Ring Road Option - L1	A new 22km single carriageway road. Alignment a combination of Option S1 (southern link only) - Option W1 (southern section from A131 - Hendingham Road Junction) + E1	Level of traffic which scheme option attracts is over three times greater than western relief road option (£42.8m benefit). However scheme cost is also more than three times greater and environmental impacts would be considerable, therefore considered likely this scheme would return a BCR of less than 1.0, resulting in a Poor VM	6, 5-10 years		Unlikely to receive significant support given the likely large environmental impact and prohibitively high scheme cost.		Very high complexity based on length of the proposed route. This option includes the proposals of most of the other options and as such will by far be the more complex. It will involve a large number of structures, liaison with third parties, particularly Network Rail as the proposed route crosses the Colchester - Sudbury line. While the topography of the area is flat, the proposed route crosses the River Stour and some drainage canals and therefore it is expected that the ground formation will increase the complexity for the foundation of roads and structures. A lot of these structures are likely to be relatively minor, i.e. those described as being over drains are probably going to end up as pipes or box culverts. However, as Flood Zone 3 for the main River Stour is relatively wide (approx. 400m for the West route, and 440m to 760m for the southern route), it is assumed that the structures crossing the main River Stour are likely to need to be significantly long multi-span viaducts.						The overall general assumptions are the same as Option W1					This scheme involves building infrastructure. The operation of this will need to be finalised at design stage, as it would not be possible to change it following construction.	To be finalised. Likely to be too large for MRN funding, possible through LLM.



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