

# **A47 Acle Straight: Case for Investment**



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## 1 Executive Summary

In the 2014 Autumn Statement the Government committed over £300m of investment to the A47, including a number areas to be upgraded from single to dual carriageway, as part of the Road Investment Strategy period 1 (RIS 1), 2015-2021.

Over the past 15 years, a number of studies have been undertaken relating to improvements on the A47. Fifteen of these studies have been reviewed in detail and have highlighted key themes regarding highway capacity, safety, environmental constraints, economic growth, community severance, non-motorised users and highway maintenance.

In the coming years it is expected that East Anglia will see unprecedented growth in both housing and jobs. With the main sectors of advanced manufacturing, agri-tech, ICT/digital and life sciences leading the way, alongside traditional key regional sectors of agriculture, professional and business services, ports and logistics and tourism.

A fast, reliable transport network with sufficient capacity is key to unlocking this growth. However, one of the areas that is currently underperforming in this regard is the Acle Straight section of the A47. At present, this single carriageway section is plagued by a number of issues, all of which negatively affect the economy of the wider region.

This report demonstrates how the proposed improvements to the A47 Acle Straight will be beneficial, both strategically and economically. The proposal for investment in the scheme presents an opportunity to aid in growth of jobs and housing in Great Yarmouth, Lowestoft, Greater Norwich and the surrounding areas, as well as complementing other planned schemes in the area.

In addition to reducing overall journey times, congestion and delay along this section of the A47, the proposed scheme is expected to also improve the resilience of the local road network, improve journey time reliability to and from Great Yarmouth, and reduce numbers of road accident casualties in the region. It will accomplish those objectives whilst realising a high value for money, and in doing so will be a catalyst for future growth in the region.

## 2 Introduction

### 2.1 Overview

The A47 is a key strategic east-west route across Norfolk and is an important route within the Trans-European Network. It links key centres across the county, including Great Yarmouth, Norwich and King's Lynn, as well as linking Norfolk to the East Midlands and to other strategic roads serving the entirety of the country.

Given the A47's importance to the County and the Region, there has been a long standing aspiration amongst stakeholders across Norfolk and the wider East Midlands and Eastern regions for the complete dualling of the A47 between the A1 and Great Yarmouth. These stakeholders have formed the A47 Alliance.

In the 2014 Autumn Statement the Government committed over £300m of investment to the A47, including a number of areas to be upgraded from single to dual carriageway, as part of the RIS 1 period . However, a number of sections were not identified as dualling schemes to be taken forward in the RIS 1 period. Norfolk identified two key sections as their priorities for RIS 2: between Tilney and East Winch (South of King's Lynn), and the Acle Straight (between Norwich and Great Yarmouth) There have been a number of previous studies undertaken over the past 10-15 years which have considered issues on the A47, including congestion, safety, environmental constraints and economic growth.

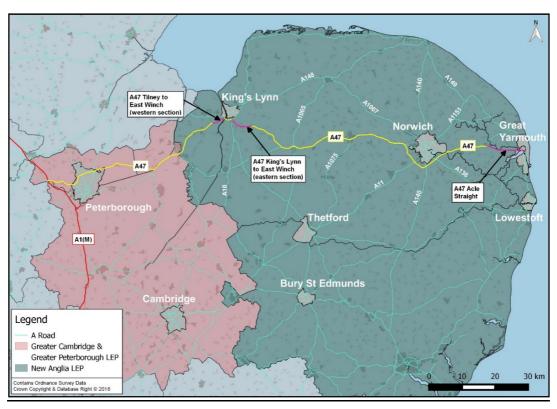


Figure 2-1: Proposed sections for dualling of the A47

## 2.2 Purpose of this report

This report focuses on the Acle Straight section of the A47, and sets out the work undertaken to identify the Strategic and Economic Cases for Investment. A separate report has been produced focusing on the Tilney to East Winch section of the A47.

## 2.3 Overview of the Acle Straight

The Acle Straight forms part of a strategic corridor between the two key growth areas of Norwich and Great Yarmouth. It is a single carriageway road approximately 11.5km in length which passes through the Broads National Park, as illustrated in Figure 2-2

As part of the RIS 1 programme there are plans for small scale safety improvements on sections of the Acle Straight. However, this will not address the identified issues or support future growth aspirations. This report presents the case to upgrade the Acle Straight to a two-lane dual carriageway.

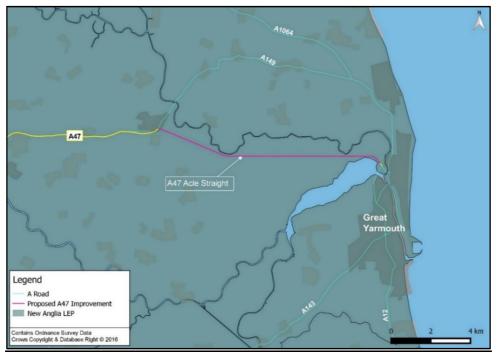


Figure 2-2: Acle Straight section of A47

## 3 The Strategic Case for Investment

## 3.1 Introduction

This document describes the Strategic Case for improvements to the A47 Acle Straight. The Department for Transport (DfT) guidance document *'The Transport Business Case'* outlines the elements that should be covered. It states that the Strategic Case should demonstrate whether an investment is needed, outlining a clear rationale for making the investment, including its strategic fit, and also to detail how the investment will further the aims and objectives of both national and subnational government bodies.

## 3.2 Business Strategy and Policy Fit

Improvements to the A47 Acle Straight are being pursued by NCC acting as a member of the A47 Alliance. However, Highways England would be the scheme promoter should the project progress. The scheme is considered a fundamental opportunity to support the future transport and economic strategies of East Anglia.

This chapter identifies how improvements to the A47 Acle Straight are in accordance with a range of relevant strategies and policies. The principal driver for change is to support economic growth.

### 3.2.1 A47 Alliance

The A47 Alliance is made up of business communities, local authorities, MPs and stakeholders along the whole of the A47 route between Peterborough and Lowestoft. The Alliance's partners also include both the Greater Cambridge Greater Peterborough (GCGP) and New Anglia Local Enterprise Partnerships (LEPs). The A47 Alliance's stated goal is the complete dualling of the A47.

### 3.2.2 New Anglia Strategic Economic Plan (2014)

Norfolk is part of New Anglia LEP, which also includes Suffolk. The vision for the LEP is set out in its Strategic Economic Plan (SEP), which identifies the growth ambitions of the organisation up to 2026. The SEP identifies the following targets between 2012 and 2026, supplemented by its impact report published in July 2016, and outlines the progress thus far:

- Delivering 95,000 additional jobs, of which 32,300 jobs have been delivered to date (34%)
- Creating 10,000 new businesses, of which 4,980 (50%) have been created to date
- Improving productivity by narrowing the gap with the UK average from 7.8% in 2012, on which limited progress has been made thus far, and the current gap stands at 7.6%
- Delivering 117,000 new houses, of which 18,850 (16.1%) have been delivered to date

The key sectors that are expected to deliver this growth are advanced manufacturing, agri-tech, energy, ICT/digital and life sciences. In addition, the

sectors underpinning New Anglia's economic performance are agriculture, professional and business services, ports and logistics and tourism. The New Anglia LEP recognises that the A47 is of critical importance to the region and is a key strategic link connecting Great Yarmouth with Norwich, King's Lynn and Peterborough, where it joins the A1.

The strategic plan highlights that the A47 serves a number of growth locations along its corridor, whilst Great Yarmouth is identified among the key growth locations in New Anglia. The town's coastal location shapes the nature of its economy and growth prospects, with the borough's economy underpinned by the offshore energy sector, the port and the visitor economy.

The establishment of the two Enterprise Zones (EZs) in the borough of Great Yarmouth – Beacon Park and South Denes – aims to support the development of the energy sector and the borough's wider economy, attracting new businesses and job creation. The long term vision is to have 150 to 200 businesses across the two EZs, directly creating 9,000 new jobs by 2025 and a further 4,500 jobs indirectly in the supply chains. The area is also the location of one of the UK's six Centres for Offshore Renewable Engineering, which are intended to attract investment, particularly in wind farm assembly and manufacturing.

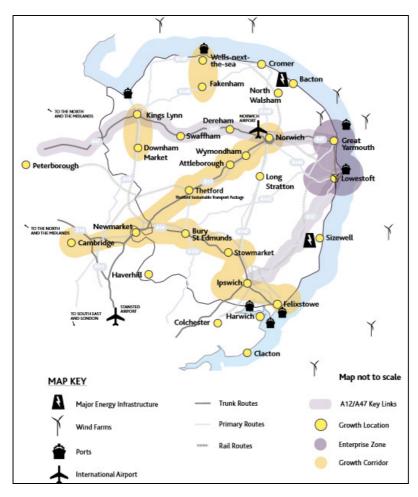


Figure 3-1 New Anglia LEP: Growth Locations

3.2.3 Greater Cambridge Greater Peterborough LEP Strategic Economic Plan (2014)
This document sets out the LEP's ambition to make the region one of UK's and
Europe's key assets, successfully competing on the international stage with a strong presence of European and global businesses.

Population growth forecasts over a 20 year period estimate that there will be approximately 300,000 more people living in the LEP area by 2031. Looking at existing and emerging plans together, around 156,000 additional homes are planned across the LEP area as a whole over the next twenty years. These new homes will meet the future population's requirements and will facilitate continued economic growth of the area. They will, however, place significant demands on the need for upgraded and new supporting infrastructure, including the transport network.

The SEP refers to the A47 being the most important east-west route in the north of the LEP area, and it highlights the fact that the mix of functions and varying quality of the route leads to delay and unreliable journey times. Significant levels of growth along the route, including housing and employment development at King's Lynn, are unlikely to come forward without improvements to the A47.

- 3.2.4 Highways England (HE) Strategic Business Plan (2014)
  This plan, for the period of 2015-2020, describes how the RIS will be delivered, as well as the requirements of the Performance Specification, the latter of which includes maximising lane availability and supporting the smooth flow of traffic as one of its key areas.
- 3.2.5 East of England Route Strategy Evidence Report (2014)
  This report collates evidence on network performance issues and identifies challenges and opportunities facing the Strategic Road Network (SRN), including the A47. This evidence base led to an announcement in the government's 2014 Autumn Statement of a scheme that would implement improvements at key hotspots along the A47 Acle Straight with the possible installation of safety barriers, junction improvements and road widening or capacity improvements.
- 3.2.6 Norfolk County Council Local Transport Plan 3 (2011)
  The Local Transport Plan identifies the A47 as one of Norfolk's key strategic connections. This plan notes that the A47 experiences unreliable and lengthy journey times due to a lack of capacity, which in turn negatively impacts the efficiency of the European TEN-T network. It emphasises that improvements to the A47 are a high priority for NCC and that, through the A47 Alliance, NCC will look for opportunities to take forward improvement schemes on sections not included in the government's RIS.
- 3.2.7 Joint Core Strategy for Broadland, Norwich and South Norfolk (Adopted 2014)
  This strategy highlights that the A47 has limitations, in particular to the east of
  Norwich. It discusses the need to reduce the significant stretches of the A47 that
  remain single carriageway, and that new developments in the area require
  improvements to the A47 and its junctions. It states that "Supported strategic

improvements to aid delivery [of growth] and economic success are... A47 improvements to reduce the significant stretches that remain single carriageway."

## 3.2.8 Great Yarmouth Borough Council Local Plan (2014)

This plan identifies land for housing and employment as proposed in areas well accessed by the A47. It suggests dualling of the A47 between Great Yarmouth and Acle at the earliest possible date in order to address issues of safety and congestion.

## 3.3 Opportunities

Improvements to the Acle Straight section of the A47 will aid delivery of future developments planned in the various local authority areas which are accessed by the A47 and support economic growth in the region. Furthermore, addressing the capacity issues on these sections of the A47 will aid in congestion relief, whilst also addressing safety issues.

