REPORT N$^{O}$ 1.0

# SUDBURY RELIEF ROAD: STRATEGIC OUTLINE BUSINESS CASE

CONFIDENTIAL

MARCH 2017

WSP | PARSONS BRINCKERHOFF

# SUDBURY RELIEF ROAD: STRATEGIC OUTLINE BUSINESS CASE

**Suffolk County Council**

**Final**
**Confidential**

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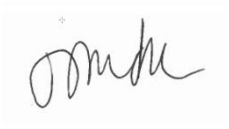
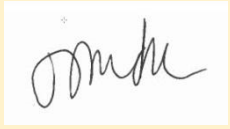
| Signature |  |  |  |  |
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# APPENDICES

# 1 INTRODUCTION

## 1.1 BACKGROUND

1.1.1 WSP | Parsons Brinckerhoff (WSP | PB) was commissioned by Suffolk County Council (SCC) to complete a Strategic Outline Business Case for a relief road in Sudbury.

1.1.2 This report builds upon the Sudbury Bypass Business Case: Strategic and Economic Analysis completed in 2015.

## 1.2 PURPOSE OF DOCUMENT

1.2.1 This Strategic Outline Business Case presents the evidence for constructing a new relief road in Sudbury.

1.2.2 The business case investigates the robust case for change that fits with wider policy objectives. It assesses the value for money of the project and highlights constraints.

1.2.3 This document will provide a platform for an Outline Business Case to be produced in the future.

## 1.3 DOCUMENT STRUCTURE

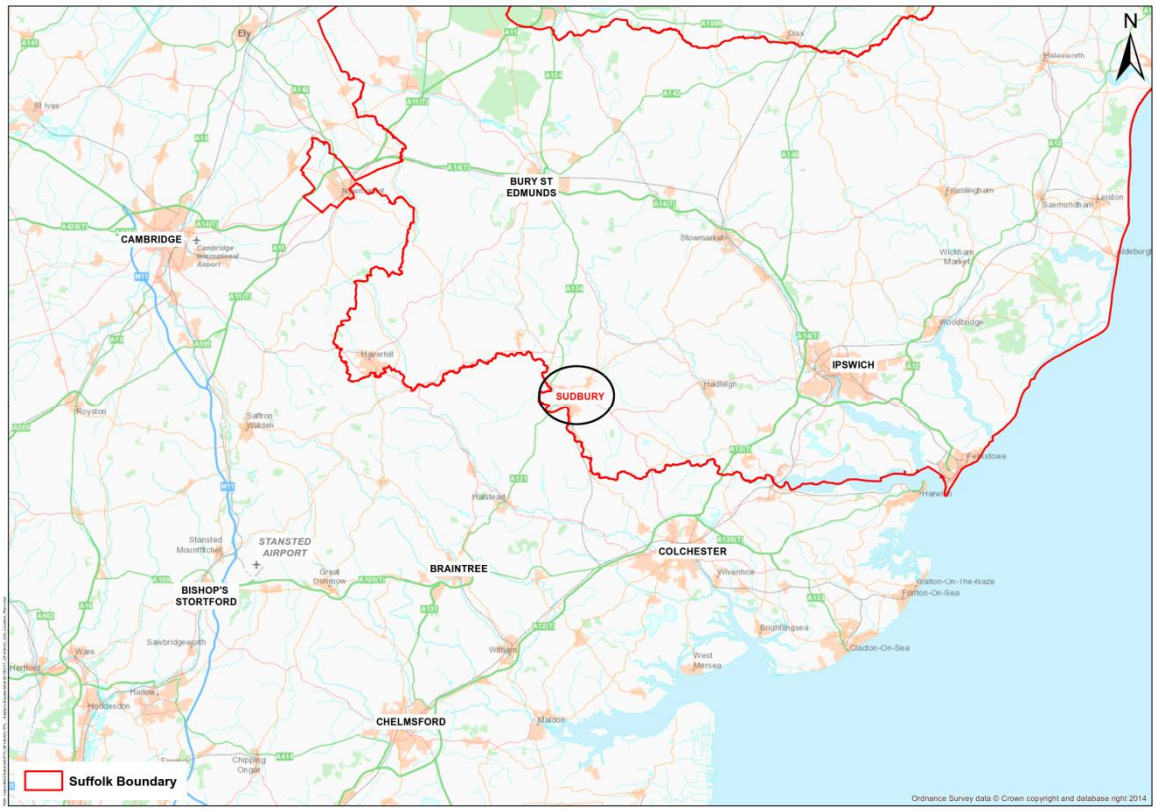
1.3.1 The remainder of the document is structured as follows:

- Previous studies and scheme description
- Strategic Case
- Modelling
- Economic Case
- Financial Case
- Commercial Case
- Management Case, and
- Conclusion.

# 2 SETTING THE SCENE

## 2.1 SUDBURY

2.1.1 Situated in the southwestern part of Suffolk, Sudbury is a historic market town with a vibrant town centre. This centre, with its Georgian and Victorian architecture, mixed with Grade 1 listed churches, creates an attractive streetscape, drawing in residents and tourists alike.




**Map 2-1 Map of Suffolk**

2.1.2 Over the course of the twentieth century Sudbury, together with Great Cornard, experienced substantial growth. New employment and retail areas were built in the town centre and at out-of-town (centre) locations to the south and east. Housing grew in the northern parts of the town and in Great Cornard. Today, the internationally recognised traditional silk weaving industry is still represented, but new industries and office uses have developed as well.

2.1.3 Sudbury has a substantial history, famous Gainsborough landscapes, strong economy and is ideally located among key towns such as Cambridge, Ipswich, Colchester and Bury St Edmunds. It has always played an important region function; serving the shopping, leisure, social and cultural needs of the residents. Its history, beauty and culture have successfully attracted tourists to the town and region for decades.

2.1.4 The town's historic core is comprised of a medieval network of streets that are narrow and offer few alternative routes for motor vehicles. Although the town has seen substantial growth since the Second World War, due to the restrictions of its historic highway network, this growth has not achieved its potential and the beauty of the town centre remains hidden behind a queue of large vehicles.


**Map 2-2 Map of Sudbury**

2.1.5 The town is constrained to the west and south by the River Stour. The A131 corridor is the only access into and through Sudbury from the southwest and as such accommodates the strategic lorry network for the area.

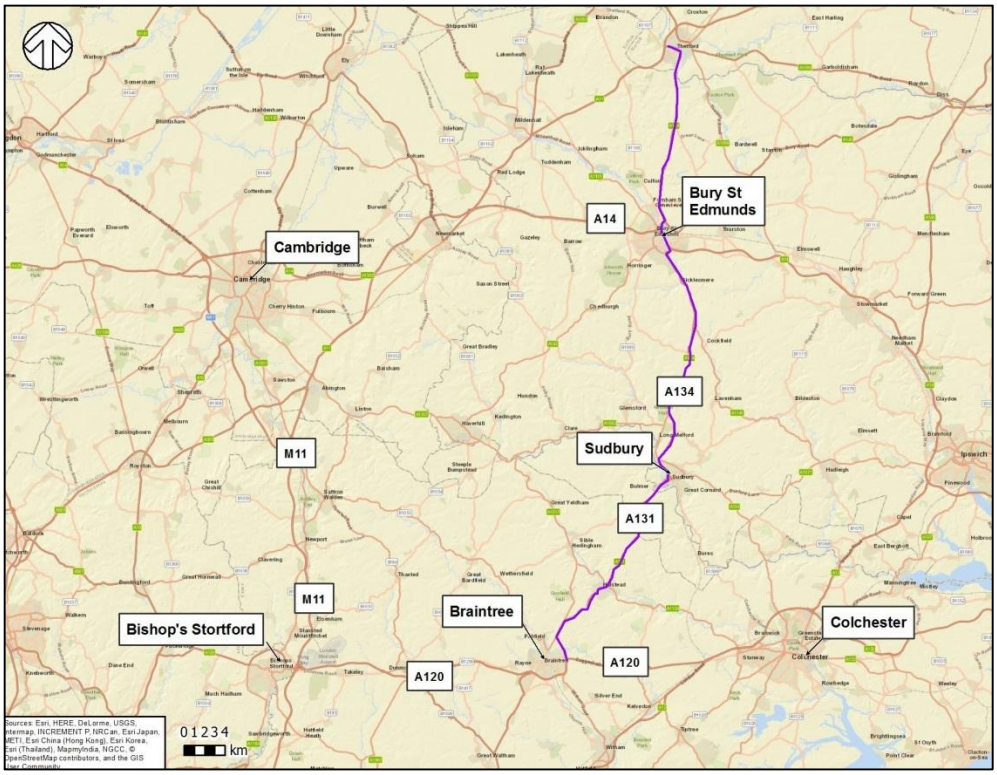
## 2.2 A131/A134 CORRIDOR

2.2.1 The A131 / A134 corridor is a key route, providing a north- south connection between Chelmsford, Braintree, Halstead, Sudbury and Bury St Edmunds.

2.2.2 The A131 / A134 also provide links to the wider strategic road network:

- → The A120 connects the A131 to Colchester and the A12 to the east and Bishop's Stortford and the M11 to the west
- → The A1017 / A1124 connects the A131 at Halstead to Haverhill, and
- → The A14 connects the A134 to Ipswich and Felixstowe to the east and the Midlands to the west.

2.2.3 Map 2-3 overleaf shows the A131 / A134 and the important strategic connections of the route.




**Map 2-3: A131 / A134 Corridor**

## 2.3 PREVIOUS STUDIES

### RELIEF ROAD – ORIGINAL SCHEME

2.3.1 As congestion has been an issue for Sudbury for many years, the idea for a relief road is not a new one. In 2001 Suffolk County Council and Babergh District Council published a Local Transport Action Plan to address a wide range of transport problems in the area. The main focus was the traffic that passed through Sudbury on the A131, and the resulting congestion, accidents and negative impact on the town centre.

2.3.2 Four possible relief road corridors options were assessed.

2.3.3 The Local Transport Action Plan also included a do-minimum scheme that could be implemented in the short term. This would improve the quality of service and accessibility to the public transport network and provide a series of sustainable transport measures.

2.3.4 Public consultation took place in October 2002 and a southern relief road received very little acceptance from the local community. A western relief road received the most support out of the proposed options and was accepted by many as the most appropriate corridor to Sudbury and Great Cornard's traffic problems.

2.3.5 Work progressed on a potential alignment for and in 2003 Suffolk County Council produced *A131 Sudbury Bypass and Related Measures*.

2.3.6 The document included full horizontal and vertical alignment for the road, a summary of the costs, benefits and impacts of final scheme.

2.3.7 The Transport Case for a relief road through the western corridor suggested an initial Benefit Cost Ratio (BCR) of **2.8**, representing a **high value for money** (VfM) scheme. This could be further increased by considering the wider economic benefits arrived from unlocking growth.

2.3.8 At that time there were a number of issues which needed to be addressed during later phases of design and planning. The main concern was the environmental impacts: the alignment passed across a former landfill site and the River Stour flood plain. The initial designs had not taken into account the type of earthworks needed or ways to design the relief road to mitigate the impact to the landscape.

### SUDBURY BYPASS: REVIEW OF ENVIRONMENTAL ISSUES (WSP | PARSONS BRINCKERHOFF, SEPTEMBER 2015)

2.3.9 A Technical Note was produced in September 2015 which undertook a high level desk based environmental review of the 2003 alignment in light of current selection criteria, with consideration of any changes to legislation and guidance, statutory designations, and other environmental constraints that may have arisen since the original route appraisal was undertaken. The Technical Note also considered whether an alternative route could be developed that would have a less adverse impact on the environment that could be analysed further from an environmental and transport planning perspective.

2.3.10 The review showed that the main land use and environmental constraints in the Sudbury area have not altered significantly since 2003, and that biodiversity, landscape and heritage features still remain the key constraints. However, for the majority of environmental constraints, environmental assessment / appraisal methodologies have been significantly updated or superseded by new policies.

2.3.11 The Technical Note concluded that an alternative alignment could be developed that would avoid:

- a former historic landfill site to the east of the previous alignment and adjacent to Bush Grove;
- noise sensitive receptors along Bush Grove, to the east of the previous alignment; and
- the UK BAP Priority Habitat Woodland at the south of the previous alignment.

2.3.12 However there still remain potential adverse impacts on the landscape, Belchamp Brook CWS; River Stour and associated floodplain habitats and the footpaths of the Valley Line walk which are still the key environmental constraints.

2.3.13 The Technical Note recommended that further studies and surveys should be undertaken for the topics which have been determined to be the key constraints namely landscape, heritage, biodiversity, River Stour and associated floodplain habitats and the footpaths of the Valley Line walk.

### WSP | PARSONS BRINCKERHOFF SUDBURY BYPASS BUSINESS CASE: STRATEGIC AND ECONOMIC ANALYSIS (2015)

2.3.14 Alongside the 2015 Environmental review, the strategic and economic case for a relief road was brought up to date. This study concluded that a relief road through the western corridor still had a strong business case with a BCR of 2.8 and was still a **high value for money scheme**.

2.3.15 It stated that the transport investment would alleviate the congestion Sudbury has experienced for decades and lead Sudbury to becoming a **Connected Town** that could support and create new opportunities for businesses, jobs and housing.

2.3.16 The study identified the wider economic benefits, such as creating a region with innovative industries, supporting rural productivity and generating highly skilled jobs that will turn Sudbury into the centre of a strong, inter-connected Eastern England.

# 3 STRATEGIC CASE

## 3.1 BUSINESS STRATEGY

3.1.1 This strategic case sets out the case for investment for this much needed transport infrastructure improvement on the A131, Sudbury. It demonstrates the problems faced in the area, the case for change, the effect of the project and the benefits of the proposal.

3.1.2 The business case is promoted by the New Anglia Local Enterprise Partnership and Suffolk County Council working in partnership with Essex County Council, Babergh District Council and Braintree District Council

### NEW ANGLIA LOCAL ENTERPRISE PARTNERSHIP

3.1.3 The New Anglia Local Enterprise Partnership was established by Government in 2010 and represents one of the fastest growing regions in the country, with 1.6 million people and around 55,000 businesses.

3.1.4 It is a business-led collaboration between the private, public and education sectors across Norfolk and Suffolk with an ambition to drive economic growth and transform the local economy into a global centre for talent and innovation.

3.1.5 It is responsible for shaping the **economic** landscape for businesses in Suffolk and Norfolk.

### SUFFOLK COUNTY COUNCIL

3.1.6 Suffolk County Council is the Local Highway Authority for Suffolk. It is responsible for the **roads** and **highway infrastructure** in Sudbury. Through strong financial management, innovation, local leadership and market development, it provides or enables the provision of good-quality services for Suffolk people.

3.1.7 Suffolk County Council and the New Anglia Local Enterprise Partnership have come together with **shared vision** and **aims** to promote this Business Case.

### ESSEX COUNTY COUNCIL

3.1.8 Essex County Council is the Local Highway Authority for Essex. It is responsible for the **roads** and **highway infrastructure** in Braintree District, which neighbours Suffolk County. Highways England is responsible for strategic route network, which includes the A120 and A12.

3.1.9 Essex County Council is committed to facilitating **growth** and understands that improved highways and transport infrastructure plays an important role in enabling development and businesses to grow.

### DEPARTMENT FOR TRANSPORT

3.1.10 Central Government understands that there is a need for Public Sector investment in Suffolk to help achieve regional **growth** and **productivity** targets.

## 3.2 STRATEGIC AIMS

### NEW ANGLIA LOCAL ENTERPRISE PARTNERSHIP

3.2.1 New Anglia Local Enterprise Partnership aims to drive **growth** and **enterprise** across Norfolk and Suffolk with ambitious growth plans to transform the local economy into a global centre for talent and i**nnovation**.

3.2.2 The aims for 2026 in 'The Strategic Economic Plan' are for more:

- **Jobs**
- **Businesses**, and
- **Homes**.

3.2.3 The aims in its Growth Deal are:

- To boost **skills**
- Drive **innovation**, and
- Improve **transport** and **infrastructure.**

### SUFFOLK COUNTY COUNCIL

3.2.4 Suffolk County Council have five County Wide priorities:

- Raise **educational** attainment and **skill** levels
- Increase **economic growth** in existing areas and grow biotechnology; energy; food, drink and agriculture; ICT and tourism
- Maintain roads and develop Suffolk's **infrastructure**
- Support those most vulnerable in our communities, and
- Empower local communities.

### DEPARTMENT FOR TRANSPORT

3.2.5 These are the Department for Transports priorities which relate to road investment projects:

- Tackling **congestion**
- Continuing to improve road **safety**
- Encouraging **sustainable** local travel, and
- Promoting lower carbon transport, such as **walking** and **cycling** as well as introducing more environmentally-friendly buses and trains.

## 3.3 THE PROBLEM

3.3.1 Sudbury and the surrounding area are facing major transport and development problems, such as:

- → Congestion in Sudbury town centre causing issues for local residents and businesses.
- → Congestion through Sudbury causing delay on the Primary Route Network.
- → Congestion on the Strategic Road Network A11, A12 and A120, of which some traffic could be better served by an improved route through Sudbury.

3.3.2 These transport problems are part of the reason behind development and growth problems in the area:

- → Growth in Sudbury has been stifled over recent years.
- → Further growth in the area is restricted by poor connectivity.
- → Sudbury is failing to be the connected town it could be, providing a suitable base for new and expanding businesses.

### CONGESTION IN SUDBURY TOWN

3.3.3 High volumes of traffic are funnelled through the historic town centres medieval road network. These narrow roads form a convoluted one way system.

3.3.4 As a result, the town centre is congested with cars and HGVs, particularly during peak periods. Gregory Street experiences an average of 636 and 823 vehicles during the AM and PM peak periods (data from traffic survey undertaken in April 2016).

3.3.5 This has inevitably resulted in noise and air quality problems within Sudbury and there is currently an Air Quality Management Area (AQMA) encompassing part of Cross Street. The pollution identified, Nitrogen Dioxide, exceeds the allowed annual mean. The images in Figure 3-1, taken on a weekday in October (2015), show the congestion in the town centre.


**Figure 3-1 Sudbury Town Centre Congestion**

3.3.6 There is a high volume of HGVs travelling through the town. These heavy vehicles often move slowly and this results in vehicles frequently breaking. The trafficked area is extremely close to residential buildings, shops and businesses. The result is regular and significant levels of traffic noise.

## CONGESTION THROUGH SUDBURY

3.3.7 Sudbury town centre is ideally located to benefit from its connection with and between key towns, cities and services in the region.

3.3.8 Regional traffic could be using the A131, the A134 and the A1071 to travel around West Suffolk. However, the historic highway network through Sudbury town centre is causing significant delay to journeys through Sudbury.

3.3.9 The problems are exacerbated by the one-way system in the town centre, which results from the narrow historic highway network. The route from Braintree to Bury St. Edmunds and Newmarket joins with local traffic on a narrow one way gyratory. The width of the road reduces in the town centre and there are a large number of junctions and a significant quantity of on street parking. This road is not suitable to carry such volumes of traffic.

3.3.10 A review of historic journey time information through Sudbury shows that during the peak periods, normal journeys through Sudbury can increase by at up to 4 minutes compared to off peak periods. During periods of traffic management, the road network provides very little resilience and the impacts are major.

## CONGESTION ON THE STRATEGIC ROAD NETWORK

3.3.11 The M11, which is the only significant length of Motorway in East Anglia and a major north-south link from London to Cambridge and much of northern East Anglia, has been facing congestion in recent times.

3.3.12 The non-dualled sections of the A120, which runs between the M11 and A12, is also congested. Proposals for dualling this section are underway, which promises to deliver growth opportunities to the region. These improvements are likely to release suppressed demand for east/west movements in this area, as there are no dual carriage routes between the M25 and the A14.

3.3.13 The A12, which connects the M25 with the A14 is congested along most of its entire length, with significant issues around Colchester and at the A12/A14 Copdock Interchange in Ipswich.

3.3.14 The congestion along these strategic routes has led to poor levels of service for all motorists.

3.3.15 The traffic volume along this heavily over-capacity network is expected to increase in the future with congestion becoming progressively worse.

3.3.16 The A131/A134 route runs in between the M11 and A12 corridors and has the potential to serve traffic which currently chooses to use the Strategic Road Network.

## REDUCED GROWTH IN SUDBURY

3.3.17 These traffic issues results in:

- → Fewer people passing through Sudbury
- → Fewer people coming to Sudbury, and
- → Fewer people wanting to live in Sudbury

3.3.18 This is limiting new businesses starting up in Sudbury, stifling the growth of existing businesses and reducing the value.

3.3.19 If nothing is done, the problem will not only persist but get worse.

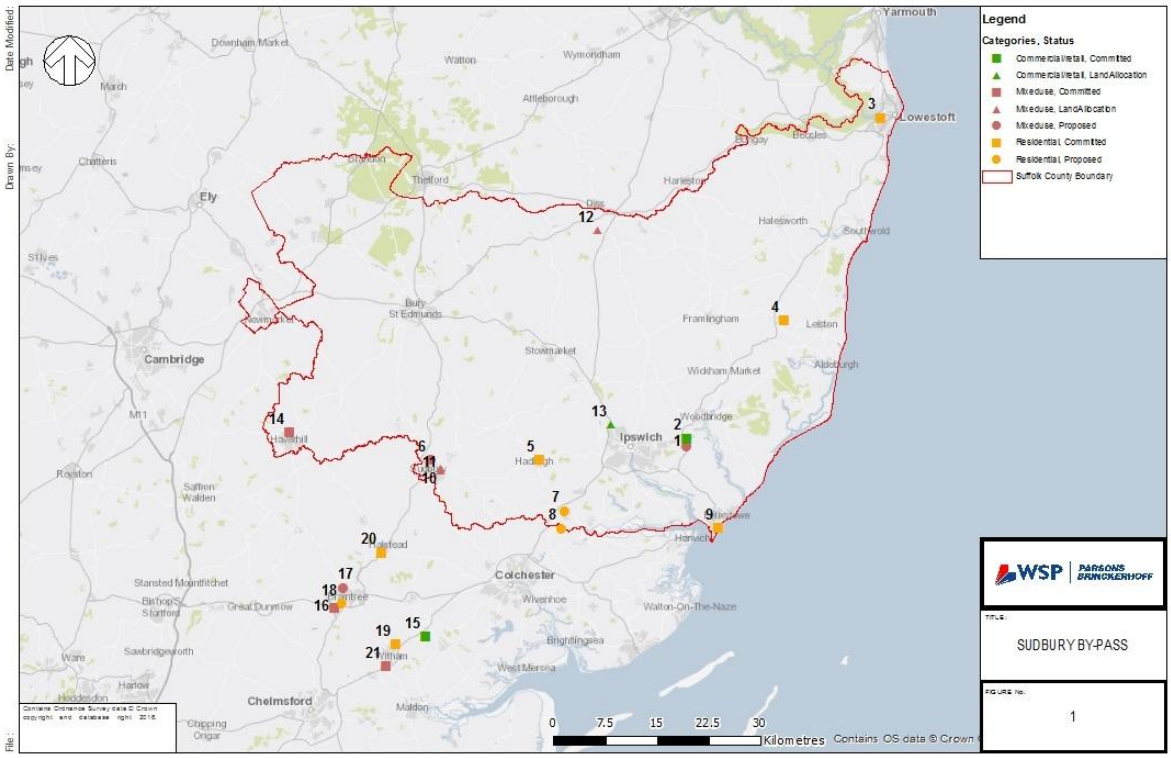
## GROWTH DESIRED IN THE AREA

3.3.20 Several housing, employment and retail land use developments are already proposed for areas within Suffolk and to the north of Essex. A review of the relevant local plans as well as Babergh and Mid Suffolk's Joint Strategic Housing Land Availability Assessment suggests there are:

- → 2,705 committed residential dwellings that will be delivered in the short term and
- → 4,059 proposed residential dwellings that do not yet have planning permission status.

3.3.21 The location of the developments are shown in Map 3-1 below; Appendix A provides more detail for each development.

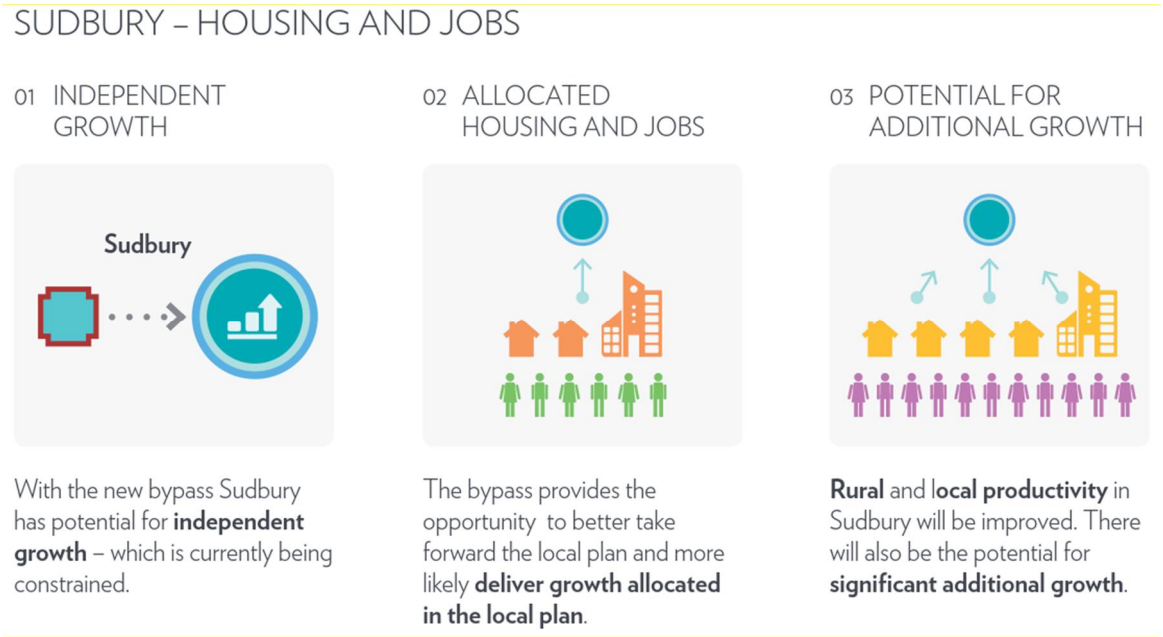
3.3.22 The additional developments will add to the existing congestion on the regional network. In absence of the proposed relief road, developments surrounding Sudbury will further contribute to the high level of congestion found within Sudbury town centre and will increase delay on the A131.




**Map 3-1: Developments in Suffolk and Essex**

## GROWTH DESIRED IN SUDBURY

3.3.23 Sudbury has the potential to play an even larger role in supporting the economic growth of the region, but it is hindered by severely lacking road infrastructure. These traffic levels have constrained the economic development that is needed in the region.



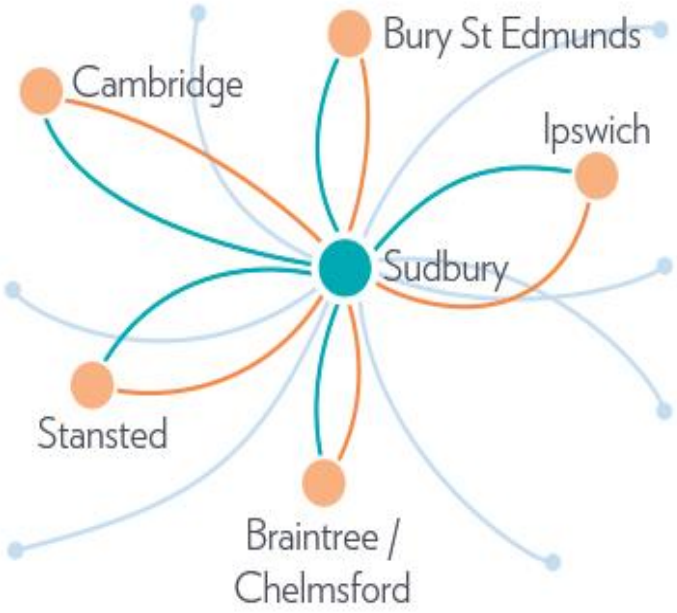

3.3.24 Babergh District Council has plans to add more jobs and housing across the district and Sudbury would struggle to meet these demands.

3.3.25 Essex County Council and Braintree District Council are considering plans to provide additional jobs and housing in the Braintree to Sudbury area. This growth would be challenging along the A131/A134 corridor without transport infrastructure improvements.

3.3.26 Such ambitions may only be realised following improvements to the A131/A134 corridor; these would begin with Sudbury as a first phase with others following later (including at Halstead).

## SUDBURY FAILING TO BE THE CONNECTED TOWN

3.3.27 Sudbury is a key town in the western part of Suffolk that could offer quick and easy connections to destinations in Suffolk and East Anglia as illustrated by the graphic below.




3.3.28 However, the ability of the town to perform this key regional role has been stifled by congestion.

3.3.29 Sudbury as a Connected Town would see it having a far greater regional influence. Offering an increased range of services to areas further afield.

3.3.30 More people would travel on the roads around Sudbury and would begin to make Sudbury a place to come and visit on these travels. No longer put off by congestion and delays.

## 3.4 THE OBJECTIVES

3.4.1 Having reviewed the key issues and opportunities that are facing the area, the risks of not doing anything and the support for doing something, four key objectives of the scheme have been developed. The primary and secondary objectives are included in the Table below.