## 3.3.1 Supporting economic growth

Norfolk's employment has grown by 7% in the past five years – a growth which was largely driven by the areas of Norwich and Breckland. Figure 3-2**Error! Reference source not found.** shows the sectors with growth of more than 1,000 employees between 2010 and 2015, alongside their location quotients to highlight employment concentrations.

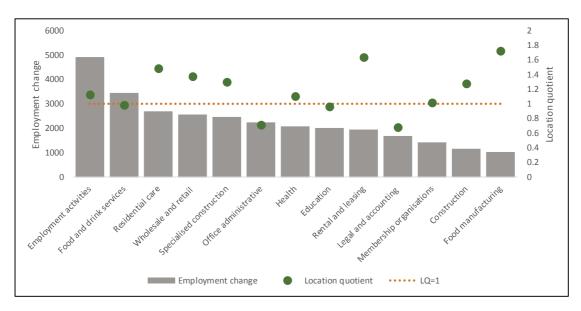


Figure 3-2 Employment change in Norfolk: highest growth sectors, 2010-2015 (Source: BRES 2010-2015)

This data shows that elements of professional services (including employment activities, office administrative services and legal) are among the largest growth sectors, as well as elements of the visitor economy (including food and drink serving, rental and leasing services). Food manufacturing stands out as being almost twice as concentrated in Norfolk as in the rest of the UK, presumably reflecting the strategic move toward food processing and agri-tech activities.

Improvement to the A47 Acle Straight will aid in the delivery of developments planned in the various local authority areas accessed by the A47, namely Great Yarmouth, Lowestoft and Greater Norwich.

## Great Yarmouth and Lowestoft

The performance of the Great Yarmouth and Lowestoft economy is shaped by the towns' location on the east coast and by its sectoral mix, including a historic dependence on the port and its related sectors, as well as by the tourism sector. However, the offshore energy sector presents a major opportunity for the local economy by offering the potential to grow employment across a range of direct and supply chain sectors.

The Great Yarmouth Borough Council Core Strategy, adopted in December 2015, states that 35% of all new development in the borough will be in the main towns, including Great Yarmouth. 7,140 new homes are planned for the area, with approximately 5,000 of those planned in Great Yarmouth, by 2029. The population of the borough is also forecast to increase by 9% between 2013 and 2029 and it is anticipated that there will be a demand for around 35ha of employment land up to 2030.

Lowestoft continues to be the focus for development and growth in Waveney and is identified as a priority regeneration area along with Great Yarmouth. Between 1991 and 2001 the population grew by 6,650 (6.23% slightly above the Suffolk average). 7,000 new dwellings are planned between 2001 and 2025 along with 5,000 new jobs in the same period.

An EZ has been created covering six sites in and around Great Yarmouth and Lowestoft. The two designated employment sites at South Denes and Beacon Park, Great Yarmouth, both of which are partly covered by EZ status, will be a key driver of growth both in offshore and related sectors and in other business sectors. Both sites were subject to a Local Development Order in 2012, providing a simplified planning regime. It presents considerable opportunities for Great Yarmouth, and could unlock the potential to deliver 9,000 direct and 4,500 indirect jobs through the EZs, boosting employment in the borough. Four sites have been created in Lowestoft: Mobbs Way, Riverside Road, South Lowestoft Industrial Estate and Ellough Business Park. The growth in these sectors will drive the general demand for improvements to the A47 due to increased vehicle traffic that will be generated by the increase in jobs and businesses.

## **Greater Norwich**

The Joint Core Strategy for Broadland, Norwich and South Norfolk sets out the long-term vision and objectives for the area, identifying broad locations for housing and employment growth as well as changes to transport infrastructure. The document sets out the need to plan for 37,000 new homes and the creation of 27,000 jobs in the area, whilst minimising the impact on the environment. The Norwich area is the

major focus, but smaller service centres such as Acle are also earmarked for the provision of 100-200 dwellings.

## **Summary**

The EZ covering large parts of Great Yarmouth and Lowestoft will be a key driver of growth, especially in the offshore energy and related sectors to help bring forward 9,000 direct and 4,500 indirect jobs across the area. Furthermore, approximately 14,000 new homes are planned across Great Yarmouth and Lowestoft. Improving the A47, including the dualling of the Acle Straight, will be a key element in helping to bring forward these growth aspirations.

Also, the plans for 37,000 new homes and the creation of 27,000 jobs in the Greater Norwich area will further increase demand along the A47 between Greater Norwich and between the Enterprise Zone of Great Yarmouth and Lowestoft. These aspirations for growth will need to be matched by investment in transport infrastructure, particularly along the A47.

Work by Mott MacDonald (*A47 Wider Economic Benefits*, August 2012) set out that with transport improvements in Great Yarmouth, including trunk road junctions and the TRC, but excluding Acle Straight dualling, there would be 3,900 more jobs and an increase of £146m per annum GVA. The same report noted that there would be benefits associated with dualling sections of the road that do not bear direct relation to unlocking sites, and therefore GVA.

## 3.3.2 Supporting complementary transport schemes

There are a number of ongoing and planned transport schemes that would complement investment in the A47 Acle Straight. Together they would help to lock-in the benefits of investment.

## Highways England investment

As part of the RIS 1 period, Highways England has identified schemes to address congestion hotspots on the A47. This includes dualling of single carriageway sections and various junction improvements. A route map outlining the schemes along the A47 corridor is shown in Figure 3-3.

The improvements to major A47 and A12 junctions at Great Yarmouth and Lowestoft will help to alleviate congestion at those locations, whilst the dualling of the A47 between Blofield and North Burlingham will provide additional capacity and offer a continuous dual carriageway between Acle and Norwich. Upgrading the Acle Straight section to dual carriageway would complement the planned RIS 1 investment, providing a significantly enhanced route between Lowestoft, Great Yarmouth and Norwich. It would complete the dual carriageway, trunk road connection to the towns of Lowestoft and Great Yarmouth.

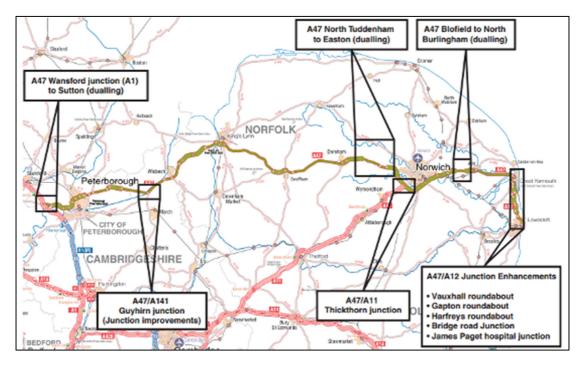


Figure 3-3 Highways England A47 Corridor Improvement Programme

### Local Majors Fund

In August 2016 the DfT granted £1.1m from the Local Majors Fund to NCC in order to prepare and submit an Outline Business Case (OBC) in support of the proposed Great Yarmouth Third River Crossing (GYTRC). The crossing is intended to provide much needed connections between the strategic road network and the fast growing energy-related EZ in the south of Great Yarmouth. The new bridge would also help to reduce traffic levels on the existing bridges and in historic areas, whilst also improving journey times.

NCC submitted the OBC to the DfT at the end of March 2017 and at the time of this report are awaiting the outcome. The provision of the third river crossing in combination with RIS1 improvements would complement the dualling of A47 Acle Straight. This would enhance the connectivity of the Great Yarmouth peninsula and Outer Harbour to the strategic road network, supporting the economic growth and regeneration of the area.

### Local Growth Fund

New Anglia LEP was allocated £9m for the Great Yarmouth Package, which is intended to deliver measures to connect key employment and business sites, maintain the existing road network, improve facilities for sustainable modes and ease congestion.

Schemes currently under development include improvements to junction hot-spots in Great Yarmouth, and these junction improvements would further complement the

GYTRC, RIS 1 improvements and the Acle Straight by helping to relieve congestion and improve connectivity.

### 3.4 Problems

A number of issues have been identified in the area that are directly or indirectly related to the present condition of the A47. These include economic and environmental constraints, as well as those related to congestion, safety, connectivity, resilience and maintenance.

## 3.4.1 Underperforming economy

New Anglia's economy contributes £35bn to the UK economy each year, of which £19bn is driven by Norfolk. Norfolk's economy has seen steady growth since 2011, increasing annually by 4% on average, which is also in line with the national average.

However, productivity challenges remain, including the fact that New Anglia's Gross Value Added (GVA) per head is £20,970, compared to £25,140 across the UK Furthermore, the GVA gap has widened somewhat between 2012 and 2014<sup>1</sup>.

Within Norfolk itself, GVA per head is even lower than over the entirety of New Anglia, at £18,650 in North and West Norfolk, whilst it is higher in Norwich and East Norfolk at £23,340.

A contributing factor to the underperforming productivity is the lack in higher level skills. Approximately only one third of the economically active, working-age population has higher level skills (Level 4 and above) in Norfolk compared to over 40% nationally. The challenge is particularly starker in Great Yarmouth where less than a fifth of the population possess those higher level skills.

Norfolk has over 348,300 employees across approximately 32,230 businesses. Employment levels have been recovering steadily since the economic downturn in the late 2000s, and the annual employment growth rate has been roughly in line with the national average over the past five years.

However, it is also important to note that employment in the county is concentrated in low value sectors, with wholesale and retail making up almost a fifth of employment in Norfolk. Locally, employment trends also appear volatile. For example, in Great Yarmouth there was no overall employment change between 2010 and 2015, and the annual employment growth rates fluctuated significantly during that time, ranging from 5% growth to 3% contraction.

## 3.4.2 Traffic congestion

The A47 Acle Straight is a single carriageway with at-grade roundabouts at each end. Traffic is constrained by a lack of capacity, resulting in low speeds during peak

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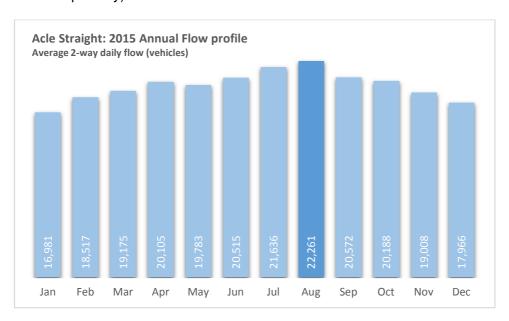
<sup>&</sup>lt;sup>1</sup> 2014 is the latest year for which LEP data is available.

periods. A review of the available evidence shows that this section of the A47 has high vehicle flows including a high use by HGVs resulting in longer and more unreliable journey times, as well as delays and congestion at junctions.

Traffic Flow Data System (TRADS) data analysis has revealed that the two-way Annual Average Weekday Flow (AAWF) on the A47 at Acle Straight is approximately 21,000 vehicles, including a significant HGV percentage of more than 17% in the AM peak period (07:00-10:00). A review undertaken by AECOM in February 2015 showed that average speed on the Acle Straight (particularly in the eastbound direction) during the AM and PM peak periods was significantly lower than the daily average speed, suggesting issues associated with congestion.

Planned growth will result in increased traffic flows which will impact on the current capacity and safety issues noted. A report by AECOM, also from 2015, suggests that link capacity on the Acle Straight will be exceeded by 2031.

An assessment of the existing traffic flows has been undertaken using data from TRADS, which confirms that there is a significant issue in this location with severe traffic problems over long periods throughout the year. Two-way traffic flows can exceed 22,000 vehicles per day in the busiest month (August), which is significantly above the recommended opening year flow for such a roadway (up to 13,000 vehicles per day).



#### 3.4.3 Safety

There are also safety issues on the Acle Straight stretch of the A47, with one particular problem being that of vehicles leaving the carriageway and overturning in the adjacent dykes. A small-scale safety improvement is currently being progressed by Highways England in certain hotspots, but this will not address this issue over the entire length of the Acle Straight.

Previous studies have noted that the Acle Straight has an accident rate above that of the national average, with a total of 59 personal injury accidents occurring in the past 5 years (2011-2016) including 3 fatal and 16 serious injuries. At 32%, the proportion of fatal and serious accidents for this section of single carriageway road is significantly higher than the national average (13%) and the average for Norfolk County (16%).<sup>2</sup>

Accidents on the Acle Straight have also resulted in road closures, with traffic having to be diverted onto unsuitable alternative routes. Incident records show that the greatest delays in the area occur due to accidents, with the average delay exceeding over two hours. These records also reveal that incidents of vehicle breakdowns cause excessive delays as well, given the lack of suitable alternative routes as discussed in section 3.4.5.

#### 3.4.4 Limited connectivity

Lowestoft is the most easterly point in the UK, and Great Yarmouth the second most easterly major town. The towns' locations on the east coast means that it is geographically isolated. The limited transport links include the A47, providing connections west toward Norwich, the A12 (to be renumbered as the A47), providing connections south toward Lowestoft and the A143, providing links south-west toward Beccles. The Wherry Line also provides rail connections toward Norwich and from Norwich to Lowestoft. The isolated geography and limited transport connectivity impact on the local economy.

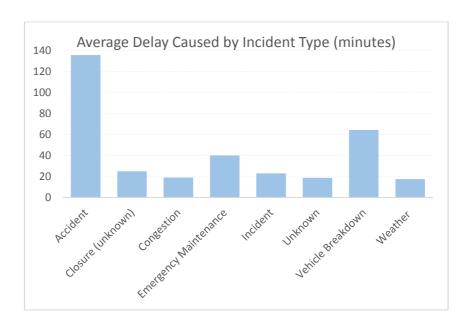
#### 3.4.5 Resilience and maintenance constraints

Lack of resilience is another key issue on the Acle Straight, particularly in response to incidents which could cause traffic to use alternative routes. In the event of a closure or congestion on either section of the single carriageway, there are a lack of suitable alternative routes to the Acle Straight, instead involving either a diversion via the A1064 from Acle or the A146/A143 from Norwich. Both pass through a number of villages, are local non-trunk roads, and are unsuitable for the volumes of trunk road traffic. Potential safety issues are also exacerbated when traffic diverts onto unsuitable routes.

Incident records published in the media were collected by NCC and the graph below shows the average delay caused by incident type. It is acknowledged that media records do not necessarily provide an official record, however, they do provide a useful insight to the type of incident and the scale of impact.

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<sup>&</sup>lt;sup>2</sup> Reported road casualties in Great Britain, provisional estimates - April-June, 2016).



The major outcomes are as follows:

- Delays more often occur due to congestion meaning that the link (and junctions) operate over capacity. During the last 4.5 years the media highlighted congestion issues on more than 10 occasions.
- The greatest delays occur due to accidents. The average delay caused by an
  accident is 136 minutes and shows the vulnerability of this type of road during
  a road closure. It is not clear if the closure occurs in both directions, but it is
  possible.
- Interestingly, the data reveals that even a vehicle breakdown can cause excessive delays; 4 incidents have been recorded with an average delay of 64 minutes.

Highway maintenance is generally noted as being an issue for single carriageway routes as there are few suitable alternative diversion routes. This is true of the Acle Straight section of the A47 as well, which is noted for difficulty of maintenance and management, particularly during peak holiday periods.

## 3.4.6 Environmental constraints

The Acle Straight section of the A47 is largely within the Broads National Park and is adjacent to a number of environmentally sensitive sites. The dykes alongside this section of the roadway are known to contain a variety of species that are protected by UK and European legislation, notably the Lesser Whirlpool Ramshorn Snail. In order to establish whether the dykes could be relocated away from the carriageway without affecting the snail species, a trial is currently being undertaken. The outcomes of the trial are expected to be published toward the end of the RIS 1 programme in 2020/21, as there is a requirement to monitor the species in their new location for some time. Furthermore, adjacent to the western section of the Acle Straight, near to the settlement of Acle, is an area designated as a Site of Special Scientific Interest (SSSI).

## 3.4.7 Summary

It is anticipated that growth around King's Lynn and Great Yarmouth, in addition to other nearby urban areas including Peterborough, Wisbech, Dereham and Norwich, will exacerbate the existing economic, environmental and traffic-related problems listed above. This will have a particularly negative impact on highway capacity and congestion through increased demand for travel both locally and between key origins and destinations further afield.

## 3.5 Objectives

In response to the identified economic and environmental constraints, as well as those related to congestion, safety, connectivity and resilience and maintenance, clear objectives have been set for the scheme.

The high level objectives are:

- to improve strategic connectivity
- to support the creation of new jobs in Great Yarmouth and Lowestoft, especially in the EZ areas, by being a catalyst for investment
- to support Great Yarmouth and Lowestoft as a Centre for Offshore Renewable Engineering, and as ports
- to support the regeneration of Great Yarmouth and Lowestoft, helping the visitor and retail economy

The specific objectives are:

- to improve the resilience of the local road network
- to reduce congestion and delay along the A47 Acle Straight
- to improve journey time reliability to and from Great Yarmouth and Lowestoft along the A47
- to reduce road accident casualties
- to reduce overall journey times along the A47 Acle Straight

## 3.6 Scheme Impact

A positive impact on the local economy is expected, as the scheme looks to support and deliver economic growth through job creation, investment opportunities and by catalysing regeneration of the area. The effective distance between firms and workers will be reduced as a result of the scheme, leading to increased business and labour market connectivity. This in turn will generate economies of scale and density, thereby increasing productivity and reducing costs.

The population of the Great Yarmouth borough is forecast to grow by 9,200 (9%) between 2013 and 2029. The associated housing allocations over this period include an additional 7,140 dwellings by 2030. In Waveney, the population is forecast to grow by 8,890 (7.7%) between 2011 and 2031 with 7,000 dwellings planned by 2025.

The Great Yarmouth and Lowestoft EZ will be a key driver of employment growth and would benefit from the dualling of A47 Acle Straight in order to improve access to the area.

Growth in the offshore energy sector, the associated supply chains and more general economic stimulus to the town all have the potential to increase vehicle traffic using the A47, as shown from the growth rates extracted from the National Transport Model (NTM). The growth of manufacturing, engineering and logistics businesses in particular will require improved connectivity between the port and key employment sites, markets and suppliers beyond.

Residential developments and associated population growth are also likely to increase use of the highway for accessing key service centres and jobs. Dualling the roadway would benefit the general economy and improve the accessibility of Great Yarmouth and its links with key centres to the west, thereby increasing its attractiveness to employers and residents.

The dualling of the A47 Acle Straight is anticipated to have a significant impact on the way in which the traffic network around Great Yarmouth performs. Time and cost savings for car and freight traffic flows across the network as a result of new capacity and released capacity on other parts of the network, such as improvements to A12 junctions in in Great Yarmouth area will lead to improved reliability, network resilience and safety.

Construction of a dual carriageway, with improved alignment and a central barrier, would significantly reduce the frequency and severity of accidents, and would prevent an anticipated 13 fatal and 87 serious casualties over the life of the scheme.

In addition to mitigating the traffic and network operational problems that currently affect the area, improved connectivity is likely to lead to agglomeration, which is associated with more competitive markets and better labour market sorting. Ultimately, this will attract more people to the labour market and provide access to better jobs.

## 3.7 Stakeholders

There is widespread support for dualling the entire A47, and in particular the Acle Straight. The A47 Alliance brings together MP's, local authorities and stakeholders, including GCGP LEP and the New Anglia LEP, to make the case for improvements and to secure investment. It has a list of priorities, a number of which are already programmed for 2015-2021. These could release at least 10,000 jobs and see an increase in GVA of at least £400m per annum across the New Anglia area.

The A47 Alliance has a long term aspiration for the A47 to be fully dualled and members are fully engaged in the process to evaluate the case for investment to improve the sections of the A47. The group welcome the Government's commitment to Route Based Strategies across the whole of the trunk road network and to the Feasibility Study on the A47.

To build on this support, Regeneris Consulting undertook an extensive consultation and engagement exercise with local stakeholders and businesses. A summary of the engagement and findings is provided below and further details can be found in Appendix B.

## 3.7.1 Overview of 2016 stakeholder engagement

Consultations have been undertaken with stakeholders, including local authority economic development and planning officers, business representative groups, sectoral groups and key businesses and property agents. A full list of consultees is provided in Appendix B.

A web-based survey of businesses that use the A47 in Norfolk and Cambridgeshire has also been undertaken. This approach was used to gain insight into business perceptions of the road and its impact on their activities, as well as investment decisions, business' ability to grow and expand, the attractiveness of specific locations around Norfolk and access to labour and markets.

The approach synthesises messages and understanding from these strands in order to identify the potential for wider economic benefits to arise.

The issues covered in the discussions can be summarised in the following strands:

- Economic performance: the drivers and barriers to growth in Norfolk, covering key growth sectors and locations.
- Impact of A47 on economic growth: the perceived constraints on economic performance and productivity, and how this impacts on access to markets, labour and attractiveness of the area for business.
- Views on the potential benefits of dualling the proposed sections: discussing the types and scale of business benefits, and how the improvements could benefit access to workers, suppliers and markets.

The survey was distributed using a number of business databases:

- The membership database of Norfolk Chamber of Commerce through a weekly newsletter
- Through social media channels, such as Twitter and Facebook, on behalf of Cambridgeshire Chamber
- The business databases held by Broadlands and Great Yarmouth local authorities
- Though Visit East Anglia communication channels
- Though Peel Ports and port users

The chosen approach has a number of benefits, including the access to good quality and up-to-date contacts data, this helped to secure a relatively high number of overall responses (132). However, as with any survey approach there are also risks, including the difficulty measuring the representativeness and response rate against business population and the potential for self-selection and sample bias.

## 3.7.2 Findings from the 2016 stakeholder engagement

In order to understand the impact that A47 improvements can have on businesses, it is important to consider the economic environment in which they operate, as well as their appetite to grow.

Over half of respondents (57%) stated that they plan to grow their turnover in the next three years, with around 44% planning growth in employment and business investment. However, 20% of respondents indicated no plans to grow, with a fraction expecting a decline in their business performance. Decrease in employment is expected by almost one in ten businesses (9%), followed by increased turnover (7%), and decreased business investment (6%).

The findings from the consultation reinforce the four sectoral drivers of economic growth identified in the New Anglia SEP and Core Strategies:

- Renewables and off-shore: The port at Great Yarmouth is an important enabler of offshore activity: the purchase of the port by Peel Ports has brought additional opportunities, and is seen as vital infrastructure for the capture of local economic benefits from the sector's expansion.
- Agriculture and food processing: Agriculture is a prominent sector in the
  rural areas of East Anglia. The strategic goal is to move to the high-value end
  of agriculture and introduce food processing facilities in Norfolk and bring
  food production closer to consumers.
- **Tourism:** The visitor economy in Norfolk is an important sector, bringing in almost 43 million visitors who spend around £143m annually. It is estimated to be the largest sector in Norfolk, accounting for 15% of all employment. Visit East Anglia is keen to turn Norfolk into a year-round visitor destination.
- Manufacturing: The sector is seen as having high growth potential, particularly in the advanced element of manufacturing. Consultations with local decision makers suggest there is a strong appetite for growth among the businesses in the industry.

There are however, barriers to growth, and the barriers which businesses are facing echo the perceptions of consultees and can be thought of in three broad groups: the general economic condition, skills and the ability to recruit, and infrastructure.