**Table 3-1: Objectives**

| PRIMARY OBJECTIVES | SECONDARY OBJECTIVES |
|---|---|
| Enable growth within Sudbury and the surrounding area | Facilitate the delivery of new homes and jobs within Suffolk and Essex |
| Improve Sudbury town centre | To improve the quality of life for residents, workers and shoppers by reducing traffic, air and noise pollution. |
| Reduce congestion | Improve journey times in Sudbury and the surrounding area and reduce the amount of time wasted queueing.<br>Improve road safety, with a relief road designed to DMRB safety standards |
| Improve the connectivity of Sudbury | People more likely to travel to Sudbury.<br>People more likely to make journeys which include Sudbury.<br>Businesses benefitting from being more active within the region. |

## 3.5 MEASURES FOR SUCCESS

3.5.1 Successful delivery of the objectives would:

- Facilitate additional new homes
- Enable an increase in jobs and skills in Sudbury along with a reduction in worklessness
- Generate an additional council tax revenue
- Increase GVA in Sudbury and along the A131/A134 corridor, and
- Stimulate uplift in tourism through an improved town centre.

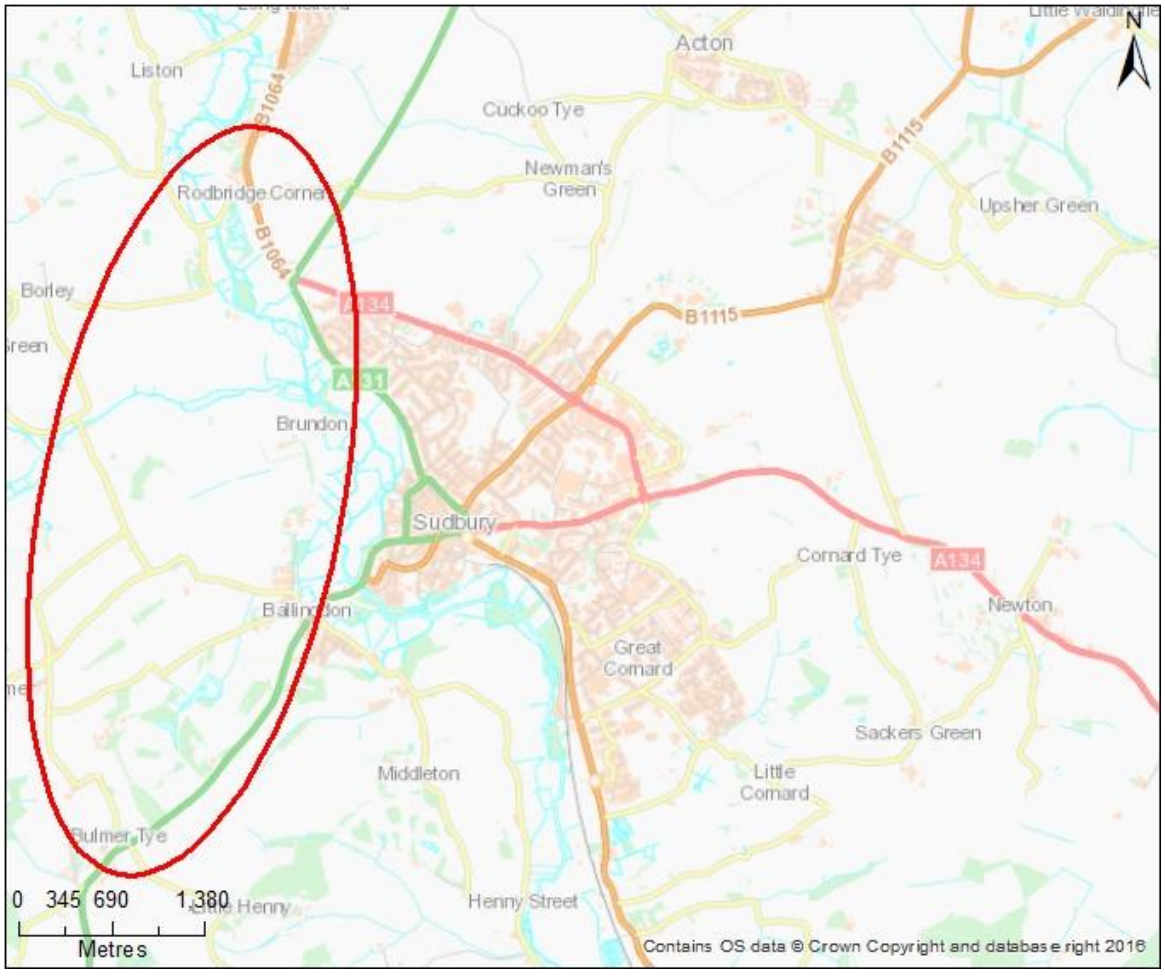
## 3.6 PROPOSED SOLUTION

3.6.1 An early design was produced which takes a route through the preferred western corridor and attempt to reduce its environmental impact as much as practicable. This indicative scheme allowed the transport benefits to be calculated and provided more information to the environmental assessment. The scheme would enable traffic to travel between the A131 and the A134 without having to travel through Sudbury town centre.

3.6.2 An option assessment process will be undertaken during the next phase of design and planning, with an Outline Business Case being produced to describe the benefits and constraints of a preferred option.

3.6.3 The indicative western relief road is 3.5 km in length, single carriageway road with a speed limit of 60mph.

3.6.4 The indicative route would run through to the west of Sudbury, and to the east of the villages of Bulmer and Borley.




**Map 3-2: Location of Proposed Western Relief Road**

3.6.5 The road commences from the Sudbury Road / Melford Road / A134 roundabout and meets the A131 to the South. Table 3-2 below shows the work required.

**Table 3-2: Proposed work for relief road by section**

| *Section* | *Proposed Work* |
|---|---|
| ***1*** | → Additional arm on the Sudbury Road Melford Road A134 junction.<br>→ New "at grade roundabout" (four arm entry) for crossing over "Kitchen Hill" Road.<br>→ Construction of new three-entry roundabout on A131. |
| ***2*** | → Construction of approximately 3500 metres of new road. |
| ***3*** | → New bridge over River Stour.<br>→ New bridge over "The Valley Walk".<br>→ New underpass drains.<br>→ New bridge over footpath.<br>→ New bridges over farmer's access for livestock/machinery.<br>→ New bridge over access road to existing refuse tip (public).<br>→ New underpass access. |

## 3.7 THE STRATEGIC FIT

3.7.1 The following describes how a western relief road complies with local and regional policies.

### SUFFOLK COUNTY COUNCIL LOCAL TRANSPORT PLAN

3.7.2 Suffolk County Council's Local Transport Plan 2011-2031 notes Sudbury as a key urban centre for growth where transport interventions can have a significant impact.

3.7.3 The plan highlights Sudbury as a key location to provide an increase in employment opportunities.

3.7.4 Sudbury is described as having severe air quality problems as a result of heavy goods vehicle queuing at obstructions. An Air Quality Action Plan has been put in place in an attempt to reduce this issue.

3.7.5 The plan agrees that the community of Sudbury is suffering as a result of the traffic issues. It highlights that severance is occurring due to difficulties of crossing the A12, A1071 and A137 to reach services.

3.7.6 A relief road is listed as a required transport intervention to resolve a key transport issue.

### BABERGH DISTRICT COUNCIL LOCAL PLAN

3.7.7 Babergh District Council published in 2014 a *Core Strategies & Policies* document. This, alongside the *emerging Local Plan 2011-2031*, sets out the potential for business and housing growth, job creation and development. As the largest town in the District, Sudbury plays a significant role in helping to achieve these targets. However developers and house builders are finding it difficult to achieve those targets.

3.7.8 The Local Plan is jobs led and sets out the level of growth needed to meet the district's aspiration. The 9,720 new jobs in a 30-year plan (to 2031) will require 485 new jobs per year. To meet this economic intensification, 5,975 new dwellings are to be built across the District over the plan period. Delivery of the dwellings is phased: 220 dwellings per annum in the first five years (2011-2016), rising to 325 dwellings per annum in the later years of the plan.

3.7.9 Babergh District Council plans to distribute the developments across the district in both the urban centres and rural areas. The plan shows 60% of the housing growth will be provided in urban areas (Sudbury/Great Cornard, Hadleigh, and the Babergh Ipswich Fringe) and 40% across the rural areas.

3.7.10 When the Local Plan was first developed the Sudbury/Great Cornard area was to receive about a quarter of housing allocated to urban areas.

3.7.11 The Babergh Local Plan Alternation No.2 (2006) Saved Policies allocated 19 hectares of land for residential development and 20.2 hectares for general employment and low impact employment at Chilton. However limited progress has been made bringing this plan forward.

3.7.12 Babergh and Mid Suffolk District Councils are working together to develop a new Joint Local Plan. This includes discussions about new growth figures for Babergh and Mid Suffolk. As the Councils identify their Objectively Assessed Need (OAN), additional development opportunities in Sudbury may be desirable. These numbers are not yet finalised and will need to be agreed upon between the District and the County.

3.7.13 The cumulative delivery of housing from the Core Strategy start period of 2011 to 2015 is 7% above target. This is due to some large developments which have come forward early on in the plan. However recent build out rates for Babergh as a whole are poor and have begun to underperform. If the level of development remains at its current levels, the District will not deliver the level of new housing needed. The councils are reviewing possible factors that are limiting housing delivery. This review includes discussions with local developers.

3.7.14 Several factors are likely to be contributing to the slow down for Babergh and West Suffolk. The narrow congested road network is perhaps the most crucial.

## BRAINTREE DISTRICT COUNCIL CORE STRATEGY (2011)

3.7.15 Braintree District Council Core Strategy outlines a vision of change between now and 2026. The document sets out how and where the district will meet its need for housing, employment and retail development.

3.7.16 The strategy outlines:

- → 9,625 dwellings are required between 2011 and 2026 to meet the needs of the District; and
- → A need to provide jobs to maintain a strong local economy.

3.7.17 The area along the A131 between Braintree and Halstead could provide an important part of these proposals.

## IMPROVING THE ESSEX ROAD NETWORK (DECEMBER, 2016)

3.7.18 Essex County Council has proposed improvements for the A120. The A120 between Braintree and the A12 is one of the most important east to west roads in Essex, yet has become one of the most congested. This has led to poor levels of service for drivers, including poor reliability and queuing traffic. Essex County Council are investigating the feasibility of a dual carriageway to reduce journey times and improve the reliability of the east to west route.

## BRAINTREE LOCAL PLAN – INTERIM ASSESSMENT (JUNE 2016)

### A120 BRAINTREE TO A12 ROUTE OPTIONS

3.7.19 Highways England has asked the County Council to lead on the feasibility work to determine options for a new A120 route between Braintree and the A12 by summer 2017. A range of possible options to increase the capacity of the A120 have been assessed. Essex County Council and Highways England will recommend its preferred route to the Government for inclusion in the next Government Road Investment Strategy (RIS), which will run from 2020 to 2025.

### A131 ROUTE BASED STRATEGIES

3.7.20 The A131 between Braintree and Chelmsford has seen recent improvements, which formed part of the Essex County Council Route Based Strategies.

3.7.21 The A130 / A131 Chelmsford to Braintree Route Based Strategy also propose a number of options. These include: improved signing and road lining across the route, improving the bus provision along the route including an express bus service between Chelmsford and Braintree. Highway improvements aimed at reducing congestion include addressing the capacity problem at Sheepcotes roundabout.

## 3.8 CONSTRAINTS

3.8.1 This section outlines the possible constraints the scheme may face at this stage.

### PLANNING CONSTRAINTS

3.8.2 Possible planning constraints include:

- This type of work takes time, as various environmental and stakeholder groups will need to be consulted
- To capitalise on growth in the surrounding areas the relief road should be built as soon as possible. A balance between a speedy programme and an environmentally sensitive relief road route will need to be struck
- Uncertainty of funding, and
- Uncertainty of construction time.

### ENVIRONMENTAL CONSTRAINTS

#### NOISE

3.8.3 One of the aims of the relief road is to remove much of the traffic going through Sudbury. However, a number of properties, currently in a semi-rural setting, are likely to be affected by the new road. A summary of the noise-sensitive receptors in the study area is presented below:

- Kitchen Farm Cottages and Kitchen Farmhouse (approximately three dwellings)
- Dwellings at Kitchen Hill (approximately 21 dwellings)
- New Cottages
- Barley Mill Cottage
- Dwellings on Melford Road

## AIR QUALITY

3.8.4 Air quality across Sudbury is currently good, although pockets of poor air quality exist particularly in the southwest of the town. Babergh District Council has designated an Air Quality Management Area (AQMA) for exceedances of the annual mean standard for Nitrogen Dioxide in 2008 around the Cross Street area of Sudbury. There are no automatic monitoring sites within the Babergh District, however, Babergh District Council have undertaken diffusion tube monitoring, with the primary focus being the AQMA.

3.8.5 In 2014, there were multiple monitored exceedances of the $NO_2$ annual mean standard at relevant receptors, although all of these were roadside locations and within the designated AQMA. Defra background mapping in this area shows background concentrations between 9 - 15µg/$m^3$, this indicates that the roadside contribution to $NO_2$ contributes a significant proportion of the monitored exceedances. Monitored concentrations generally show little / no reduction in monitored $NO_2$ concentrations over the last 5 years.

3.8.6 There are relatively few properties within 100m of the assessed route, and background $NO_2$ concentrations within this region are relatively low. Due to this, the sensitivity of this area to $NO_2$ impacts is considered to be relatively low. Conversely, the town of Sudbury is relatively densely populated, and concentrations are relatively high, especially the area within the AQMA. Therefore the sensitivity of this area to $NO_2$ impacts is considered to be relatively high.

3.8.7 The nearest statutory designated ecological sites to study area are the Glemsford Pits Site of Special Scientific Interest (SSSI) and Cornard Mere SSSI, approximately 3km to the northwest and southeast respectively.

## LANDSCAPE

3.8.8 The western relief road corridor comprises a predominantly agricultural landscape of the Stour Valley on the western side of Sudbury. The route of a relief road is likely to connect the A134/A131/B1064 junction on the northern edge of Sudbury with the A131 at Ballingdon Hill to the south-west of the town.

3.8.9 Much of the site and surrounding area is recognised through landscape designations, including the 'Stour Valley Project Area' and Dedham Vale AONB. Although the Stour Valley Project Area currently falls outside the AONB, it is situated within the area of search for the AONB boundary review i.e. the proposed boundary extension, reflecting the high value and quality of the landscape. If the AONB was extended to include the maximum area of search, the study area would lie just inside the AONB. It would fall fully within the area that forms the setting to the AONB, i.e. it is either visible from the AONB or the AONB can be seen from it. The site is also partly located within the locally designated 'Stour Valley Special Landscape Area (SLA)' which is highly valued for its natural beauty and landscape views. The Stour Valley has historic and cultural associations with the nationally recognised artist Thomas Gainsborough. The viewpoint from the Auberies for Gainsborough's painting 'Mr and Mrs Andrews' (1750) overlooks part of the study area which, through this association, adds cultural value to aspects of the landscape.