The **general economic conditions** are seen as a common barrier to growth by the majority of business respondents (60%). Consultations with business representatives provide sector insight – the perception in the energy and renewables sector links these to the uncertainty associated with the UK's withdrawal from the EU, and linked to this, the lack of clarity on Government policy with regard to the process.

**Skills and ability to recruit** are a commonly cited barrier in Norfolk. The challenge in attracting and retaining skilled workers has been cited by most economic development officers, and is further reinforced by the survey findings with 44% of businesses stating that they are struggling to recruit workers with the right skills. This echoes the concerns of consultees, and links to the perception of Norfolk as

peripheral with low density labour markets, influenced by the weaknesses in its connectivity.

**Infrastructure** including mobile connectivity, broadband and road infrastructure were quoted as a constraint on economic growth in Norfolk. Poor infrastructure quality was linked to local businesses readiness to invest locally, as well as to the attractiveness for inward investment.

## Constraints posed by the A47

The key message which came out of the consultation process is the peripherality issue which characterises Norfolk. There is a strong feeling among the strategic consultees that the current state of the A47 is hindering inward investment.

Consultation with Peel Ports has provided insight into how its activities are affected by the A47, and the Acle Straight in particular. The Acle straight is seen as a major bottleneck for getting staff, lighter equipment and goods to and from the port. Lack of resilience on the road has knock-on effects on the users of the port, as well as its activities. For example, a grain vessel coming into the port would require c. 5 tonnes per day to be distributed by road to the port. If issues occur on the Acle Straight, this sometimes leads to only a third of the daily load being distributed, causing major delays in getting the goods to the vessel. Consequently, the vessel is required to remain in the port longer, leading to increased costs for the business involved, as well as for the port as it delays other vessels docking.

The A47 is seen to cause constraints for nearly 80% of the respondents' business activities. Travel time uncertainty was cited as the main constraint, while access to markets, suppliers and skilled staff was also an issue.

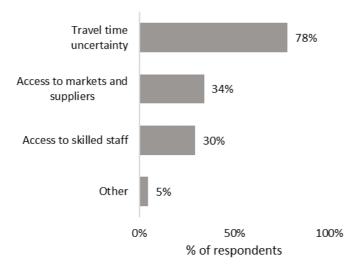


Figure 3-4 Main constraints reported by respondents

Additional issues mentioned include increased business costs as a result of delays and the perceived remoteness of Norfolk among clients. This links to the issues identified earlier and how they impact on business investment.

These challenges have consequences for the businesses, causing disruption to their operations. The majority of survey respondents are experiencing some disruption as a result of constraints on the A47. Of the resondents 43% experience major disruption to business travel, with a further 52% indicating moderate to minor level disruption. Staff and customer travel are also significantly affected, with over a third of business respondents experiencing major disruptions.

Survey responses suggest the Acle Straight is "slow, unpredictable and dangerous". Problems on the Acle Straight have knock on effects on traffic entering and leaving Great Yarmouth, exacerbated by road capacity issues within the town itself.

The Acle Straight is seen as a particular concern for the tourism industry. It is thought to impact on perceptions about Norfolk as a tourism destination, as well as causing negative associations for those who visit. In tourism, recommendations from friends and relatives are an important generator of trips, and there is a concern that bad traffic along the Acle Straight leaves a relatively poor lasting impression.

The Acle Straight is the connection between Great Yarmouth, with its port and offshore activity, to the west of the country. Workers in the energy sector use the Acle Straight, which has knock-on effects for air connectivity as the road leads to Norwich airport. This in turn provides links with the energy sector in Aberdeen. The route also hinders the connectivity with the Midlands which is particularly important for supply chains.

### Business opportunities from improvement to the A47

The survey results show that addressing the A47's constraints can bring opportunities for businesses. There was a strong sentiment amongst respondents that the improvements can reduce travel time and improve journey time reliability. In some cases, this can lead to reduced operational costs for businesses, which in turn improves business growth prospects. About a third of business respondents also indicated they would expect to see additional turnover growth as a result of proposed improvements. While this is highly speculative and subject to much uncertainty, this indicates that investments in the A47 can deliver tangible economic benefits for businesses.

## 3.8 Summary

The strategic case for investment encompasses a number of aspects of the scheme, including its fit with existing business strategy and policy and opportunities for supporting economic growth, whilst also addressing numerous related problems that have been identified in the area.

The core strategies for the area indicate that a significant amount of future growth is planned along the A47 corridor. As a key strategic link connecting those future growth locations, as well as the region's major centres, business plans at various levels of government have identified the A47 as being very important to future growth in the region across a number of economic sectors. Additionally, there are a number of ongoing and planned transport schemes in the area that would complement investment in the A47 Acle Straight.

Issues identified with the current condition of the A47 Acle Straight include high levels of traffic congestion, poor road safety, and resilience and maintenance constraints. Additionally, there is limited connectivity in the region, and each of these issues will be exacerbated by future growth in the area without corresponding improvements to the A47.

There is widespread stakeholder support for dualling the Acle Straight section of the A47, both in terms of published studies and through views expressed at consultations, which have informed this study.

Overall, a positive impact is expected as a result of the scheme. If the population grows as forecast in coming years, the scheme will be a catalyst for regeneration of the region by reducing barriers to connectivity and facilitating growth in jobs and housing.

## 4 The Economic Case for Investment

#### 4.1 Introduction

The Economic Case assesses options to identify their economic, environmental, social and distributional impacts. Wherever possible, costs and benefits of the options are quantified and monetised. In assessing value for money (VfM), all of these are consolidated to determine the extent to which a proposal's benefits outweigh its costs, with monetised impacts represented by a Benefit to Cost Ratio (BCR).

## 4.2 Option appraised, method and assumptions

The A47 Acle Straight links the settlement of Acle, at its western end to Great Yarmouth at its eastern end. This stretch is approximately 11.5km of single carriageway road passing through the Broads National Park.

The option appraised includes upgrading the single carriageway to a two-lane dual carriageway between Acle and Great Yarmouth.

A high level economic appraisal has been carried out, assumptions for the economic appraisal that form inputs to the TUBA economic appraisal process are as follows:

- The Acle Straight scheme will be opened in 2025 and is appraised over a 60 year period from the year of opening. User benefits of the scheme, after the design year of 2040, are assumed not to grow and are subject to the normal discounting to 2010 present value year and changes to values of time (VOT) and other economic parameters.
- The economic benefits of the scheme are accrued over all days of the year (including weekends and bank holidays).
- Changes in journey times and any economic benefits that are calculated are based on differences between the Do Minimum and the Do Something scenarios.
- The available 2016 TRADS data have been processed for four time periods.
  - o AM Average Peak (07:00-10:00)
  - Average Inter-Peak (10:00-16:00)
  - PM Average Peak (16:00-19:00)
  - Weekend and Bank Holidays Average Inter-Peak (10:00-16:00)
- Reference traffic growth based on DfT's data contained in version 7 with planning dataset 70 and NTM dataset AF15.
- The Value for Money Assessment includes transport user appraisal and accident benefits using industry standard techniques. However, assumptions (based on comparable schemes) have been made regarding the level of benefits that may be attributed to maintenance, reliability and wider benefits.

#### 4.3 Costs

Scheme costs were estimated based on the actual outturn costs of completed Highways England schemes. The schemes and costs per kilometre considered were as follows:

- A11 Fiveways to Thetford Improvement £6.9m per km in 2013 prices
- A453 Widening (M1 Junction 24 to A52 Nottingham) £13.4m per km in 2012 prices

Due to the characteristics of the scheme, it has been deemed appropriate not to use an average cost per km based on the two schemes. The Acle Straight scheme is considered a rural dualling, less complex as all construction works will be undertaken at grade and there are no junctions along the scheme length. As such, the £6.9m per km (2013 prices) cost of A11 Fiveways to Thetford Improvement scheme has been used in this assessment.

The cost was rebased to 2010 prices for consistency producing a cost of £6.6m per km.

Based on the opening year of 2025 an assumed spend profile was applied based on experience from other major schemes including time for feasibility, planning and preparation, followed by construction. Using the average cost per km the present value cost of the scheme (in 2010 prices) was calculated to be £78.4m.

#### 4.4 Monetised Benefits

The economy objective identified within WebTAG is concerned with improving the economic efficiency of transport and the efficiency of economic activities, with the key aim of supporting sustainable economic activity and returning good value for money. It considers the following three sub-objectives:

- To improve transport economic efficiency for business users and transport providers
- To improve transport economic efficiency for consumer users
- To get good value for money in relation to impacts on public accounts

The following sections set out the benefits that have been assessed to demonstrate that investment in the Acle Straight meets these objectives.

## 4.4.1 User Benefits

The impact of the scheme on travel time and vehicle operating costs has been assessed using the DfT's TUBA (Transport User Benefit Appraisal) tool. Since there is no transport model available at this stage, TUBA assessment has been carried out by using base year flows extracted from the Highways England WebTRIS database for the base year. Future year flows were calculated using growth factors from the NTEM (TEMPro) model and were applied to estimate the future traffic demand on the link.

It is highly likely that additional traffic will be released on to the A47 once improvements have been implemented along the congested stretch of the A12 at Vauxhall, Gapton Hall and Harfery's junctions as part of the RIS 1 programme, thus increasing traffic volumes along the Acle Straight. Furthermore, the dualling of the Acle Straight combined with other RIS 1 improvements would attract traffic diverting from other routes. However, the likely increase in traffic volumes on the Acle Straight have not been considered as part of this assessment and thus the analysis represents a conservative level of benefit.

Furthermore, increased travel demand due to realisation of the EZs aspirations, planned growth and regeneration have not been accounted for as part of this assessment. Therefore, the resulting economic appraisal does not incorporate potential additional traffic due to future growth.

Table 2 presents the analysis of monetised costs and benefits.

Item	Benefits (£000s)
Greenhouse Gases	-2,870
Economic Efficiency: Consumer Users (Commuting)	22,330
Economic Efficiency: Consumer Users (Other)	78,010
Economic Efficiency: Business Users and Providers	64,712
Wider Public Finances (Indirect Taxation Revenues)	5,401
Present Value of Benefits (PVB)	167,583

Table 1: Analysis of Monetised Costs and Benefits

## 4.4.2 Accident saving benefits

The impact of the scheme on road safety has been assessed using the DfT's COBALT 2013.2 software. The benefits in terms of savings in the number of accidents and casualties from the proposed scheme has been calculated using the difference in the costs of accidents and casualties in the Do-Minimum and Do-Something scenarios (that is by comparing the existing single carriageway with the proposed dual carriageway).

Table 3 below presents the results of the accident analysis which was undertaken in COBALT, in terms of number of accidents, casualty savings, and also the monetary benefits for the 60-year appraisal period.

Scenario	PIAs	Casualties, by Severity			Costs
Scenario	FIAS	Fatal	Serious	Slight	(£000s)
Do-Minimum (a)	561.4	17.3	112.6	744.5	£41,156
Do-Something (b)	227.8	4.8	29.6	289.5	£12,986
Savings (a) – (b)	333.6	12.4	83.0	454.9	£28,170

Table 2: Analysis of accident benefits

Further details on the economic appraisal can be found in Appendix C.