3.8.10 A well-developed network of Public Rights of Ways and recreational areas, including common lands, lie within the Stour Valley. Recreational routes within the study area include the Stour Valley Path and St Edmunds Way to the east; The Valley Walk, which follows the disused railway line between Rodbridge Corner on the southern edge of Long Melford and Sudbury Station; The Gainsborough Trail, a circular route approximately 20km around the Sudbury area; and Meadow Walk, a 5km section of the Gainsborough Trail along the disused railway line between Brundon and the centre of Sudbury. In addition a Sustrans traffic free cycle route (NCR 13) follows the route of The Valley Walk along the disused railway line.

3.8.11 The northern section of the site lies within low lying floodplains (c. 20-30m AOD) of *Landscape Character Area (LCA) 26 Valley Meadowlands*[i] with its distinctive meadows and riverside trees contributing significantly to the distinctive character of the district and sense of place. Here a relief road would cross the River Stour, Belchamp Brook and a disused railway line via overbridges. Between Belchamp Brook and Sandy Hill the site lies within *LCA 18 – Rolling Valley Farmlands* which comprises higher (c. 30-50m AOD), undulating valley sides. Agricultural land in this area retains its historic pattern of medium size fields enclosed by tall hedgerows with abundant hedgerow trees and is traversed by historic sunken lanes on the valley sides. Views over this area are widely available from the historic part of Sudbury (designated as 'Sudbury Conservation Area'), which contributes to the scenic quality of the area. The southern end of the site lies within *LCA 4 – Ancient Rolling Farmlands* which comprises rolling arable farmland (c. 60-80m AOD) of ancient enclosure patterns with hedgerows and ditches which combine to create a feeling of intimacy in places. This largely intact landscape is also crossed by a dense network of winding lanes and paths.

3.8.12 At a local level Babergh Council believe the landscape of the districts to be a 'heritage asset'. The need to safeguard the countryside and heritage of the area is captured in Babergh Core Strategy Objective 6 and Saved Policy CRO4 of the Babergh Local Plan. Recognition of the need to protect the distinctive countryside and heritage of the area is consistent across all relevant landscape planning policies at a national and local level.

3.8.13 The study area has a distinctive sense of place due to the topography, woodland cover, land use, historic field patterns, settlement pattern and high levels of tranquillity which prevail throughout. Considering this and the number of designations present, the landscape is of high value and has a high susceptibility to the type of change proposed. This results in high landscape sensitivity.

## HISTORIC ENVIRONMENT

3.8.14 A total of five scheduled monuments, 11 Grade I, 16 Grade II* and 326 Grade II Listed Buildings are present in the outer study area (up to 2km from the centreline of the study area), mostly located with Sudbury itself. Three conservation areas, including Sudbury, and two historic landscapes were also identified.

## BIODIVERSITY

3.8.15 No internationally or nationally statutory designated sites occur within the likely Zone of Influence of the relief road. The disused railway which traverses the study area forms part of the Railway Walks Local Nature Reserve (LNR) which supports woodland, scrub and grassland habitats; a nationally notable plant species Deptford pink *Dianthus armeria* occurs within the designated site. The Sudbury Common Lands LNR occurs in the south east of the study area. These sites receive protection through planning policy. It is important to note that information regarding the presence local non-statutory designated sites has not been collated as this was beyond the scope of the preliminary baseline study; if they are present within the study area, this could pose a significant constraint a relief road.

3.8.16 Two rivers, Belchamp Brook and the River Stour, and their associated floodplains occur within the study area. These are ecologically important habitats that provide resources for a broad range of species. Effects on watercourses can have negative impacts at broad geographic scales. Watercourses receive protection under the Water Framework Directive.

3.8.17 An area of ancient woodland (Brundon Wood) occurs within the study area, a habitat type of high conservation value. In addition other priority habitats, as identified under Section 41 of the Natural Environment and Rural Communities act (NERC) 2006, occur within the study area. These include hedgerows, coastal floodplain and grazing marsh, lowland mixed deciduous woodland and lowland calcareous grassland. Notable / rare flora could occur within the study area including in association with the watercourses and arable fields; further survey will be required to establish whether species are present and their distribution. Under the NERC Act (2006) government bodies are obliged to have regard to the conservation of biodiversity; priority habitats (and species) are identified as a guide to exercising their duties.

3.8.18 A number of legally protected and / or notable fauna species could occur within the study area, although further survey would be required to inform a full constraints assessment. The study area is certain to be used to some degree by populations of bats, birds (over winter and breeding), invertebrates and fish; these populations are likely to be of some conservation importance based on the habitats present. The study area also has the potential for supporting a range of legally protected species including hazel dormouse, reptiles, amphibians, water vole and otter; the presence of these species could present significant constraints.

## SURFACE WATER FEATURES

3.8.19 A relief road would cross over two main rivers: the River Stour and Betchamp Brook. Both of these watercourses are monitored against the objectives of the Water Framework Directive. The River Stour is classified as a heavily modified waterbody with an overall quality status of ‘moderate’ comprising ‘moderate’ ecological quality and ‘good’ chemical quality. Betchamp Brook is assessed to have an overall quality status of ‘poor’ comprising ‘poor’ ecological quality and ‘good’ chemical quality.

### GROUNDWATER FEATURES

3.8.20 A relief road would likely be located within Zone 2 of a designated Groundwater Source Protection Zone which indicates those aquifers used to support public drinking water supplies. Zone 2 is defined as the area within which groundwater will take a maximum of 400 days to travel from any point within the area to the point of abstraction.

3.8.21 Review of borehole records obtained via the Geology of Britain viewer suggests a groundwater level in the region of approximately 22mAOD. The topography within the study area is undulating but broadly ranges between 30mAOD to 50mAOD, increasing to approximately 75mAOD at the junction with the A131 Ballingdon Hill in the south.

3.8.22 Groundwater within the study area is monitored against the objectives of the Water Framework Directive. North of Kitchen Hill is located within the North Essex Chalk catchment with an overall quality status of 'poor' comprising 'poor' quantitative quality and 'poor' chemical quality. South of Kitchen Hill is located within the Essex Gravels catchment with an overall quality status of 'poor' comprising 'good' quantitative quality and 'poor' chemical quality.

### FLOOD RISK

3.8.23 A relief road would pass through an extensive area of fluvial Flood Zone 3 associated with the River Stour. Land within Flood Zone 3 is assessed to have a greater than 1% (1 in 100) annual probability of flooding from fluvial sources. The flood extent within the area crossed by a relief road is also likely to comprise the functional floodplain Flood Zone 3b where the annual probability of flooding is greater than 5% (1 in 20). It is assumed that a relief road would be located on an embankment to the north and south of the River Stour within the mapped flood extents. It is not yet clear if a clear span structure will be provided across the River Stour.

3.8.24 A relief road would pass though the fluvial Flood Zone 3 associated with Betchamp Brook and its minor tributary located immediately to the north of the brook. This is considered likely to include functional floodplain. It is assumed that there would be a clear span structure crossing both of these watercourses, but that an embankment will be constructed within the mapped Flood Zone 3 to the north and south of Betchamp Brook.

3.8.25 Surface water flooding within the study area is generally low. The most significant risks are associated with the River Stour and Betchamp Brook as discussed above. Overland flow routes are also indicated to the north of Kitchen Hill and along the alignment of the watercourse to the east of the Auberies Estate Lake.

## STAKEHOLDERS

3.8.26 Early discussions have taken place between most of the key stakeholders shown below:

- Suffolk County Council
- Babergh District Council
- Braintree District Council
- Essex County Council
- Sudbury Town Council
- Highways England

## 3.9 SCHEME BENEFITS

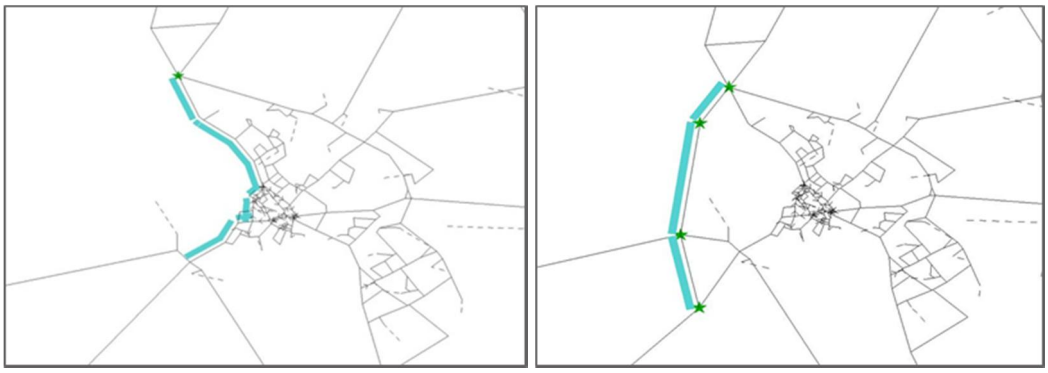
### JOURNEY TIME SAVINGS

3.9.1 The provision of a new relief road provides journey time savings to travellers on the A131.

3.9.2 The existing A131 route through Sudbury town centre has an average journey time of 295 seconds in the PM peak. The indicative western relief road has an average journey time of 149 seconds; resulting in a saving of over 2 minutes for all users of the new route. Empirical evidence indicates that peak hour traffic can lead to gridlock in Sudbury, and therefore journey time savings may be greater.

3.9.3 Removing vehicles from the town centre also reduces the journey times of vehicles using the current A131 within Sudbury.

**Route used within model without Relief Road** **Route used within model with Relief Road**



### REDUCTION OF VEHICLES IN THE TOWN CENTRE

3.9.4 The relief road would relieve the key routes within Sudbury town centre, removing some 600 vehicles during the PM peak. There would also be a 60% reduction in the number of HGVs within Sudbury.

3.9.5 The SATURN modelling shows that the majority of vehicles on the A131 would change to using the relief road; as the current route along the one-way gyratory is poor.

3.9.6 The relief road has a positive effect on the wider Sudbury network, with reductions on B1115 (Waldingfield Road / East Street), Shawlands Avenue to the east and A1092 (Westgate Street) to the north.

3.9.7 The reduced number of vehicles through Sudbury would lead to the following additional benefits:

- → Reduced noise pollution and enhanced air quality (especially given the high number of HGV movements being removed from the town), and
- → The re-routing of vehicles onto the relief road will create extra capacity for local journeys e.g. shoppers/workers travelling to Sudbury town centre.

3.9.8 The reduction of traffic in the town is not as large as first might be expected. This is in part due to the difficulties faced by many people travelling through the town at the moment, and relieving this congestion allows some of these people to change their travel behaviour. This would be of benefit to residents of Sudbury, as well as the businesses and retail establishments as more journeys can be made where Sudbury is the destination.

3.9.9 A relief road would also allow Sudbury to have a reimagined town centre; as a place for people to visit. Providing an Enhanced Local Centre would allow Sudbury to grow sustainably as required.

3.9.10 Improvements to the town centre could lead to:

- Town centre parking which better fits with the streetscape
- A town centre made for pedestrians to freely use
- Better use the historic market area
- Increasing the amount of usable outdoor space (café style and community seating), and
- Improved safe and sustainable access into the town, which will support economic growth.


## REDUCTION IN TRAFFIC ON KEY REGIONAL ROUTES

3.9.11 The improved A131 / A134 north-south connection also attracts users that currently use alternative routes, resulting in improvements on these congested routes. The model showed that a relief road would lead to the following reductions in vehicle numbers in 2021:

- The M11 between A120 and A11: 221 vehicles in the AM and 60 vehicles in the PM.
- The A120 between A12 and A131: 51 vehicles in the AM and 27 vehicles in the PM.
- The A12 south of London Road: 14 vehicles in the AM and 16 vehicles in the PM.

3.9.12 The A134, south of Bury Road, is expected to have an increase in vehicles in 2021 due to the relief road re-routing traffic. However, the additional traffic does not result in capacity issues.

## CAPACITY FOR FUTURE DEVELOPMENT

3.9.13 The indicative relief road is predicted to attract 900 users during the peak hour (PM) in 2021. This number is still well within expected limits of a newly constructed road.

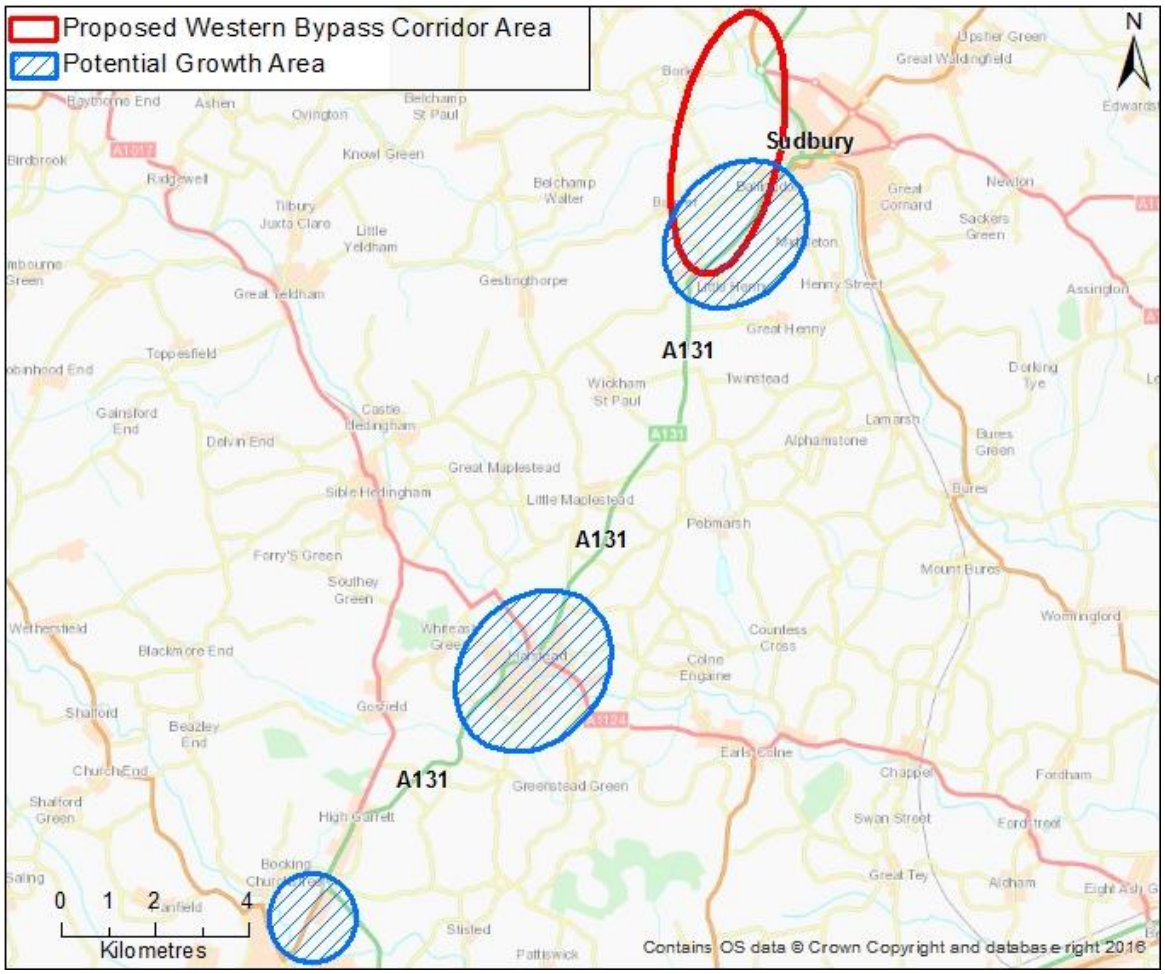
3.9.14 The performance of the three junctions has been assessed in 2021 and 2036 and all the roundabouts work well within capacity.

3.9.15 Therefore a relief road and associated junctions would have capacity to accommodate future developments and growth in the local area and in the wider area.

3.9.16 New Anglia LEP, Suffolk County Council, Babergh District Council, Braintree District Council and Essex County Council have a combined desire to realise this growth potential, with more growth in the area being discussed.

3.9.17 An improved A131 link will allow for further land to be allocated for development in the Sudbury area, in the Braintree area and the corridor between, including around Halstead.

3.9.18 Map 3-3 shows these areas.




**Map 3-3: Potential Areas for Future Growth**

3.9.19 Transport infrastructure improvements along the A131/A134 corridor are key to enabling local and regional growth. The Sudbury relief road is the first of these infrastructure improvements and, on its own, would provide significant capacity for additional housing and employment. Further improvements (for instance around Halstead) which could be considered later would further enhance the areas growth potential.

3.9.20 The corridor could see a transformative level of development following investment on the A131/A134; with synergetic benefits arising between the three major centres.

3.9.21 The Sudbury relief road is the sensible first stage given the problems faced within Sudbury, the availability of land for development and the considerable work already undertaken in assessing and consulting on a relief road.

## 3.10 SCHEME IMPACT

3.10.1 A report was commissioned in January 2016 to undertake further studies and surveys for the topics which have been determined to be the key environmental constraints namely ecology, landscape and cultural heritage. Conclusions for each of these topic areas are presented below.

### ECOLOGY

3.10.2 A number of potential ecological constraints to a western relief road have been identified. Whilst the survey has identified some important ecological features and provides baseline data necessary to inform preliminary avoidance, mitigation and compensation measures, further ecological surveys are required to characterise the likely ecological Impacts and inform the requirements, extent, nature and scope of a potential mitigation strategy. Careful design of a relief road, particularly with respect to the River Stour and associated habitats will be crucial in avoiding and minimising significant adverse effects upon biodiversity.

3.10.3 Some residual impacts upon biodiversity arising from a relief road are likely to be unavoidable, in which case compensation measures will be required.

### LANDSCAPE

3.10.4 The landscape of the study area is of high value and has high sensitivity and susceptibility to change, which is recognised through landscape designations including Special Landscape Area and the Stour Valley Project Area. The landscape has strong historic and cultural associations relating to the Sudbury Common Lands, Gainsborough's paintings and Sudbury Conservation Area. Furthermore, the high value and quality of the landscape in the southern part of the study area is acknowledged by the proposed extension to the Dedham Vale Area of Outstanding Natural Beauty (AONB) westwards to the southern edge of Sudbury and the A131 road.

3.10.5 The AONB boundary extension has not been approved at the time of writing this report, however it would be advisable to consider the special qualities of the AONB and its setting that could be affected by the project when developing the design. It is likely that some aspects of the project including large-scale disturbance, reduced tranquillity, visual impact, raised earthworks etc. could not be mitigated fully.

3.10.6 The project site lies within the Rolling Valley Farmlands landscape character area which is characterised by gentle valley sides with some complex and steep slopes, much of the agricultural landscape retains its historic field pattern. High levels of tranquillity prevail throughout.

3.10.7 Development in this valley side landscape is likely to have a significant visual impact and could adversely affect the character of the landscape, including that of the adjoining valley floor. Due to the undulating topography there is the potential for the project, including traffic and lighting, to be visible on the skyline.

3.10.8 Extensive woodland and hedgerow planting with locally occurring native species of trees and shrubs would be appropriate mitigation in this landscape.

## HISTORIC ENVIRONMENT

3.10.9 Works that have the potential to substantially harm known and hitherto unknown buried remains include, but are not limited to, excavation associated with geotechnical trial pitting, boreholes, topsoil stripping, excavation of foundations, landscaping, the provision of services, the creation of roads both temporary and permanent, creation of compound areas and any other ground levelling.

3.10.10 Groundworks for a relief road are likely to impact on regionally important below-ground remains located in the area. Other than agricultural ploughing the study area for the western relief road has not been subject to previous disturbance, and therefore there is potential for the remains of these assets to survive below ground. Although there has been little archaeological fieldwork in the local area, from the presence of such assets as mentioned above suggests potential archaeological remains to survive within the study area.

3.10.11 A relief road is not likely to have a physical impact on any of the Scheduled Monuments or listed buildings present in the study area. However a relief road is likely to have an adverse impact on the setting of the following designated assets within the study area: The scheduled site of a Romano-British (SM1005969), the Grade II* Listed Ballingdon Hall (1037550) and Brundon Hall (1037518) and the Grade II Listed Rodbridge House (1198067), barns at Rodbridge House (1396596), a barn (1123294), Brundon Mill (1037517), Brundon Hall Cottages (1351341), Borley Mill (1123285), Borley Hall (1123284), an outbuilding at Borley Hall (1306432), The Old Vicarage (1337893), the archway/stables (1123292), the gatepiers, gates and railings to Auberies (1306419), K6 telephone kiosk (1431001), Borley Lodge (1306436), outbuilding at Borley Lodge Farm (1234827), Barn at Borley Lodge Farm (1275932), Woodburn (1169662), Rose Tree Cottage (1169659), Eyston Hall (1123314), Glebe Cottage (1123288) and Blacksmiths Cottage (1169645).

3.10.12 The setting assessment undertaken in the Historic Environment report concludes that a relief road is likely to have a positive effect on upon the experience of Sudbury Conservation Area and listed buildings within due to an expected reduction in congestion and associated noise and fume pollutants. Further studies of Sudbury Town Centre should be undertaken to understand this beneficial impact.

3.10.13 The negative impact on the historic environment outside the conservation area however is considered to be adverse and may outweigh those positive effects outlined above. This is with particular emphasis on the setting of the two historical landscapes in the study area which comprise the Valley Meadowlands and Rolling Valley Farmland. A relief road would traverse through these landscapes which are historically associated with nationally important artists such as Constable and Gainsborough. A relief road would also create new land divisions, and will introduce new patterns of movement, noise and possible lighting that will interrupt the current tranquil and timeless rural settings.

**Figure 3-2 Sudbury Landscape**

## 3.11 WHAT THE SCHEME WILL DELIVER

3.11.1 The scheme will deliver:

- A new relief road to the west of Sudbury
- Improved connectivity and route reliability between Sudbury and Bury St Edmunds, and
- Enhanced environment in Sudbury town centre with fewer vehicles using this route.

### COMPARISON OF RESULTS AGAINST OBJECTIVES

3.11.2 Table 3-2 illustrates how the relief road assessment results support the scheme objectives.

**Table 0-1: Comparison of results against objectives**

| OBJECTIVES | Results that support objective |
|---|---|
| Enable growth within Sudbury and the surrounding area | → A relief road would unlock development land which currently cannot be accessed. This unlocked land could be used to take unallocated housing and jobs from other authorities in Suffolk and from neighbouring councils, such as Essex County Council.<br>→ A relief road and the associated junctions would have capacity to accommodate future developments and growth in the area. |
| Improve Sudbury town centre | → Fewer HGVs travelling through the town centre would enhance air quality and reduce noise pollution within the town.<br>→ Fewer vehicles in the town centre will provide an opportunity for Sudbury to have a reimagined town centre; as a place for people to visit. |
| Reduce congestion | → An improved north-south route results in reduced journey times and greater reliability.<br>→ The improved A131 / A134 north-south connection would attract users that currently use alternative routes, resulting in improvements on other currently congested routes.<br>→ Improved journeys times on many routes in the area.<br>→ Some vehicles changing from the surrounding strategic roads (M11, A12 & A120) to use an improved A131/A134 route. |
| Improve the connectivity of Sudbury | → An improved A131/A134 route would bring neighbouring towns and centres closer. |

# 4 ECONOMIC CASE

## 4.1 PURPOSE

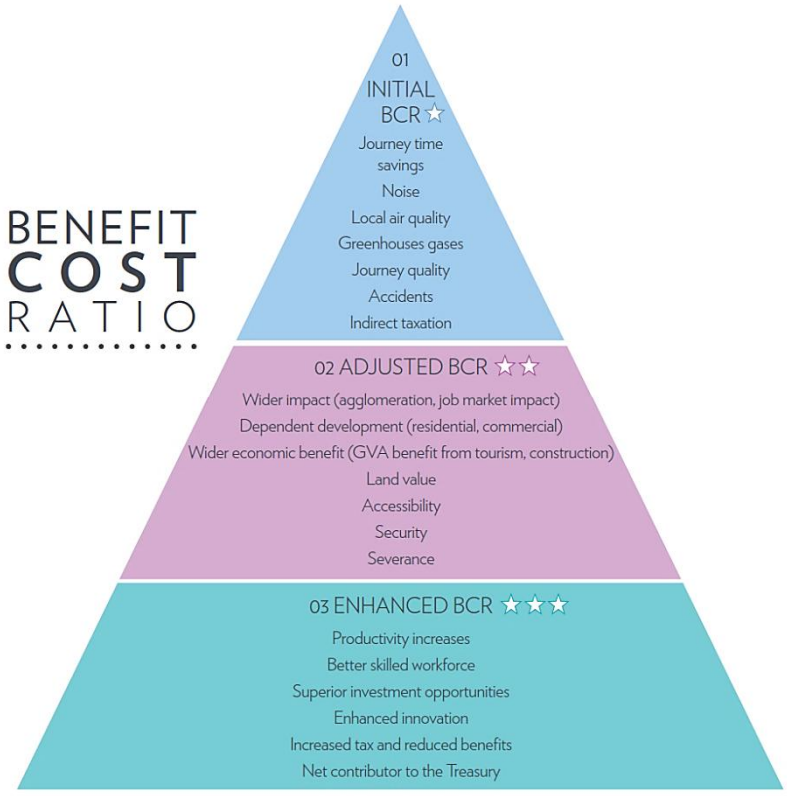
4.1.1 The main purpose of the economic case is to demonstrate that the proposal represents the best value for money scheme to the UK as a whole.

4.1.2 A review of a relief road within the preferred western corridor has been undertaken, which shows the costs and benefits of an indicative scheme.

4.1.3 The scheme's benefit cost ratio was calculated in order to assess its value for money.

4.1.4 An initial benefit cost ratio (BCR) has been calculated which monetises the immediate transport benefits of the scheme.

4.1.5 The 'Adjusted BCR' takes into account wider economic impacts, while the 'Enhanced BCR' assesses the further benefits that may result from this scheme to the UK. These have not been monetised during this Strategic Outline Business Case given its early stage. Any subsequent business cases would undertake this work, however there are expected to be significant additional benefits.



## 4.2 ASSESSMENT METHODOLOGY

4.2.1 The relief road option is appraised using the methodologies recommended by the Department for Transport's *WebTAG* (Transport Analysis Guidance) and the *Green Book*, using the most up to date parameters in November 2014.

4.2.2 The key benefits for the scheme are journey time savings, as the relief road would provide a quicker and more direct route for through traffic, which is expected to significantly reduce current congestion in the town.

4.2.3 Other WebTAG quantifiable benefits, such as journey reliability and accident savings have not been quantified at this time.

4.2.4 The main qualitative assessment reviewed the environmental impact from both the construction of the new relief road and changes in traffic movement. A high level qualitative appraisal was undertaken for the following topics and is shown in the Appraisal Summary Table (appendix B):

- Noise
- Air Quality
- Greenhouse gases
- Landscape
- Historic Environment
- Biodiversity
- Water Environment

## 4.3 MODELLING A WESTERN RELIEF ROAD

### ASSUMPTIONS

4.3.1 The traffic changes resulting from a relief road have been modelled in SATURN using the latest Suffolk County Traffic Model. Forecast years of 2021 and 2036 as the opening year of the relief road is not known.

4.3.2 Three modelled periods have been considered:

- 07:00 to 10:00 with a peak hour of 08:00 to 09:00;
- Interpeak hour based on the average hour from 10:00 to 16:00; and
- 16:00 to 19:00 with a peak hour of 17:00 to 18:00.

### JUNCTION MODELLING

4.3.3 The indicative relief road includes two new at grade roundabouts and the reconfiguration of the Sudbury Road / Melford Road roundabout. The roundabouts have been modelled using JUNCTIONS (8.0) software to assess how the junction will perform.

4.3.4 The performance of these junctions was assessed using traffic flows from the Suffolk County Traffic Model.

4.3.5 The results show that the southern and middle junctions will perform under capacity, with a maximum ratio of flow to capacity (RFC) of 0.73 and a queue of one vehicle in the PM peak.

4.3.6 The proposals add an additional arm on the northern roundabout, and the junction initially showed that it was over-capacity in 2021 and 2036. An additional flare was added on A131 (Melford Road) and the width of the additional arm increased. This improved the overall performance of the northern roundabout so that it performs under-capacity in 2021 and 2036, with a maximum RFC of 0.80.

## 4.4 SCHEME COST

4.4.1 In order to assess the costs and benefits of a relief road, the base case "Do Nothing" scenario must first be established. For this assessment the "Do Nothing" scenario is the road network as it exists today, without the relief road.

4.4.2 An indicative relief road was designed to the Design Manual for Roads and Bridges within the preferred western corridor, whilst avoiding some of the environmental constraints previously identified. Qualified Quantity Surveys provided a cost estimate of indicative scheme. Additional cost items (such as land cost, statutory undertakers equipment diversions, design and planning fees) were estimated.

4.4.3 The estimated cost of the indicative scheme was **£39,925,285** in 2016 prices.

4.4.4 An optimism bias of 44% has been used within the assessment to reflect the indicative nature of the design.

4.4.5 This increased cost has been discounted to 2010 prices resulting in an assessment cost of £42.1m.

## 4.5 JOURNEY TIME SAVINGS

4.5.1 The following assumptions have been used to calculate journey time savings of **£50 million** in 2010 prices**.**

4.5.2 Scheme benefits have been assessed using the Department for Transport's TUBA (Transport Users Benefit Appraisal) software. This is an industry-standard tool for undertaking economic appraisal in accordance with guidelines published in WebTAG Unit A1.

4.5.3 The latest version of TUBA (v1.9.5) was used with parameters published in WebTAG Unit A1. The Suffolk Countywide Transport Model has been used to understand the transport changes that a relief road would bring.