## 4.4.3 Highway maintenance benefits

Highway maintenance is an ongoing issue for the Acle Straight given the problems associated with traffic management and a lack of alternative routes. Based on experience from similar highway projects the maintenance benefits have been estimated at 5% of the user benefits. This results in the following highway maintenance benefit:

Item	Benefits (£000s)
Highway Maintenance benefits (5% of total user benefits)	£8,379

#### 4.4.4 Reliability benefits

Journey time reliability is defined as 'variation in journey times that drivers are unable to predict', and is assessed as part of the DfT's Appraisal Reliability Sub-impact. The guidance in WebTAG 3.5.7 advises the use of traffic models to assess journey time reliability. At present a traffic model is not available to assess reliability, however, it is evident that dualling the Acle Straight would help to improve journey time reliability. Therefore, based on experience from similar highway projects, the journey time reliability benefits have been estimated at 15% of the overall user benefits. This results in the following reliability benefit calculation:

Item	Benefits (£000s)
Reliability benefits (15% of total user benefits)	£25,137

## 4.4.5 Wider benefits

The proposed dualling of the Acle Straight will play an important role in providing the required economic infrastructure to support the current and future growth aspirations of the town and the borough over the coming decades. The A47 is already considered one of the key constraints for the Great Yarmouth economy, particularly the energy and tourism sectors, on which the region is looking to capitalise further.

Previous studies have concluded that dualling the Acle Straight would have wide economic benefits and help to create jobs directly through investment, and along with other regeneration measures it would help act as a catalyst for economic growth. Furthermore, the evidence from the stakeholder consultation demonstrates that there is significant potential for investment in the Acle Straight to deliver wider economic benefits. In fact, around one third of business respondents indicated they would expect to see additional turnover growth as a result of the proposed improvements.

Furthermore, the growth aspirations for the Enterprise Zone, including to unlock 9,000 direct and 4,500 indirect jobs in the borough and to deliver over 4,000 new homes, will have direct and an indirect impact on the A47. This growth will lead to greater demands being placed upon the Acle Straight, as well as on the A47 more generally, given the flows of goods, services and labour which use this strategic east-west route (for example, increased demand from new residents accessing

employment in other parts of the county, and increased demand linked to the offshore sector).

The wider economic benefits have been conservatively estimated at 10% of the business user benefits to account for the welfare impact and change in GDP as referenced in WebTag unit A2.1. However the guidance on Wider Economic Impacts is currently being updated by DfT and in future it will consider the implications of the revised guidance as it likely that the Acle Straight has the potential to deliver significant benefits for the wider economy. For this study, the following wider economic benefit has been estimated:

Item	Benefits (£000s)
Welfare impact & GDP (10% of business user benefits)	£6,471

#### 4.5 Non-monetised Benefits

Various impacts, including environmental and social implications have not been monetised at this stage of the project. However, these impacts still contribute to the overall Economic Case, and they should be taken into account in later stages of the project. It should be noted however that the scheme is likely to increase greenhouse gas emissions but improve air quality. An increase in speed may also slightly increase noise levels.

## 4.5.1 Enhanced connectivity

A study has been carried out by using Basemap-TRACC software, which is a multimodal accessibility planning tool. This software assesses travel time differences by mode, as well as the changes in population accessibility as a result of transport improvement schemes. The software was used to assess the impact of dualling the Acle Straight, in order to estimate the likely journey time saving per road user and estimate the change in population accessibility.

The assessment shows that an average travel time saving of approximately 10 minutes could be achieved for road users by upgrading the Acle Straight section of the A47. The assessment also shows that an additional 62,400 people would be within a 60 minute journey of Great Yarmouth as illustrated in the images below.

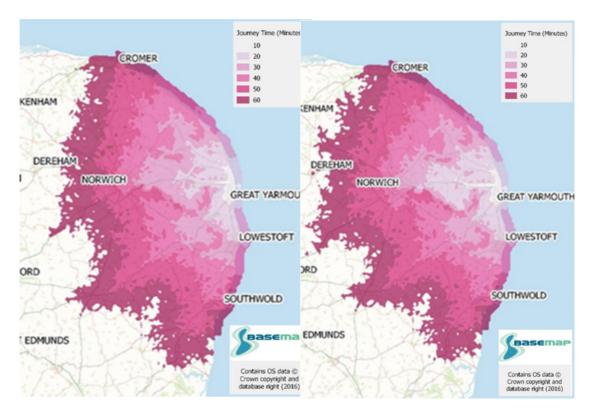


Figure 4-1: Journeys to/from Great Yarmouth by travel time within 60 minutes (left – current situation | right – with Acle Straight dualled)

## 4.5.2 Population Affected by Change in Travel Times

This analysis shows the effect on travel times to/from Great Yarmouth. It assumes that the entire population of each Output Area (OA) lives on the exact point of the population-weighted centroid for that OA. This was done in order to prevent overlap of borderline OAs that were partially within two travel time bands or partially within a travel time greater than 60 minutes. Because OAs are the smallest census region, the analysis should still be very accurate despite the use of centroids. The use of population-weighted centroids adds an additional layer of accuracy to the analysis.

The scheme's improvements to the A47 at Acle Straight would result in a net benefit to over 23,000 residents in terms of potentially faster journey times to/from Great Yarmouth as shown in Table 3 and 4.

Post-scheme, some residents from each time band would subsequently fall within a lower time band, whilst others who were previously further than 60 minutes away would also be within the sub-60 minute range.

The higher time bands, which are further from Great Yarmouth, include less overall OAs as well as a greater number of more rural OAs, and thus also include less population. Conversely, the lower time bands which are closer to Great Yarmouth, include more overall OAs as a result of the scheme as well as a greater number of more urban OAs, and thus include more population.

Travel time	Population before	Population after	Difference
Traver time	scheme	scheme	Difference

10 – 20 min	133,041	145,734	12,693
21 – 30 min	97,529	141,199	43,670
31 – 40 min	180,454	178,805	-1,649
41 – 50 min	158,333	137,960	-20,373
51 – 60 min	118,536	107,437	-11,099

Table 3: Overall Population change by travel time

Travel time	Population before scheme	Population after scheme	Difference
< 20 min	133,041	145,734	12,693
< 30 min	230,570	286,933	56,363
< 40 min	411,024	465,738	54,714
< 50 min	569,357	603,698	34,341
< 60 min	687,893	711,135	23,242

Table 4: Cumulative change

Figure 7 below shows journey time heat maps before and after the dualling of A47 Acle Straight section.

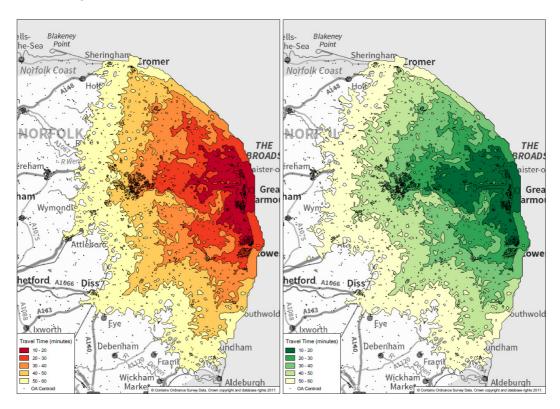


Figure 4-2: Journey times before and after the Acle Straight dualling

## 4.6 Value for Money

As discussed above, the purpose of economic appraisal is to compare the benefits and costs of a scheme to determine if it represents value for money. The statistic used is known as the Benefit to Cost Ratio (BCR).

The table below summarises the present value of benefits and present value of costs, in 2010 prices. This demonstrates that the proposed A47 Acle Straight

improvement has an estimated **BCR of 2.94**, which represents **high value for money** as per DfT guidance.

Element	Output
Accidents (Total)	£28,170,400
Travel Time Benefits (TUBA)	£167,583,000
Maintenance Benefits*	£8,379,150
Reliability Benefits*	£25,137,450
Wider Economic Benefits*	£6,471
Total Benefits (PVB)	£229,276,471
Total Costs (PVC)	£78,405,009
NPV	£150,871,462
BCR	2.9

Table 5: Economic Appraisal Results

## 4.7 Summary

The analysis shows that dualling of the Acle Straight section of the A47 would represent high value for money. Whilst it is appreciated that the scheme would need to go through an appropriate options assessment and appraisal process, dualling the roadway is considered the only solution that will achieve the economic ambitions for the region whilst also addressing the current problems.

To estimate the costs of delivering a dual carriageway scheme, and to provide a robust estimate for appraisal, actual outturn costs for completed Highways England schemes have been used in the analysis.

The benefits appraisal is in-line with WebTAG guidance, and whilst a transport model does not exist the user benefits and accident savings have been robustly calculated using TUBA and COBALT software. To estimate the additional benefits that would be expected as a result of improvements to maintenance, reliability and wider benefits, assumptions have been applied based on similar project experience.

The economic appraisal does not include any growth beyond the design year, nor does it incorporate potential additional traffic attracted by the upgrade of the Acle Straight. As such, the appraisal can be considered conservative.

Based on the costs and benefits calculated, the benefit to cost ratio has been calculated to be 2.9, which represents high value for money. To test the robustness of the appraisal, a series of sensitivity tests have been undertaken to assess the impact of higher and lower traffic growth. The outputs from these sensitivity tests are summarised in the table below.

The outputs from these sensitivity tests demonstrate that even under the most conservative scenario, the scheme would still represent high value for money.

	Base scenario	Sensitivity test 1: High Growth Scenario	Sensitivity test 2: Low Growth Scenario
Present Value of Benefits	£229,276,471	£252,713,671	£205,854,871
Present Value of Costs	£78,405,009	£78,405,009	£78,405,009
Net Present Value	£150,871,462	£174,308,662	£127,449,862
Benefit to Cost Ratio	2.9	3.2	2.6
Value for Money	High	High	High

## 5 Conclusions

### 5.1 Conclusions

The case for investment in improving the A47 Acle Straight is based on both the strategic and the economic benefits that would be realised as a result of the scheme.

The A47 is a strategic link for major centres and future growth sites in the region, both in terms of jobs and housing. The proposed improvements to the Acle Straight would address its current issues with congestion, safety, resilience and maintenance, thereby facilitating future economic growth.

Furthermore, in terms of economic benefits, mid-range estimates show that the scheme represents high value for money, with even the most conservative estimates showing that the scheme represents high value for money, with benefits outweighing the costs by at least 2.63 to 1.

#### 5.2 Recommendations

Based on the results of the economic and strategic assessments undertaken thus far, it is recommended that the scheme forms part of the RIS2 programme and is subjected to further options assessment and appraisal. However, it should be borne in mind that a dual carriageway solution for the Acle Straight is currently considered the only option that will fully achieve the economic ambitions for the region whilst also addressing the current problems.

The regional traffic model should be used to assess the scheme, and further work should be undertaken to quantify the wider economic impact. The appraisal thus far does not incorporate growth beyond the design year of the scheme or additional traffic induced by the upgrade, both of which should be considered in subsequent stages of the study.

# 6 Appendices

Provided separately:

- A. Technical Evidence Report
- B. Regeneris Wider Economics and Consultation Report



# A47 – Evidence review:

# Tilney to East Winch & Acle Straight

**Technical Report** 

June 2016

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Norfolk County Council

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# 1 Executive Summary

In the 2014 Autumn Statement the Government committed over £300m of investment to the A47 including a number areas to be upgraded from single to dual carriageway, as part of the Road Investment Strategy (RIS) period 1 2015-2021.

The sections between Tilney and East Winch, and the Acle Straight were not identified as schemes to be taken forward in the RIS 1 period. However, the A47 Alliance (made up of business community, local authorities, MPs and stakeholders along the whole of the trunk road route between Peterborough and Lowestoft including the A12) has a long-term aspiration for the complete dualling of the A47 between the A1 and Great Yarmouth. Furthermore, both sections have previously been identified as having capacity issues and the Acle Straight has particular safety concerns. As a consequence Norfolk County Council asked Mouchel Consulting to undertake a high-level review of the evidence surrounding these two sections to explore the potential case for investment.

#### 1.1 Previous studies and the need for intervention

Over the last 15 years, a number of studies have been undertaken relating to improvements on the A47. Fifteen of these studies have been reviewed in detail and have highlighted key themes regarding: Highway capacity; safety; environmental constraints; economic growth; community severance; non-motorised users; highway maintenance; land ownership; and value for money.

A review of available evidence has highlighted that both sections have above average accident rates and high vehicle flows including a high use by HGVs, this results in slower journey times, delays and congestion at junctions.

Anticipated growth around King's Lynn and Great Yarmouth, and around nearby urban areas including Peterborough, Wisbech, Dereham and Norwich will exacerbate existing problems. This growth will increase the demand for travel both locally and between key origins and destinations.

It is evident that there is a long term aspiration of local authorities and businesses to complete the full dualling of the A47, particularly given its importance as a Trans-European Network. Previous studies have investigated the feasibility of improving the two section but key constraints such as lack of funding, engineering and environmental have been identified.

Having reviewed the available evidence it is clear that the two sections have different considerations as a result, each section has been considered separately against the nine themes mentioned above.

## 1.2 Tilney to East Winch

# 1.2.1 Highway capacity

Current traffic flows on the A47 between Middleton and East Winch are approximately 15,000 vehicles per day, including a high HGV proportion of more than 25% in the AM peak. Congestion is noted at A47/A10/A149 Hardwick Interchange which is expected to worsen given planned housing and employment growth to the south east of Kings Lynn.

#### 1.2.2 Safety

Previous studies have noted that Hardwick interchange and the adjacent single carriageway sections as having above national average accident rates.

#### 1.2.3 Environmental constraints

There are a number of environmental constraints that would need to be considered. The section of the A47 from Tilney (Main Road) to the A47/A17 junction falls within a Flood Zone 3 area adjacent to the River Great Ouse, and East Winch Common, an area of land adjacent to the A47 south east of East Winch, is designated as a SSSI.

#### 1.2.4 Economic Growth

There is significant planned growth within the King's Lynn and West Norfolk Borough growth of 16,500 new dwellings (2001-2026) and 5,000 jobs (2001-2021). Key strategic sites in West Winch and North Runcton adjacent to A47 includes 1,600 dwellings and 1ha employment land and employment land is identified at Hardwick (27 hectares) and Saddlebow (23ha). This planned growth is likely to result in increased traffic flows which will impact on the current safety and capacity issues noted, the review by Mott MacDonald (May 2015) identified link stress issues on the A47 to the east of Hardwick Interchange from 2026 with theoretical link capacity being exceeded both eastbound and westbound.

It is noted that the key strategic employment sites at Hardwick Extension and Saddlebow and West Winch urban extension site would benefit from Tilney to East Winch section of A47 being dualled and has the possibility to help bring forward additional development.

#### 1.2.5 Community Severance

There are some small built up areas of Middleton, East Winch, West Bilney with properties fronting the A47. These communities would benefit from reduction in traffic flow if bypassed, along with reduced severance and associated issues of the road including reduced noise, vibration, air pollution and visual impact. The communities would be impacted on with any widening works to the A47.

#### 1.2.6 Non-motorised users

The Tilney to East Winch section of the A47 is a strategic route and as such currently has low use by pedestrians and cycle users, it also presents a barrier given crossing movements are difficult.

## 1.2.7 Highway maintenance

Highway maintenance generally is noted as being an issue for single carriageway highways as there are few suitable alternative (diversion) routes. This is the case for the A47 between Tilney and East Winch.

#### 1.2.8 Land ownership

Land adjacent to the A47 is predominantly agricultural with numerous ownerships. This section also passes through small settlements and any widening scheme would require discussions with several land owners.

## 1.2.9 Value for money

Previous studies have assessed at a high level the potential value for money case of dualling sections of the A47. The Tilney to East Coast Business Park (junction with A17) was identified as having a high value for money (BCR: 2.82) (Mouchel A47 Dualling Economic Assessment, July 2014). The King's Lynn to Swaffham section was identified as medium value for money (BCR: 1.67) (although it should be noted this section is longer than that being investigated as part of this study).

#### 1.3 Acle Straight

# 1.3.1 Highway capacity

Current traffic flows on the A47 at Acle Straight are approximately 19,000 vehicles per day, including a high HGV proportion of more than 17% in the AM peak. A review undertaken by AECOM in February 2015 highlighted that the average speeds on the Acle Straight (in particular eastbound) in the peak periods were lower than the daily average speed, suggesting issues associated with congestion.

#### 1.3.2 Safety

Previous studies have noted that the Acle Straight single carriageway sections as having above national average accident rates. A Highways England led smaller scale safety scheme is currently being progressed at a hot spot but will not address the whole route issues. Network resilience is also noted as a particular issues for the Acle Straight given the limited diversion routes.

#### 1.3.3 Environmental constraints

The Acle Straight section of the A47 is largely within the Broads National Park and is adjacent to a number of environmentally sensitive sites. The dykes alongside this section of the A47 are known to contain a variety of species that are protected by UK and European legislation, notably the Lesser Whirlpool Ramshorn snail. To establish if the dykes could be relocated away from the carriageway without affecting the Lesser Whirlpool Ramshorn snail a trial is currently being undertaken and is in its early stages. The trial is expected to last 4 years as there will be a requirement to monitor the species in their new location for some time. Furthermore, adjacent to the western section of the Acle Straight near to the settlement of Acle is an area designated as a SSSI.

#### 1.3.4 Economic Growth

There is significant planned growth within the Great Yarmouth area mainly focussed around employment land (35ha). Key developments include Waterfront (1,000 dwellings, 10-15ha new employment), Beacon Park (1,000 dwellings, 10-15ha new employment) and Great Yarmouth and Lowestoft EZ (9,000 jobs by 2025, plus 4,500 indirectly). The Great Yarmouth Enterprise Zone is expected to have a positive effect on employment growth targets of 5,000 new jobs by 2025. This planned growth will result in increased traffic flows which will impact on the current capacity and safety issues noted. A report by AECOM, 2015 suggests link capacity on the Acle Straight will be exceeded b 2031.

Two designated employment sites at South Denes and Beacon Park, both of which are partly covered by Enterprise Zone status, would benefit from dualling of A47 Acle Straight and improving access to Great Yarmouth.

#### 1.3.5 Community Severance

There are no built up areas on the A47 Acle Straight section which is largely within the Broads National Park.

#### 1.3.6 Non-motorised users

The Acle Straight section of the A47 is a strategic route and as such currently has low use by pedestrians and cyclists.

#### 1.3.7 Highway maintenance

Highway maintenance generally is noted as being an issue for single carriageway highways as there are few suitable alternative (diversion) routes. This is the case for the A47 Acle Straight which is noted for difficulty of maintenance and management particularly during peak holiday periods.

# 1.3.8 Land ownership

Land adjacent to the A47 is predominantly under numerous agricultural ownerships. Any widening scheme or offline improvements would therefore require discussions with several land owners.

#### 1.3.9 Value for money

Previous studies have assessed at a high level the value for money case of dualling sections of the A47. The Acle Straight section was identified as having a high value for money (BCR: 2.94) (Mouchel A47 Dualling Economic Assessment, July 2014).

#### 1.4 Conclusions

## 1.4.1 Tilney to East Winch

The evidence reviewed indicates that there is currently congestion on the A47 Tilney to East Winch primarily around the Hardwick Interchange which is also noted as having above national average accident rates. Traffic flows also indicate a high proportion of HGV's pass through small settlements with houses fronting onto the A47.

Although there is currently no clear evidence of existing or future highway capacity issues on the entire stretch of the A47 from Hardwick Interchange to West Bilney / Narborough, given the planned growth it is likely that there is a case to investigate possible schemes further (both on and off line) which may facilitate economic growth. The extent of the geographic area would need to be examined in more detail to enable the identification of appropriate geographic area ensuring the best case for a scheme.

#### 1.4.2 Acle Straight

The evidence reviewed indicates current congestion problems on the A47 Acle Straight particularly eastbound in the AM peak with lower than average speeds recorded. There are noted safety issues on this stretch of the A47 with particular reference to vehicles leaving the carriageway and overturning in the adjacent dyke.

There is evidence to suggest a case to investigate possible schemes further to address capacity and safety issues and support economic growth. However, a significant constraint to any scheme is the Lesser Whirlpool Ramshorn snail trial that is currently being undertaken with anticipated completion in 2020. If the snail trial determines that relocation is not possible, then any scheme is unlikely to progress.

#### 1.5 Possible next steps

A clear case for investment at either section is not yet evident and whilst dualling would: align with sub-regional aspirations; help address issues of congestion and high accident rates; provide network resilience; and support economic growth in the region – there is more work required to demonstrate a sufficient case for investment.

# 2 Introduction

This document, prepared by Mouchel Consulting, provides a review of the evidence for improvements to two sections of the A47 (Tilney to East Winch and Acle Straight). It provides a summary of previous work undertaken, baseline conditions, future growth commitments and aspirations, and provides an initial assessment of challenges and opportunities.

#### 2.1 Context

The A47 is the main east west connection in northern East Anglia passing through the highway authority areas of Peterborough, Cambridgeshire, Norfolk and Suffolk; and the planning authority areas of Fenland, King's Lynn and West Norfolk, Breckland, Broadland, South Norfolk, Great Yarmouth and Waveney. It links Great Yarmouth in the east with Norwich, King's Lynn and Peterborough to the A1. The A1 provides onward connections to the Midlands and north of England. At Great Yarmouth and Norwich connections to Europe and beyond are available via the port and airport respectively. The trunk road continues south, as the A12, at Great Yarmouth to Lowestoft.

Norwich is the largest economy in East Anglia with the Greater Norwich sub-region the key driver of economic growth across a large part of Norfolk and Suffolk. Greater Norwich has key strengths in the financial services, business services, creative industries, health and life sciences and engineering sectors. Because of its position as a large free-standing city it attracts large commuting in-flows from the surrounding, largely rural travel to work catchment. Greater Norwich has a thriving retail sector, worth £1.17billion (in 2009), the highest retail value in the East of England. It is a UK top ten shopping centre and a destination for people living as far as 80 miles away (source: http://www.a47alliance.co.uk/index.php/about-the-a47/).

Great Yarmouth is Norfolk's second largest settlement, with a population of around 75,000. It is England's energy port, and recognised as one of the government's new Centres for Offshore Renewable Engineering. Parts of Lowestoft and Great Yarmouth have been designated as Enterprise Zones (source: http://www.a47alliance.co.uk/index.php/about-the-a47/).

King's Lynn is a key sub-regional centre; unlike Great Yarmouth, which is relatively close to Norwich, King's Lynn tends to operate as a discrete centre in its own right, providing services to a very large catchment of people and businesses (source: http://www.a47alliance.co.uk/index.php/about-the-a47/).

Wisbech is sited on the border of Norfolk and Cambridgeshire. It is a historic market town and with a population of around 20,500 is the largest settlement in Fenland. It is an important destination for comparison retail and services for the surrounding rural communities. Key sources of employment include food processing industries and manufacturing, logistics and storage (source:

http://www.a47alliance.co.uk/index.php/about-the-a47/).

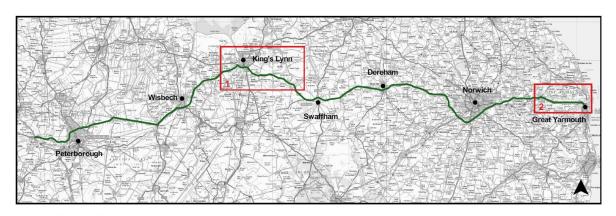
Peterborough has a population of 183,600 and is the urban centre of a much wider economic geography. The city's location means its economy is well-placed to benefit from significant links to other major conurbations (source: http://www.a47alliance.co.uk/index.php/about-the-a47/).

The A47 is part of the Trans-European Network and designated by the British government as a trunk road. However, the poor quality and unreliability of parts of the route means it does not function as the 'gateway to growth' it should be.