4.5.4 Scheme appraisal has been undertaken for a 60-year period, from the assumed scheme opening in 2021.

4.5.5 Tempro growth factors have been used to estimate the growth of traffic in 2021 and 2036.

## 4.6 ENVIRONMENTAL IMPACT

### NOISE

4.6.1 Traffic counts collected by SCC in 2016 have been used to inform the assessment. According to this data, the number of vehicles[1] on the A131 through Sudbury is in the order of 14,000 (Ballington Street) to 15,000 (Melford Road) per day. A simple estimate based on Chart 3 of CRTN[2] suggests that dwellings adjacent to the A131 in the town centre are likely to be currently exposed to a façade noise levels in excess of $L_{A10,18h}$ **68dB.** This value is recognised as an important threshold on road traffic noise due to its relation with the Noise Insulation Regulations (NIR) 1975, as amended 1988.

4.6.2 In terms of traffic forecast when the bypass is in operation, the Suffolk County Transport Model suggests that the traffic flows along the A131 in 2021 (i.e. do something scenario) will be between 30 to 40% lower than those forecast for the same year without the operation of the bypass (i.e. do minimum scenario).

4.6.3 This has the potential to reduce the noise level at the façade of those properties by **2dB**, which would result in a minor beneficial impact. This is a very high level of assessment and does not take into account the fact that the properties in Sudbury are very close to the carriageway, that Sudbury is very built up and that the properties are located within a conservation area.

4.6.4 On the other hand, the traffic flows along the bypass are predicted to be in the order of 11,000 during 2021. This would mean that existing properties listed in paragraph 4.8.3 are likely to be subject to an increase in noise levels. Depending on the existing noise climate, the impact is likely to be minor to moderate adverse. Mitigation would need to be incorporated into the scheme, particularly to those dwellings on Kitchen Hill.

4.6.5 To summarise, as a relief road would reduce traffic in the centre of Sudbury but introduce traffic into the countryside, there would be a reduction in noise for a large population living and working in the centre of Sudbury but an increase in noise for a much smaller population living around the potential route of the relief road.

4.6.6 The potential to trigger eligibility under the NIR 1975 as a result of the operation of a relief road is considered to be low, on the basis that most of the nearest dwellings would be located further than 100m from a relief road. It has been assumed however that currently those dwellings are exposed to relatively low noise levels, as expected for a semi-rural setting. The exception may occur at those dwellings near the A134/A131 roundabout where noise levels are expected to be elevated due to the convergence of two active roads. A quantitative assessment should be prepared to confirm if there are any properties qualifying under the NIR 1975.

4.6.7 At this stage, in the absence of detailed designs, modelling and mitigation a worst case scenario has been reported in the Appraisal Summary Table. Through scheme development, application of mitigation and detailed survey & assessment (modelling) improved impact scores may be possible.

4.6.8 Any noise modelling undertaken will need to be calibrated via noise monitoring, both at receptors within Sudbury town centre, and in the countryside at receptors potentially affected by the relief road. This may find sound levels in the centre of Sudbury to be louder than estimated.

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[1] AAWT 18 hours between 06:00 – 00:00
[2] Calculation of Road Traffic Noise, Department of Transport Welsh Office, 1988

4.6.9 During any future design, a relief road would be designed to avoid receptors were possible (including residential properties). Additional mitigation could be used to reduce the impact on these receptors and this could include Low Noise Surfacing on the carriageway and noise barriers. Noise barriers in this location would likely be in the form of earth bunding or false cuttings.

## AIR QUALITY

4.6.10 The development of a relief road is likely to result in an overall benefit to air quality, as reductions in $NO_2$ concentrations are anticipated both within the AQMA, where exceedances of the annual mean standard occur, as well as throughout the town of Sudbury. The introduction of a relief road is not anticipated to affect statutory ecological designations.

4.6.11 Traffic modelling shows rerouting of regional traffic around the town centre. The primary impact of a relief road is to reroute a significant number of vehicles around Sudbury, and away from local roads. The overall air quality impact can be split geographically, as an increase in $NO_2$ concentrations are anticipated close to the relief road (relatively low sensitivity to $NO_2$ impacts), and a reduction in $NO_2$ concentrations on local roads throughout Sudbury (relatively high sensitivity to $NO_2$ impacts).

## GREENHOUSE GASES

4.6.12 The TUBA result indicates a decrease of greenhouse gas emissions across the study area and an overall Greenhouse Gas Benefit of £717,000.

## LANDSCAPE

4.6.13 The development of a relief road in the western corridor is likely to adversely affect the special qualities of designated landscapes nearby. A relief road would cross the Stour Valley and it would also adversely affect the cultural associations with Gainsborough, particularly on views from Auberies. The introduction of engineered landforms would be at variance with the natural landform, and the loss of hedgerows would adversely affect the historic field pattern. Due to the likely large visual influence of a relief road it has the potential to cause adverse effects both on views and visual amenity from surrounding sensitive visual receptors. The area's strong sense of tranquillity would also be adversely affected due to increased traffic, noise and visual appearance of the scheme. Considering the high sensitivity of much of the landscape and visual resource and the likely high magnitude of change, the level of effect is considered to be large adverse overall.

4.6.14 Should there be an extension of the Dedham Vale AONB to the west as currently proposed, this would also be adversely affected by a western relief road.

## HISTORIC ENVIRONMENT

4.6.15 It is anticipated that none of assets identified will be physically affected by a relief road.

4.6.16 However the settings of the following assets are expected to be harmed as a result of the construction and operation of a relief road in the study area:

- Scheduled site of a Romano-British villa (SM1005969),
- Grade II* listed Ballingdon Hall (1037550) and Brundon Hall (1037518),
- Grade II Listed Rodbridge House (1198067), Barns at Rodbridge House (1396596), a barn (1123294), Brundon Mill (1037517), Brundon Hall Cottages (1351341), Borley Mill (1123285), Borley Hall (1123284), outbuilding at Borley Hall (1306432), The Old Vicarage (1337893), Archway/stables (1123292), gatepiers, gates and railings to Auberies (1306419), K6 telephone kiosk (1431001), Borley Lodge (1306436), outbuilding at Borley Lodge Farm (1234827), Barn at Borley Lodge Farm (1275932), Woodburn (1169662), Rose Tree Cottage (1169659), Eyston Hall (1123314), Glebe Cottage (1123288) and Blacksmiths Cottage (1169645).

4.6.17 The setting of Sudbury Conservation Area and the two historic landscapes which comprise the Valley Meadowlands and Rolling Valley Farmlands are also likely to be harmed as a result of a relief road. However, the experience within Sudbury Conservation Area and listed building within is likely to improve as a result of a relief road due to an expected reduction in traffic and congestion. Further study of Sudbury Town Centre should be undertaken to understand this beneficial impact.

4.6.18 The association of the historic landscape, in particular the water meadows and meadowlands, with famous views depicted by artists such as Gainsborough heighten the historical and artistic significance of the area. The setting of a number of the listed buildings likely to be affected by a relief road also form part of, and derive their significance from, this wider cohesive setting that will be adversely affected.

4.6.19 The non-designated heritage assets identified within the study area range in date from the Prehistoric to the Modern period. Below-ground archaeological remains associated with these assets are likely to be subject to potential significant harm resulting from ground disturbance relating to construction works, with effects being permanent. In addition, this archaeological evidence suggests that there is the potential for further previously unknown assets from the Prehistoric to the Modern period to be present within the study area.

## BIODIVERSITY

### THE RAILWAY WALKS LNR

4.6.20 It is likely that the alignment of a relief road would intersect the Railway Walks LNR in an area containing dense scrub habitat with some semi-improved calcareous grassland located close by. Impacts would include direct habitat loss, habitat fragmentation and degradation of habitats adjacent to the road. The Sudbury Common Lands LNR is unlikely to be directly affected.

### RIPARIAN HABITATS

4.6.21 The alignment of a relief road would require two rivers crossings. It is therefore likely that some loss of riparian habitat, including bankside vegetation and floodplain, would occur. A relief road could also lead to habitat degradation through water, noise and light pollution and habitat fragmentation effects in the absence of mitigation.

### OTHER NOTABLE HABITATS

4.6.22 A relief road would result in direct loss of notable habitats including hedgerows, coastal floodplain and grazing marsh. Indirect effects resulting from changes in air quality and hydrology may also occur. The ancient woodland is unlikely to be affected if avoided.

### NOTABLE FLORA

4.6.23 The colony of the notable plant Deptford pink would be unlikely to be affected. However, it is possible that notable plant species such as those associated with the riparian or arable habitats could be directly affected.

### PROTECTED AND NOTABLE FAUNA

4.6.24 Direct mortality of individuals could occur during the construction phases in the absence of mitigation, and would be likely during the operational phase in the absence of appropriate design measures to reduce habitat fragmentation and provide safe routes for species such as badger to cross the relief road. The reduction in habitat availability and habitat fragmentation may have significant impacts upon local populations of fauna. Hedgerows and watercourses are likely to function as habitat corridors; removal of hedgerows and construction of bridges over watercourses is likely to reduce habitat connectivity. Changes to lighting could cause significant negative impacts on a variety of species; foraging and commuting behaviour of species including bats would be affected increasing effects resulting from habitat fragmentation, and changes to lighting may affect invertebrate behaviour and survival rates.

# WATER ENVIRONMENT

## POLLUTION RISKS

4.6.25 It is assumed that a relief road would be served by a surface water drainage system that would collect rainfall runoff from the new highway and most likely discharge to ground via infiltration or to an adjacent watercourse. The inclusion of appropriate treatment methods will prevent any notable impact of the scheme on surface water or groundwater quality.

## HYDROMORPHOLOGICAL RISKS

4.6.26 A relief road would introduce new crossings over the River Stour, Betchamp Brook (and its minor tributary) and the ordinary watercourse to the east of the Auberies Estate Lake. It is assumed that realignment of these watercourses will not be required, however the development of a relief road may result in the loss of natural river bed and / or bankside habitat. It is recommended that any proposed culverts maintain the natural river bed and bankside habitat as far as practicable to maintain ecological potential and connectivity along the watercourse; loss of these features could sever connectivity upstream of the relief road and affect watercourse hydromorphology.

4.6.27 With regard to the proposed crossings of the River Stour and Betchamp Brook, a relief road would introduce embankments within the fluvial floodplains of these watercourses. The ecological value of these floodplains has not yet been determined, but functional floodplains that experience regular inundation can provide valuable wetland habitats that may contribute to the overall catchment and Water Framework Directive objectives.

## FLOOD RISK RISKS

4.6.28 The location of a relief road within areas that have been identified to be at risk of fluvial and surface water flooding may pose risk to users of the road. It has been assumed that the relief road will be located on an embankment within all areas that have been identified to be at risk and, therefore, the road is likely to be elevated above adjacent flood waters.

4.6.29 A relief road could cause a significant increase in fluvial flood risk upstream of its alignment associated with the proposed crossings of the Betchamp Brook and, most significantly at the River Stour, where the proposed embankment is located within the mapped fluvial floodplain.

4.6.30 The proposed crossings are likely to restrict the flow of flood waters associated with the watercourses and cause water to ‘back up’ - potentially increasing upstream flood probability, extents and depths. Land that is most likely to be affected by a relief road comprises low density rural land and, therefore, the significance of increased flooding may not be as severe as it would be if the floodplains were located in a more urban area. However, any increase in flood risk should be appropriately assessed and, where necessary, mitigated. Hydraulic modelling of a relief road will therefore certainly be required to demonstrate no unacceptable increase in flood risk to people, property and infrastructure elsewhere, and to inform the design of appropriate mitigation.

4.6.31 Ideally a relief road would be elevated on piers as far as practicable to minimise the impact to flood flow conveyance. This is considered to be most relevant to the River Stour where approximately 500m of a relief road would pass through mapped fluvial floodplain. Alternatively, flood relief culverts through the embankment and upstream compensatory flood storage may be required for both locations.

4.6.32 Consultation with the Environment Agency will be required to inform the assessment of flood risk and design of mitigation. It is possible that the Environment Agency may want to explore the potential for a relief road to assist in downstream alleviation of flood risk by retaining flood waters upstream of the proposed embankments. This could reduce downstream flood probability, extents and depths to people, property and infrastructure located on the periphery of Sudbury. Review of OS mapping indicates that the majority of land within the area identified to be at flood risk downstream of a relief road would comprises low density and rural land which may not benefit from reduce flood flow. However, the potential impacts of climate change could significantly increase flood risk to Sudbury and, as such, some restriction to future flows may be beneficial.

## 4.7 APPRAISAL RESULTS

4.7.1 An indicative relief road alignment was compared against the “do nothing” scenario, where no relief road is built. The appraisal has assessed the quantifiable costs and benefits of a relief road to calculate the Benefit to Cost Ratio (BCR).

4.7.2 The monetised costs and benefits are shown in the Economic Efficiency of the Transport System (TEE) are shown in Table 4-1. Numbers reported in the table are in pounds millions, in 2010 price and values.

4.7.3 The non-monetised benefits including a high level qualitative assessment of the environmental impact have been reported in the Appraisal Summary Table (AST) in Appendix B.

4.7.4 According to WebTAG guidance the scheme has an **initial BCR of 3.32**, representing a high value for money business case.

4.7.5 These results do not take into account the wider economic growth and benefits that would occur as a result of the relief road, which should also be assessed within the Outline Business Case.

## 4.8 POTENTIAL WIDER IMPACTS

Although not monetised for the Strategic Outline Business Case, the following areas which are highly likely to result in significant value to the area will be assessed in any future Outline Business Case:

1. Dependant Development: development which is currently un-viable that would be enabled by a new relief road in the Western Corridor.
2. Agglomeration: The concentration of economic activity over an area. The benefits will be productivity improvement as a result of reduction in travel cost and of businesses being close to each other and close to workers.
3. Output change in imperfectly competitive markets: A reduction in transport costs to businesses so that firms can profitably increase output of goods or services that require use of transport in their production. This leads to a welfare gain as consumers' willingness to pay for the increased output will exceed the cost of producing it.
4. Tax revenues arising from labour market impacts: Changes in transport provision, in other words, changes in travel cost could affect labour market decisions. Two main types of labour market impact are assessed: labour market supply impact and the move to more or less productive jobs.
5. Regeneration opportunities within Sudbury and the A131 route.
6. Benefits of new construction jobs created when building the new river crossing – note that only jobs created for bridge construction have been included.
7. Journey Quality: improved journey experience for car drivers and passengers, pedestrians and cyclists in terms of congestion relief and comfort and this will manifest itself as improved ambiance/journey quality benefit.
8. Accident Savings: reduced number and severity of accidents based on drivers travelling less far and on higher quality roads.
9. Journey reliability: realised when the road congestion is relieved and journey times become more predictable.