Responsibility for maintaining and improving the road rests with the Highways Agency, an Executive Agency of the Department for Transport responsible for operating, maintaining and improving the strategic road network in England on behalf of the Secretary of State for Transport.

# 2.2 Overview of the study areas

An overview of the study areas is included in Figure 2-1.





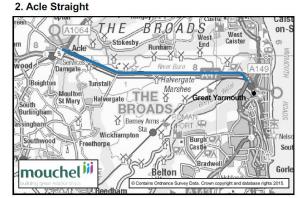


Figure 2-1: A47 Study Area

#### Tilney to East Winch

The A47 Tilney to East Winch area of study includes two separate sections of the A47 as illustrated in Figure 2-1.

The western section between Tilney and King's Lynn comprises a single carriageway section approximately 3.25km in length on a southwest to northeast alignment. The south-western end of this link connects to a 4-arm roundabout junction. Main Road

forms the northern arm of the roundabout connecting to Tilney All Saints, the eastern arm is the section of A47 of interest in this study, the southern arm links to an access to private properties and the western arm is a dual carriageway section of the A47. The north-eastern section of this link connects to a short, approximately 500m, section of dual carriageway on the approach to a large 4-arm gyratory junction connecting to the A17, south-west of King's Lynn. Along the length of this section of A47 there are a small number of accesses to dwellings and rural/agricultural businesses.

The eastern section of the Tilney to East Winch study area, illustrated in Figure 2-1 connects the south-eastern edge of King's Lynn to East Winch and beyond towards Pentney / Narborough. It comprises approximately 12.2km of single carriageway in a roughly northwest-southeast alignment, predominantly surrounded by agricultural fields. The north-western end of this section comprises a 3-arm roundabout junction linking to the A10/Hardwick Interchange. The 1.75km section of A47 south west of this junction has a small number of accesses to residential properties, a layby and a couple of T-junctions connecting to North Runcton and Fair Green. Continuing westwards the next 1.5km section has a small number of residential accesses before passing through the village of Middleton with a small number of buildings fronting the road. East of Middleton the 2.85km stretch of A47 up to the village of East Winch comprises a small number of accesses and T-junctions and a small number of buildings fronting the road at East Winch. The remaining section of A47 east of East Winch again is predominantly rural in nature with a small number of accesses to properties.

#### Acle Straight

The A47 Acle Straight section links the settlement of Acle, at the western end of the link, to Great Yarmouth at the eastern end of the link. The approximately 11.5km stretch of road, which passes through the Broads National Park, is rural in nature and predominantly surrounded by agricultural fields with dykes running along much of the length of the road. The majority of the accesses serve the agricultural businesses along this stretch of the road. The western end of the link comprises a 4-arm roundabout junction connecting to Acle and the A1064. The eastern end of the link is a 4-arm roundabout junction with the A12, A149 and a link towards the north of Great Yarmouth.

#### 2.3 Background to Study Areas and Schemes

There is significant support for the dualling of the A47 from many stakeholders and organisations, one such group is The A47 Alliance. The A47 Alliance brings together the business community, local authorities, MPs and stakeholders along the whole of the trunk road route between Peterborough and Lowestoft including the A12. The A47 Alliance has a long term aspiration for the A47 to be fully dualled and is calling on the government to allocate funding to help achieve this to support the economic prosperity of the east of England and contribute to the national economy. Other key stakeholders include the Greater Cambridge Greater Peterborough and

New Anglia LEP's, who are working together to make the case for improvements and to secure the investment required to make it happen.

The 2014 Autumn Statement, which sets out the Government's long term economic plan, committed over £300m of investment to the A47 including:

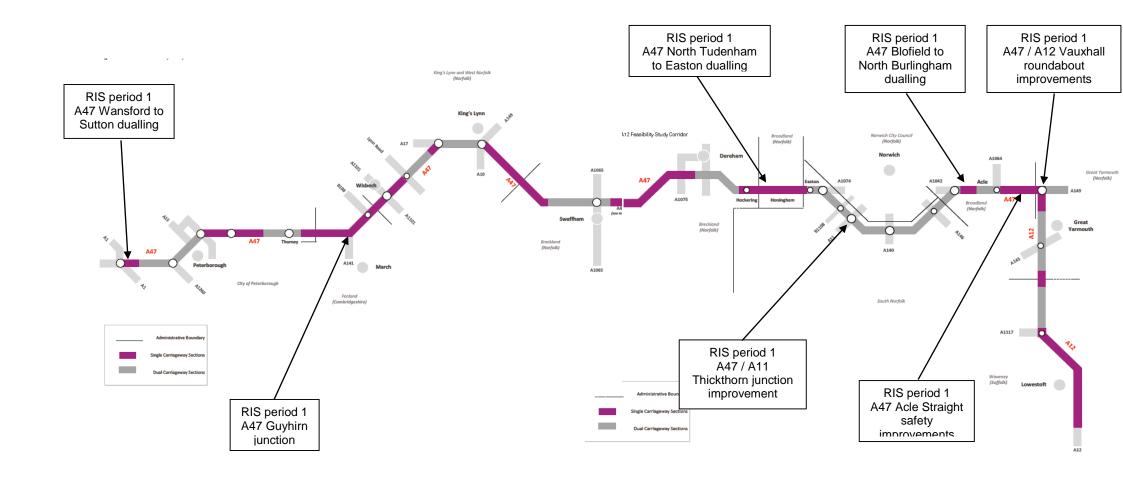
- A47 North Tuddenham to Easton Dualling
- A47 Blofield to North Burlingham Dualling
- A47/A12 Great Yarmouth Junction Improvements
- A47 Acle Straight Safety Measures
- A47/A11 Thickthorn Junction Improvement
- A47 Guyhirn new junction
- A47 Wansford to Sutton dualling

The East of England Route Strategy (April, 2015) indicates that construction of these schemes will be started in 2020.

Building on this commitment the A47 Alliance and Norfolk County Council are keen to ensure other key sections of the A47 are allocated funding to convert them from a single carriageway to a dual carriageway as part of the longer term aspiration for full dualling.

Figure 2-2 outlines the current single carriageway sections on the A47 and where committed improvements have been identified as noted above. This indicates that the two sections on the A47 subject of this study will be some of the few remaining single carriageway sections.

Figure 2-2: A47 single and dual carriageway sections and Autumn Statement committed improvement schemes



In order to achieve the longer term aspiration the A47 Alliance has set out its Business Case priorities which can be summarised in Figure 2-3 to Figure 2-5. It should be noted that these priorities were set prior to RIS1 and agreement for a number of schemes to be included in the current programme. The Alliance is refreshing its Business Case to set out its priorities for RIS2 investment.

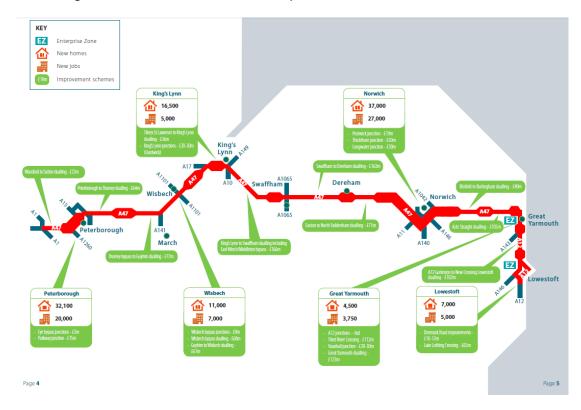


Figure 2-3: A47 Alliance Business Case Vision for the Future (source: http://www.a47alliance.co.uk/assets/Uploads/FINAL.pdf)

SHORT-MEDIUM TERM: 2015-21					
Location	Schemes	Indicative Cost	Economic Benefits		
Norwich	Postwick Hub Junction	£19m (funding secured)	1,700 Jobs 200 homes £76m GVA p.a		
Peterborough	A1 Wansford to Sutton Roundabout Dualling	£23m (excluding Junction Improvements)	BCR: HIGH Improved Journey times & reliability		
	Parkway Junction Improvements	£15m	4,000 Jobs		
Peterborough to Wisbech	Eye Bypass Junction Improvements (short term)	£3m	5,790 homes £160m GVA p.a.		
	Peterborough to Thorney Dualling (medium term)	£64m	BCR: VERY HIGH Improved Journey times & reliability		
	Guyhirn to Wisbech B198 Dualling	£61m	BCR: HIGH Improved Journey times & reliability		
Wisbech	Wisbech Bypass Junction Improvements	£9m	1,500 Jobs 2,000 homes £51m GVA p.a.		
King's Lynn	Hardwick, Saddlebow & Pullover Junction Improvements	£20-30m (Hardwick)	750 Jobs 400 homes £19m GVA p.a.		
King's Lynn to Norwich	North Tuddenham to Easton Dualling	£71m	BCR: VERY HIGH Improved Journey times & reliability		
Norwich	Longwater Junction	£30m	350 homes		
	Thickthorn Junction	£50m	3,300 Jobs 1,450 homes £149m GVA p.a.		
Norwich to Great Yarmouth	Blofield to Burlingham Dualling	£40m	BCR: VERY HIGH Improved Journey times & reliability		
Great Yarmouth	Vauxhall Roundabout	£20-30m	3,865 Jobs* 200 homes* £146m GVA p.a.*		
Lowestoft	Denmark Road	£10-12m	1,775 Jobs * 545 homes * £105m GVA p.a. *		
TOTAL short-med	dium term ask	£416m			

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Figure 2-4: A47 Alliance Business Case Short-Medium term: 2015-2021 (source: http://www.a47alliance.co.uk/assets/Uploads/FINAL.pdf)

LONGER TERM: POST 2021					
Location	Schemes	Indicative Cost	Economic Benefits		
Peterborough to Wisbech	Thorney Bypass to Guyhirn Dualling	£77m	BCR: HIGH Improved Journey times & reliability		
Wisbech	Wisbech Bypass Dualling	£68m	BCR: MEDIUM Improved Journey times & reliability		
Wisbech to King's Lynn	Tilney St Lawrence to King's Lynn Dualling	£36m	BCR: HIGH Improved Journey times & reliability		
King's Lynn to Norwich	King's Lynn to Swaffham Dualling Including East Winch/ Middleton Bypass	£166m	BCR: MEDIUM Improved Journey times, reliability & local communities		
	Swaffham to Dereham Dualling	£163m	BCR: HIGH Improved Journey times & reliability		
Norwich to Great Yarmouth	Acle Straight Dualling	£105m	BCR: HIGH Improved Journey times & reliability		
Great Yarmouth	Third River Crossing, Great Yarmouth	£112m	BCR: VERY HIGH (crossing only)		
	A12 Junctions in Great Yarmouth (Harfreys and Gapton Hall Roundabouts)	not yet known	3,865 Jobs* 200 homes* £146m GVA p.a.*		
	A12 from A47 Great Yarmouth to dualling at Gorleston Bypass	£123m			
Great Yarmouth to Lowestoft	A12 Gorleston to New Crossing Lowestoft Dualling	£102m	BCR: MEDIUM Improved Journey times & reliability		
Lowestoft	Lake Lothing Crossing, Lowestoft	£65m	BCR: HIGH 1,775 Jobs * 545 homes * £105m GVA p.a. *		
TOTAL longer term ask		£1bn			

Note: BCR = Benefit Cost Ratio HIGH = BCR = 2-4 MEDIUM = BCR = 1.5-2 VERY HIGH = BCR greater than 4

Figures are based on information known to date. Jobs and homes are based on economic modelling techniques which attribute a proportion of the growth potential of the land released e.g. the land released by the Postwick Hub Junction can accommodate around 5,000 jobs and 600 homes. BCRs are calculated using the average cost of recent HA schemes and include both traffic flow and accident benefits data. While every effort has been to make information consistent along the route, evidence has been sourced from several different studies so some methodological inconsistencies may exist.