## 4.9 WEBTAG TABULATED RESULTS

4.9.1 The Transport Economic Efficiency (TEE) benefits for a western relief road are shown in Table 4-1.

**Table 4-1: TEE Western Relief Road**

| Non-business: Commuting | ALL MODES TOTAL | | ROAD Private Cars and | BUS and COACH Passengers | RAIL Passengers | OTHER |
|---|---|---|---|---|---|---|
| *User benefits* | | | | | | |
| Travel time | 10.9 | | 10.9 | | | |
| Vehicle operating costs | | | | | | |
| User charges | | | | | | |
| During Construction & Maintenance | | | | | | |
| NET NON-BUSINESS BENEFITS: | 10.9 | (1a) | | | | |

| Non-business: Other | ALL MODES TOTAL | | ROAD Private Cars and LGVs | BUS and COACH Passengers | RAIL Passengers | OTHER |
|---|---|---|---|---|---|---|
| *User benefits* | | | | | | |
| Travel time | 43.4 | | 43.4 | | | |
| Vehicle operating costs | | | | | | |
| User charges | | | | | | |
| During Construction & Maintenance | | | | | | |
| NET NON-BUSINESS BENEFITS: OTHER | 43.4 | (1b) | | | | |

| Business | | | Goods Vehicles | Business Cars & | Passengers | Freight | Passengers | |
|---|---|---|---|---|---|---|---|---|
| *User benefits* | | | | | | | | |
| Travel time | 89.7 | | 89.7 | | | | | |
| Vehicle operating costs | | | | | | | | |
| User charges | | | | | | | | |
| During Construction & Maintenance | | | | | | | | |
| Subtotal | 89.7 | (2) | | | | | | |
| *Private sector provider impacts* | | | | | | Freight | Passeng | |
| Revenue | | | | | | | | |
| Operating costs | | | | | | | | |
| Investment costs | | | | | | | | |
| Grant/subsidy | | | | | | | | |
| Subtotal | | (3) | | | | | | |
| *Other business impacts* | | | | | | | | |
| Developer contributions | | (4) | | | | | | |
| NET BUSINESS IMPACT | 89.7 | (5) = (2) + (3) + (4) | | | | | | |

| TOTAL | | |
|---|---|---|
| Present Value of Transport Economic Efficiency | 144.0 | (6) = (1a) + (1b) + (5) |

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

4.9.2 The Public Accounts table (PA) for Option A is shown in Table 4-2.

**Table 4-2: Public Accounts table Western Relief Road**

| | ALL MODES | | ROAD INFRASTRUCTURE | BUS and COACH | RAIL | OTHER |
|---|---|---|---|---|---|---|
| **Local Government Funding** | TOTAL | | | | | |
| Revenue | | | | | | |
| Operating Costs | | | | | | |
| Investment Costs | | | | | | |
| Developer and Other Contributions | | | | | | |
| Grant/Subsidy Payments | | | | | | |
| NET IMPACT | | (7) | | | | |
| **Central Government Funding:** | | | | | | |
| Revenue | | | | | | |
| Operating costs | - | | | | | |
| Investment Costs | 42.1 | | 42.1 | | | |
| Developer and Other Contributions | | | | | | |
| Grant/Subsidy Payments | | | | | | |
| NET IMPACT | 42.1 | (8) | | | | |
| **Central Government Funding: Non-Transport** | | | | | | |
| Indirect Tax Revenues | 7.5 | (9) | 7.5 | | | |
| **TOTALS** | | | | | | |
| **Broad Transport Budget** | 42.1 | (10) = (7) + (8) | | | | |
| **Wider Public Finances** | 7.5 | (11) = (9) | | | | |

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

4.9.3 The Assessment of Monetised Costs and Benefits (AMCB) for a western relief road is shown in Table 4-3.

**Table 4-3: Assessment of Monetised Costs and Benefits Western Relief Road**

| | | |
|---|---|---|
| Noise | £0 | (12) |
| Local Air Quality | £0 | (13) |
| Greenhouse Gases | £3.2 | (14) |
| Journey Quality | | (15) |
| Physical Activity | £0 | (16) |
| Accidents | | (17) |
| Economic Efficiency: Consumer Users (Commuting) | £10.9 | (1a) |
| Economic Efficiency: Consumer Users (Other) | £43.4 | (1b) |
| Economic Efficiency: Business Users and Providers | £89.7 | (5) |
| Wider Public Finances (Indirect Taxation Revenues) | £7.5 | - (11) - sign changed from PA table, as PA table represents costs, not benefits |
| Present Value of Benefits (see notes) (PVB) | £139.7 | (PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11) |
| Broad Transport Budget | £42.1 | (10) |
| Present Value of Costs (see notes) (PVC) | £42.1 | (PVC) = (10) |
| OVERALL IMPACTS | | |
| **Net Present Value (NPV)** | £97.6 | NPV=PVB- |
| **Benefit to Cost Ratio (BCR)** | 3.32 | |

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

# 5 FINANCIAL CASE

## 5.1 INTRODUCTION

5.1.1 The Financial case provides a cost estimate and a breakdown of how the scheme will be funded.

## 5.2 COSTS ASSUMPTIONS

5.2.1 An indicative relief road highway design was used to estimate the construction costs. However, as the design is still at a very early stage, the costs are only approximate.

5.2.2 The high level costs of the proposed scheme have been produced with costs derived from SPONS Civil Engineering and Highways 2015 (Unit rates), plus an allowance for inflation to 3Q/2016.

5.2.3 Other costs, such as design fees, planning and building control fees, changes to utility services, land purchasing or compensation costs, environmental mitigation, out of hours working and traffic disruptions were estimated to ensure that the cost included all reasonable costs

5.2.4 The total estimated cost for the project is **£39,925,285.**

5.2.5 The opening year of the relief road has not been estimated at this time, therefore no attempt has been made to show the final out-turn cost.

## 5.3 FUNDING SOURCES

5.3.1 The following potential funding sources have been identified:

- Future Department for Transport Local funding streams
- Local Enterprise Partnership Funding
- Local Partners (Babergh District, Braintree District, Essex County Council)
- Suffolk County Council
- Private developers

5.3.2 A full risk evaluation has not been carried out on the project. This will be carried out during an Outline Business Case. A 50% Risk and Contingency allowance has been used to provide a robust assessment.

## 5.4 FINANCIAL SUSTAINABILITY

5.4.1 Maintenance of additional highway is not likely to pose any undue extra burden on the council.

# 6 COMMERCIAL CASE

## 6.1 COMMERCIAL VIABILITY

6.1.1 Suffolk County Council have recently embarked on two major highway schemes and will use the experienced gained to steer the delivery of the Sudbury relief road.

6.1.2 We believe we understand and have practical experience of the problems we are likely to encounter and have a realistic deliverable project plan to make sure the allocated resources are used on time.

## 6.2 PROCUREMENT STRATEGY

6.2.1 Following on from output based specification the procurement strategy suggested in this section needs to be managed, developed and recorded in the dynamic context of the development of the project itself.

6.2.2 This is based on the experience that assumptions made at a point in time may well change during future scheme development. Therefore continually reviewing the baseline and developed assumptions, and crucially being prepared to challenge and change when counterfactual evidence to the assumptions is identified, should result in the procurement being as closely aligned to the scheme objectives as possible.

6.2.3 It is recognised that the form of procurement itself plays a considerable role in the behaviour and project culture that is likely to be manifested during the physical delivery of the scheme. This is based on experience that people and organisations will both take less risk and react negatively or cautiously to issues requiring change and negotiation; if procurement and particularly the contractual terms and conditions are alien to them.

6.2.4 From this understanding we have taken the view that for a publically procured Civil Engineering scheme the New Engineering Contract (NEC) family of contracts and it is general procedures should be used in the procurement of this scheme for sourcing options 1 to 4 in 6.4. If sourcing options 5 and 6 from 6.4. are to be pursued then consideration of the variance between the terms and conditions in these existing framework contracts and the NEC should be undertaken and the impact evaluated in making a decision on sourcing options.

6.2.5 There are a number of key elements in the development of a successful procurement strategy:

a) Approval by Suffolk County Council, the New Anglia Local Enterprise Partnership and the Department for Transport, including the preferred strategy and financial analysis

b) Distillation of client and stakeholder objectives into tangible, measurable and achievable Employer's Requirements

c) Timing and type of engagement with Contractors/Providers

d) Assessment of NEC contract options

e) Market engagement and market testing

f) Consideration, Management and mitigation of the prevailing market conditions at the time of procurement and projected through the contract period

## 6.3 IDENTIFICATION OF RISK

6.3.1 The main risk of this scheme is unexpected additional costs either due to errors in the original costings or due to unanticipated technical problems.

6.3.2 A 50% risk and contingency budget has been used to provide assurance to the scheme.

6.3.3 Further detailed risk analysis will be undertaken during the Outline Business Case.

## 6.4 CONTRACT MANAGEMENT

6.4.1 The timescale for delivery is not known at present and allows for resourcing of the procurement and subsequent construction contract management to be undertaken at a later stage.

6.4.2 This core team would be supplemented as necessary from SCC's professional services supply chain, including, specialist procurement, legal and quantity surveying services.

# 7 MANAGEMENT CASE

## 7.1 INTRODUCTION

7.1.1 This chapter describes how the scheme will be delivered through project management best practice, confirming that the timescales are realistic and demonstrating that an appropriate governance structure is in place to oversee the project.

7.1.2 We have used an industry standard approach but also considered local variations.

7.1.3 The Management Case comprises of the following components:

- Evidence of similar projects;
- Programme and project dependencies;
- The governance structure (management framework);
- The scheme / project scheduling;
- The stakeholder management process;
- The risk management process;
- How the benefits set out in the economic case will be monitored and realised.

## 7.2 PREVIOUS SCHEME DELIVERY

7.2.1 Suffolk County Council has a proven track record of delivering large infrastructure schemes. A selection of key schemes have been listed in the table below, summarising the scope of works, capital costs, timescales for implementation and the procurement strategy employed. Opportunities will be taken, wherever possible, to improve delivery processes, through acting upon lessons learnt.

| No. | Contract | Description | Works Date | Form of Contract | Approximate Value | Project Delivered Successfully |
|---|---|---|---|---|---|---|
| 1 | Suffolk Highways Services Contract | Fabrication, construction and installation of a new pedestrian and cycle bridge over the A14 at Bury St Edmunds (Thingoe Hill to Northgate Avenue). | April 2014 – September 2014 | Through the Support Services Contract (NEC) | £1,500,000 | Yes |
| 2 | Suffolk Highways Services Contract | Construction of a flood alleviation scheme on the A12 at Blythburgh which included the installation of 800m of steel sheet piling and earth embankments. | May 2014 – September 2014 | Through the Support Services Contract (NEC) | £800,000 | Yes |
| 3 | Competitive Tender | The B1115 Stowmarket Relief Road was a major transport scheme consisting of a new road and alterations to the existing Stowmarket inner relief road (Gipping Way) to help to relieve congestion around the town centre, and to integrate new developments on the outskirts of the town with the town centre. It also included the provision of a bridge over the Norwich to London railway line and removal of a level crossing. | May 2008 – August 2010 | NEC Option C | £12,000,000 | Yes |
| 4 | Suffolk Highways Services Contract / OGC Framework / Competitive Tender | 'Ipswich Transport Fit For the 21st Century' (Travel Ipswich scheme) was an integrated scheme involving:<br>• competitive tender for reconstruction of two bus stations (Old Cattle Market and Tower Ramparts), one junction and associated works;<br>• OGC Framework Contract for provision of Variable Message Signing and Real Time Passenger Information system;<br>• Suffolk Highways Services Contract for the modernisation of traffic signal junctions and connection into and implementation of an Urban Traffic Management and Control system.<br>The scheme also included a detailed programme of | July 2012 – September 2015 | NEC Option B and Through the Support Services Contract | £21,000,000 | Yes |

| No. | Contract | Description | Works Date | Form of Contract | Approximate Value | Project Delivered Successfully |
|---|---|---|---|---|---|---|
| | | improvements to walking and cycling routes and crossings in and around the town centre. | | | | |
| 5 | Lowestoft Southern Relief Road Competitive Tender | Construction of a new 3km single carriageway relief road, as well as 750m of 'on-line' widening and other improvements to the existing carriageway in order to maximise key brownfield sites to the south of Lake Lothing. It also provides an Urban Traffic Management and Control (UTMC) system, including:<br>• SCOOT traffic signals;<br>• Bus priority measures;<br>• Real time passenger information;<br>• Variable Message Signing;<br>• Air Quality monitoring.<br>The associated traffic management measures were completed in early 2007, following the construction of the main relief road (Tom Crisp Way) in June 2006. | January 2005 – February 2007 | NEC Contract | £31,000,000 | Yes |
| 6 | Mutford Lock Refurbishment (Competitive Tender) | Construction of Mutford Lock lift bridges comprising a 12m span steel bascule bridge with fixed approach spans on both approaches and an 8.6m span timber overhead bascule pedestrian bridge, together with associated approach road / junction improvements and reconstruction of adjacent railway level crossing. | 1992 | ICE Conditions of Contract | £6,000,000 | Yes |
| 7 | Eastern Highways Alliance Framework 1 | The Lowestoft Northern Spine Road Phase 5 construction of a 1.5km section of single carriageway road with one associated roundabout connecting in to the Trunk Road network. | July 2014 – March 2015 | NEC Option B | £5,000,000 | Yes |

**Table 7-1: Summary of previous scheme delivery**

## 7.3 PROGRAMME /PROJECT DEPENDENCIES

7.3.1 The scheme is not reliant on any other schemes happening before or after for it to realise its benefits. No other future projects or schemes are dependent on it. It can be delivered, designed and costed independently and can progress in isolation.

## 7.4 PROJECT GOVERNANCE, ORGANISATION STRUCTURE AND ROLES

7.4.1 The management of the development and delivery of this project is being undertaken by Suffolk County Council as the lead authority.

7.4.2 PRINCESS, a specifically modified version of PRINCE2 will be used.

7.4.3 PRINCESS helps to apply best practice and supports good decision making to projects in Suffolk.

7.4.4 A well-functioning governance structure will be crucial to the successful delivery of the scheme. Suffolk County Council will therefore establish a Project Board, a Project Delivery Team and a Stakeholder Group to work together to deliver the scheme.

7.4.5 The Project Board's primary function is decision-making and review, and will provide strategic governance, as opposed the technical input of the Delivery Team. The Board will be responsible for:

- Managing the scheme and ensuring its successful delivery;
- Keeping track of the contractor's adherence to the project programme and completion of milestones, to ensure that the scheme is delivered within the constraints of time and budget;
- Providing guidance and support to the Project Manager;
- Authorising necessary funds and spending (to the Contractor);
- Stakeholder management; and
- Managing risks (a shared responsibility with the contractor).

7.4.6 The Programme Board will meet on a monthly basis and will be responsible for:

- Providing direction to ensure the success of the project in terms of the right activities, within budget, on time and to the correct quality standards;
- Ensuring sufficient resources are allocated to the programme;
- Providing direction and guidance on issues brought forward by the Programme Manager;
- Taking account of risks and their impact on achieving the scheme objectives;
- Approving (and where necessary requesting) changes to the programme management procedures, project plans and project deliverables;
- All publicity and dissemination of information about the project to an external audience; and formal closure of the project.

7.4.7 The design of the Scheme is to be undertaken by consultants through Suffolk County Council's supply chain partners for the provision of professional services. This will ensure that there is ongoing specialist expertise available, which will be vital for the successful implementation of the project.

7.4.8 The proposed governance structure for this project is shown below:

| MEMBER | KEY ROLES AND RESPONSIBILITIES | RESOURCED |
|---|---|---|
| **Project Director** | | |
| **Senior Responsible Owner** | Responsible for delivering the new capabilities through the management (planning and monitoring) of the project. | Geoff Dobson, Director of Resource Management, Suffolk County Council |
| **Corporate financial manager** | Responsible for managing the project budget, monitoring expenditures and costs throughout the project. | Tracey Woods, Chief Accountant (Financial Control), Suffolk County Council |
| **Senior Supplier** | Responsible for the accountability of the quality of deliverables produced by the design consultants. | Jerry Pert, Kier Group (Suffolk Highways) |
| **New Anglia Local Enterprise Partnership** | New Anglia Local Enterprise Partnership representative | Chris Starkey, Managing Director, New Anglia Local Enterprise Partnership |
| **Communications Lead** | Responsible for communication and stakeholder engagement | Adam Barnes, Senior Strategic Communications Officer, Suffolk County Council |
| **Project Director** | Responsible for the delivery of a product that is relevant, to the required standard of quality within the specified constraints of time and cost<br>Responsible for project delivering benefits defined in business case | Dave Watson, Suffolk County Council |
| **Principal Designer** | | |
| **Design Team Director** | **Responsible for** ensuring **the production of the product defined by the project director. Delivering a quality product on time and to budget** | To be appointed |
| **Design Team Manager** | Responsible for managing the multi-disciplinary team to deliver a quality product on time and to budget. | To be appointed |
| **Other Roles** | | |
| **Environmental Officer** | Responsible for ensuring the project adequately considers and mitigates its environmental impact. | Nick Collinson, Head of Natural and Historic Environment, Suffolk County Council |
| **Transport Policy** | Responsible for ensuring the project fits with Suffolk Transport Policy | Graeme Mateer, Transport Policy Specialist, Suffolk County Council |
| **Economic Policy** | Responsible for ensuring the project fits with Suffolk Economic Policy | Mike Dowdall, Economic Development Manager, Suffolk County Council |
| **Project Assurance** | Provides an independent review of project progress | TBC |

**Table 7-2: Key roles and responsibilities**

# Appendix A

**TABLE OF DEVELOPMENTS**

| Site No. | Planning app reference number | District Council | Development Address | Description | Residential (dwellings) | Business (floorspace m2) | Reatil and Commercial floorspace (m2) | Mixed use (m2) | Status |
|---|---|---|---|---|---|---|---|---|---|
| 1 | N/A | Ipswich Borough Council | Cornhill Regeneration | The project by the Ipswich Vision Group aims to inject new life and business into the heart of the town. | | | Unknown | | Committed development |
| 2 | c/08/0500 | Suffolk Coastal | Land south of Martinsyde, Beardmore Park, Martlesham heath, Martlesham. | Erection of non-food retail unit comprising 2, 839sqm buildling & 734sqm external trade yard (3,573sqm total), with car parking & associated landscaping. | | | 3,573 | | Committed development |
| 3 | DC/15/2004/RG3 | Suffolk Coastal and Waveney | Former Sanyo factory site | Outline Application for up to 252 residential units (Class C3) and associated infrastructure; and Full Application for development of 48 residential units, 2 hectares of community open space including replacement dual-purpose football pitch, changing facilities and equiped play area, associated highway, engineering and landscaping works, including land raising, relocation of existing pumping station and temporary use of part of site for surface level car park associated with the community open space. | 300 | | | | Committed development |
| 4 | C/07/0362 | Suffolk Coastal | Land North Side of Church Hill, Saxmundham | Construction of 145 dwellings including 49 affordable units with associated access and the provisions of public open space. | 145 | | | | Committed development |
| 5 | C12/0068/FUL | Waveney | Land Between Orford Road, Langer Road and Manor Terrace, South Seafront, Felixstowe | Construction of maritime park to include play areas, gardens, toilets and public car parking together with 158 dwellings. | 158 | | | | Committed development |
| 6 | B/06/01488/OUT | Barbegh | Land South of Lady Lane and North of, Tower Mill Lane, Hadleigh, | Development of up to 170 dwellings, 5 hectares of industrial/commerical. | 170 | | 50,000 | | Committed development |
| 7 | SE/09/1283 | Edmundsey | Land at North West Haverhill | 1,150 Residential units, a primary school and local facilities. | 1,150 | | | | Committed development |
| 8 | 12/01472/FUL | Braintree | Land at Highfieilds Farm, Highfields Lane, Kelvedon Essex | Construction of a 36.54hectare solar park, to include the installation of solar panels to generate electricity. | | 360,000 | | | Committed development |
| 9 | 15/00582/FUL | Braintree | Land North of A131 Avenue East, Skyline 120, Great Notley, Essex | Erection of 18 units for B1, B2 and B8 uses along with ancilliary service yards, car parking, cylcle and motor cycle parking. | | 6,290 | | | Committed development |
| 10 | 15/00799/OUT | Braintree | Land at North East, Witham Forest Road, Withim, Essex | Application for 222 residential dwellings. | 222 | | | | Committed development |
| 11 | 14/01580/OUT | Braintree | Land south of Oak road Halstead, Essex | Application for the erection of up to 292 residential dwellings. | 292 | | | | Committed development |
| 12 | 06/01143/OUT | Braintree | Land on the south side of Maltings Lane, Witham, Essex | Erection of 268 residential dwellings, B1 business park, school | 268 | | | | Committed development |
| 13 | N/A | Babergh | Former Brett Works, Hadleigh | 3.7ha of land allocated for retail use. | | | 37,000 | | Land allocated in Development Plan Document |
| 14 | N/A | Babergh | Land to East of Sudbury / Great Cornard | Land allocated for employment or residential land use. | | | | | Land allocated in Development Plan Document |
| 15 | N/A | Babergh | Eye Airfield | Land allocated for employment or residential land use. | | | | | Land allocated in Development Plan Document |
| 16 | N/A | Babergh | Land North of Anglia Business Park - Whitton | Land allocated for Ccommercial and / or employment | | | | | Land allocated in Development Plan Document |
| 17 | c/09/0555 | Suffolk Coastal | Adastral Park, Martlesham Heath, Martlesham | Refurbishment of Adastral Park and development of adjoining land to provide:up to 60, 000 m2 additional employment floorspace (B1); erection of up to 2000 dwellings: mixed-use local centre; education; hotel; energy centre;public park. | 2,000 | 60,000 | | | Proposed development |
| 18 | B/15/01718 | Babergh | Chilton Woods- Land north of, Woodhall Business Park, Sudbury | Application for 1,100 residential dwellings, general industrial, storage and distribution uses office development. | 1,100 | 61,670 | | | Proposed development |
| 19 | B/15/00673 | Babergh | Land north west of, Moores Lane, East Bergholt | Erection of 144 dwellings including 360sqm of courtyard development to contain 4 B1 units and public open space. | 144 | | | 360 | Proposed development |
| 20 | 15/01319/OUT | Braintree | Land West of Panfeild Lane, Braintree, Essex | Application for a mixed use development, which includes, 600 residential dwellings. | 600 | | | | Proposed development |
| 21 | 15/01193/FUL | Braintree | Land between London Road and East of Pods Brook Road Braintree Essex | Erection of 215 residential dwellings and new vehicular access from London Road. | 215 | | | | Proposed development |
| | | | | | **6764** | **487960** | **90573** | **360** | |

# Appendix B

## APPRAISAL SUMMARY TABLE

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Babergh and Mid Suffolk District Councils (2015) Joint Babergh and Mid Suffolk District Council Landscape Guidance [i]

**Appraisal Summary Table**

| Date produced: | Jan-17 |
|---|---|

| Contact: | |
|---|---|
| Name | Marc Thomas |
| Organisation | WSP \| PB |
| Role | Associate Director |

| | |
|---|---|
| **Name of scheme:** | Sudbury Relief Road |
| **Description of scheme:** | An indicite Western Relief Road has been proposed to the West of Sudbury with a length of 3.5km including 6 bridges, 2 underpass drains, 3 junctions and 2 underpass accesses. The Relief Road commences from the Sudbury Road / Melford Road / A134 roundabout and meets the A131 to the South. |

| Impacts | | Summary of key impacts | Assessment | | | |
|---|---|---|---|---|---|---|
| | | | Quantitative | Qualitative | Monetary £(NPV) | Distributional 7-pt scale/ vulnerable grp |
| Economy | Business users & transport providers | The Relief Road is expected to largely resolve the congestion problems in the town, and provide journey time saving benefit for though traffic as well as road users on the current town centre route. | **Value of journey time changes(£)** £43<br>**Net journey time changes (£)**<br>0 to 2min: £0 \| 2 to 5min: £43 \| > 5min: £0 | | £43.40 | |
| | Reliability impact on Business users | There is a reliability benefit as a result of congestion relief, journey time becomes more predicable. | Assessed based on economic efficiency | | £90 | |
| | Regeneration | No negative or positive impacts identified | Not assessed in detail | Neutral | N/A | |
| | Wider Impacts | No negative or positive impacts identified | Not assessed in detail | Neutral | N/A | |
| Environmental | Noise | The operation of the bypass has the potential to have an adverse effect on noise sensitive receptors within 300m of the scheme. Receptors are likely to include Kitchen Farm, dwellings at Kitchen Hill, New cottages, Barley Mill cottage and dwellings on Melford Road. On the other hand, a reduction in traffic flows on the A131 going through Sudbury is likely to result in a reduction in noise levels for those propertis adjacent to the main road. | An indicative quantitative assessment has been undertaken only doing a highlevel review of the traffic data. The traffic forecast suggests that the A131 through town will observe a reduction in traffic flows of 30 to 40% in the year 2021. This has the potential to reduce the noise climatefor those properties by 2 dB. | A high level assessment has been undertaken to determine the likely noise impact. It is considered that sensitive receptors in the town centre are likely the subject to a minor beneficial impact. On the other hand, receptors near the relief road may be subject to a moderate adverse impact, although mitigation may reduce this.The risk on the number of dwellings eligible under the Noise Insulation Regulations 1975, as amended 1988, is low. | | |
| | Air Quality | A relief road would likely result in an overall benefit to air quality. $NO_2$ concentration reductions are anticipated within the AQMA, as well throughout the town of Sudbury.<br>Disbenefits to air quality are anticipated within 200m of a relif road, however there are very few (<10) human receptors, and no statutory designated ecological sites, within this area. | | Beneficial | | |
| | Greenhouse gases | The TUBA result indicates a decrease of greenhouse gas emissions across the study area and an overall Greenhouse Gas Benefit. | Change in non-traded carbon over 60y (CO2e)<br>Change in traded carbon over 60y (CO2e) | | £717,000 | |
| | Landscape | The development of a relief road is likely to adversely affect the special qualities of designated landscapes nearby. It would also adversely affect the cultural associations with Gainsborough, particularly on views from Auberies. The introduction of engineered landforms would be at variance with the natural landform, and the loss of hedgerows would adversely affect the historic field pattern. Due to the likely large visual influence it is likely to cause adverse effects on views and visual amenity from surrounding sensitive visual receptors. The area's strong sense of tranquillity would also be adversely affected due to increased traffic, noise and visual appearance of the scheme. Considering the high sensitivity of much of the landscape and visual resource and the likely high magnitude of change, the level of effect is considered to be Large adverse overall. | | Large Adverse | | |
| | Townscape | N/A | | | | |
| | Historic Environment | The development of a relief road is likely to be intrusive in the settings of 23 assets and will affect the appreciation and understanding of the historical associations and functions of the assets. The setting of two historic landscapes and Sudbury Conservation Area are also likely to be adversely affected by a relief road. However, a relief road is expected to have a beneficial impact on the experience within Sudbury Conservation Area. A relief road could also have direct physical impact on the remains of known non-designated assets although adequate mitigation can be specified. Additionally, there is a high potential for previously unrecorded buried archaeology from the prehistoric to the modern period to be present. | | Large Adverse | | |
| | Biodiversity | The relief road could cause significant impacts to a variety of ecological features including the Railway Walks Local Nature Reserve and the River Stour and Associated tributaries though habitat loss, degradation and fragmentation. Survey data regarding the populations of notable and protected fauna is not available at this stage, however based on the habitats present it is reasonable to conclude that a range of species will be present including bats (roosting and foraging), birds (overwintering and breeding), reptiles, amphibians, otter and water vole. The impacts of habitat fragmentation and lighting upon these species may be significant. | | Moderate Adverse | | |
| | Water Environment | A relief road would cross over two main rivers, the River Stour and Betchamp Brook, and an ordinary watercourse to the east of the Auberies Estate lake. Loss of natural channel bed and bankside habitat could affect the hydromorphological quality of the watercourses and connectivity along the watercourse. A relief road on embankment within the floodplain of the River Stour could also have a notable effect on the wetland value of this floodplain. A relief road would pass through the fluvial floodplain associated with the River Stour and Betchamp Brook. Restricting flood flow conveyance could have significant impacts to flood risk upstream of the scheme. This is particularly significant for a relief road on embankment that passes through the floodplain of the River Stour. | | Large Adverse | | |
| Social | Commuting and Other users | The Relief Road is expected to largely resolve the congestion problems in the town, and provide journey time saving benefit for<br>though traffic as well as road users on the current town centre route. | **Value of journey time changes(£)** £90<br>**Net journey time changes (£)**<br>0 to 2min: £0 \| 2 to 5min: £90 \| > 5min: £0 | | £89.70 | |
| | Reliability impact on Commuting and Other users | There might be reliability benefit as a result of congestion relief, journey time becomes more predicable. This has not been assessed in detail. | Assessed based on economic efficiency | Slight Beneficial | £10.90 | |
| | Physical activity | No negative or positive impacts identified | Not assessed in detail | Neutral | N/A | |
| | Journey quality | Journey quality may be improved from a new wider Relief Road, and reduced congestion on the road. This has not been assessed in detail. | Not assessed in detail | Large Beneficial | N/A | |
| | Accidents | The scheme will result in a reduction in PIA's. | Assessed based on the previous study. | | £4.50 | |
| | Security | The level of security for road users on the Relief Road and those remaining in the town centre will be improved. | Not assessed in detail | Moderate Beneficial | N/A | |
| | Access to services | No negative or positive impacts identified | Not assessed in detail | Neutral | N/A | |
| | Affordability | No negative or positive impacts identified | Not assessed in detail | Neutral | N/A | |
| | Severance | No negative or positive impacts identified | Not assessed in detail | Neutral | N/A | |
| | Option and non-use values | No negative or positive impacts identified | Not assessed in detail | Neutral | N/A | |
| Public Account | Cost to Broad Transport Budget | | Capital investment on constructing the Relief Road. | | £42.10 | |
| | Indirect Tax Revenues | There is a minor revenue benefit on indirect taxations from fuel sale, as more road traffic would be attracted. | Estimated based on increased vehicle kilometres | | £7.50 | |