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Figure 2-5: A47 Alliance Business Case Longer Term: Post 2021 (source: http://www.a47alliance.co.uk/assets/Uploads/FINAL.pdf)

<sup>\*</sup> in conjunction with other improvements in Great Yarmouth/Lowestoft

#### 2.4 Study Aims and Approach

The aim of the study was to identify if there is likely to be an economic case for investment to improve the two sections of the A47 identified near Kings Lynn (Tilney to East Winch) and Great Yarmouth (Acle Straight) as part of the Longer Term aspirations post 2021.

The study broadly followed Stage 1 of the Department for Transport (DfT) Transport Appraisal Process outlined in Table 2-1:

Stage	Task
1	Step 1: Understanding the current situation
	Step 2: Understanding the Future Situation
	Step 3: Establishing the Need for Intervention
	Step 4a: Identifying Objectives
	Step 4b: Define Geographic Area of Impact to be Addressed by the Intervention
	Identify if there is a case for investment

Table 2-1: A47 Study Stages

#### 2.5 Stakeholder Engagement

As part of the previous studies, looking at the feasibility of improvements to the A47 and A12 corridor, numerous stakeholder engagement processes have taken place allowing views of key stakeholders to be considered.

The A47 Alliance has a long term aspiration for the A47 to be fully dualled and members are fully engaged in the process to evaluate the case for investment to improve the sections of the A47 (Tilney to East Winch and Acle Straight).

The East of England Route Based Strategy evidence reports were informed by stakeholder workshops undertaken in September 2013 involving a range of key stakeholders.

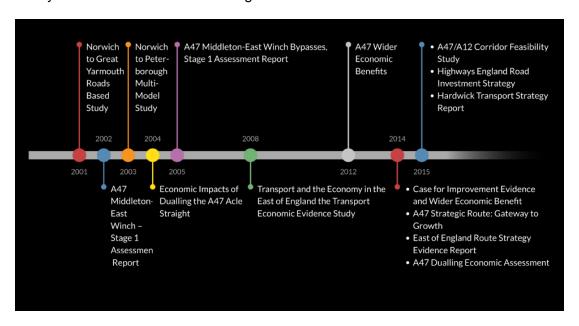
The A47/A12 Corridor Feasibility Study undertaken in 2014 included a stakeholder reference group, which was set up to allow input from stakeholders at relevant stages of the study. This included the Local Highway and Planning Authorities, Local Enterprise Partnerships and other statutory and interested bodies. Also as part of the preparation of the Highways Agency (HA) Route Strategy evidence report the HA sought information from its partners and other stakeholders to gain an understanding of the key operational, maintenance and capacity challenges for the route. In particular, taking into account future growth aspirations, proposed transport network alterations and main areas of concern for problems on the network.

Stage 2 and 3 would aim to include wider stakeholder engagement to better understand the challenges and drivers for change, and inform the development of options and the case for investment. It is envisaged that engagement could include members of the A47 Alliance, Highways England, Department for Transport, Local Enterprise Partnerships (LEPs), Local Authorities, and Local Chambers of Commerce.

# 3 Background and Historical Work

#### 3.1 Historical Work

The following sections provide a brief overview of the key information from historical studies relating to improvements on the A47 and in particular any reference to the Tilney to East Winch and Acle Straight sections.



#### 3.1.1 Norwich to Great Yarmouth Roads Based Study (Faber, 2001)

- The study looked at options for improvements along the corridor. The recommendations for improvements included:
  - o the need for an incident detection system on the corridor;
  - local junction improvements and 50mph speed limit and vehicle actuated signs on Acle Straight;
  - longer term improvements including improvements on the junctions on the western approach to Great Yarmouth, completion of dualling between Acle and Norwich (Blofield to North Burlingham), widening to modern single two lane carriageway of Acle Straight
- An addendum to the report noted that the dualling of the Acle Straight should be rejected as the benefits were insufficient to outweigh the environmental impacts (BCR of 1.4).

# 3.1.2 A47 Middleton-East Winch – Stage 1 Assessment Report (KBR for the HA, December 2002)

- The study was undertaken to identify improvement options for Middleton to East Winch (Hardwick Roundabout to Narborough Bypass). This looked at off-line and on-line options.
- Economically, the off-line options scored better than on-line options, a dual D2AP scored better than a wider single WS2AP carriageway and construction of the proposal in its entirety scored better than a staged construction.

• It was noted there was little difference in options however, Option 2 Central Route (off-line dual two-lane carriageway bypass with at-grade junctions) or Option 9 Central Route (off-line dual two-lane carriageway bypass with at-grade junctions) were recommended.

# 3.1.3 Norwich to Peterborough Multi-Model Study (Atkins, 2003)

- This study aimed to make recommendations to address the transport problems and realise the potential of the Norwich to Peterborough corridor and economic regeneration of northern East Anglia.
- The report was taken to Government Office it developed a set of recommendations for the short, medium and longer term up to 2031.
- The conclusion was that full dualling from Norwich to Peterborough could not be justified on current and projected traffic volumes but recommended a short-term measure to upgrade the A47 to dual 2 lane standard between A1 and Sutton (west of Peterborough), upgrade A47 to dual 2 lane between North Tuddenham and Easton (west of Norwich), localised junction improvements and signing at A47 Peterborough Parkway.
- HA's crossing improvements to reduce severance of the A47 were supported.
- Middleton to East Winch link is considered to have flows in excess of capacity by 2031. The preferred option is for small scale bypasses to villages of Middleton and East Winch but these will have environmental impacts.
- The East Winch to Swaffham link was predicted to operate below capacity up to 2031. Benefits of dualling are less than other areas and the local environment is highly sensitive. Minor improvements were suggested to improve safety e.g. junctions closed and accesses rationalised.
- SoS response to the study highlighted that full dualling could not be justified based on forecast traffic volumes. It was recommended that the HA (now HE) monitor traffic volumes and performance to implement small scale safety and management measures and review larger scale measures in future years.

# 3.1.4 Economic Impacts of Dualling the A47 Acle Straight (Mott Macdonald report for NCC, 2004)

- This report reviewed the economic impact of dualling the Acle Straight.
- It comments that improvements with the link to Norwich will address key accessibility issues in Great Yarmouth.
- It concluded that widening the Acle Straight has wide economic benefits it
  will create jobs directly through investment and regeneration measures
  experienced in the towns e.g. Great Yarmouth, contributing towards the
  regeneration of a deprived town, catalysing economic growth and reducing
  social exclusion.
- The report comments that the case for dualling Acle Straight is strengthened
  when considering the dualling of the entire A47 in accordance with the TransEuropean Network Classification of the road. This will open up greater
  opportunities and as part of a wider package it will contribute towards the

regeneration of a deprived town and encourage economic growth and reduce social exclusion.

- 3.1.5 A47 Middleton-East Winch Bypasses, Stage 1 Assessment Report (Halliburton KBR for the HA, November 2005)
  - The study aimed to identify options for small scale bypasses and realignment of the A47 to remove through traffic and reduce severance of Middleton, East Winch and West Bilney.
  - The report concluded that small scale bypasses would have benefits to the local communities but their short lengths make it hard to justify economically.
  - Junction delay was identified as being small but additional delays are expected if bypasses are implemented due to the diversion of traffic to the bypasses and the additional junctions required.
  - The bypasses will be longer than the current route and so journey time savings are likely to be less than junction delays and further travel results in increased vehicle costs.
- 3.1.6 Acle Straight Dyke Relocation Report (Atkins for HA, July 2007)
  - This report reviewed the environmental issues relating to dyke relocations to cater for the improvements to the Acle Straight section of A47. The document sets out estimated costs related to delivery e.g. land requirements, engineering (including drainage), environmental (including protected species mitigation, water quality).
  - It confirmed that in theory it may be possible for the dykes to be relocated but trials are required.
- 3.1.7 Transport and the Economy in the East of England the Transport Economic Evidence Study (Steer Davies Gleave, September 2008)
  - The study was to review the economic impact of transport in the East of England and in particular how it contributes to prosperity, productivity, employment and the environment.
  - The cost of congestion is estimated at around £660m p.a. (based on difference of peak and free-flow travel costs)
  - The transport network is forecast to operate worse in 2021 than 2003, indicating committed schemes do not keep pace with additional forecast demands.
  - The strategic intervention packages are set out in the document, including the Draft East of England Plan schemes which identified the A47 Middleton to East Winch local bypass proposals.
- 3.1.8 A47 Wider Economic Benefits (Mott Macdonald for NCC, Aug 2012)
  - The study highlights that the A47 will experience considerable pressure if planned growth is realised. It comments that some of the single carriageway sections are already over or close to their capacity, which results in delays to traffic at peak times and unreliable journey times.

- It is noted that the impacts on the A47 has a direct relationship with the wider economic benefits.
- Dualling of the entire length of A47 is estimated to reduce travel times by 30 minutes, equating to a saving of 9,300 vehicle hours over an average weekday and over 3 million vehicle-hours over a year, giving benefits to road users in excess of £42 million per year. By 2021 the benefits of full dualling would increase to £57m per year and to £78m by 2031.
- It is noted that King's Lynn has a particularly weak economic performance and an improvement to the infrastructure will greatly benefit the town.
- It is anticipated that if the road improvements take place, within 20 years
  there will be 9,615 more jobs and an increase of £390m per annum in GVA.
  Also there will be an additional £802m of private investment and an additional
  500 investment-related jobs across the 20 years compared with a scenario
  without the road improvements.
- Dualling the whole of the A47 was estimated to cost over £1bn.
- Dualling the Acle Straight was mentioned but the report concludes further investigation into the overall benefits is required because, whilst being beneficial, the implications of the environmental and engineering constraints are unknown.
- 3.1.9 Case for Improvement Evidence and Wider Economic Benefit (Peterborough City Council, A47 Alliance, Jan 2014)
  - The purpose of the document was to provide an evidence base for improvements to the A47, in particular the Peterborough and Cambridgeshire element of the A47.
  - Identified that the single carriageway section of the A47 performs poorly in terms of journey time and road safety.
- 3.1.10 A47 Strategic Route: Gateway to Growth (A47 Alliance, Feb 2014)
  - A47 Alliance presented a business case to the Government outlining that the A47 needs improvements along the A47/A12 corridor. It set out underperforming sections and priority investment for targeting problems.
  - The Gateway document sets out that the targeted improvements on the A47/A12 will turn it into a strategic link boosting economic development in the East of England and make a significant contribution to the national economic recovery.
  - It calls for £127m investment for 3 years then commit to a £247m package of further schemes by 2021. This will allow 15,115 jobs to be created, 10,040 new dwellings and an increase of £601m p.a. in economic output.
  - Long term goal is a fully dualled A47 Peterborough to Great Yarmouth and A12 to Lowestoft to improve journey time reliability, reduce travel times by 30mins and provide £342m per year benefit to road users.
    - Kings Lynn area Hardwick junction (£20-30m scheme cost), East Winch/Middleton bypass (£75m scheme cost) – job creation (750), Economic Output (£19m p.a.), Homes (400).

- Acle Straight dualling (£84m scheme cost) improved journey time and reliability.
- 3.1.11 East of England Route Strategy Evidence Report (Highways Agency, April 2014)
  - The report aims to identify network needs relating to operation, maintenance, and improvements to facilitate economic growth.
  - It is noted that sections of the single carriageway suffer from congestion, particularly at peak times and that the Hardwick junction and A47 in that area may need a significant upgrade.
  - The report highlights Acle Straight's poor safety record and notorious difficulty
    of maintenance and management especially during peak holiday periods. It
    also comments that capacity is impacted by it being single carriageway and
    results in lower speeds.
  - Capacity and safety issues are noted as a constraint on the A47 section south east of King's Lynn at East Winch.

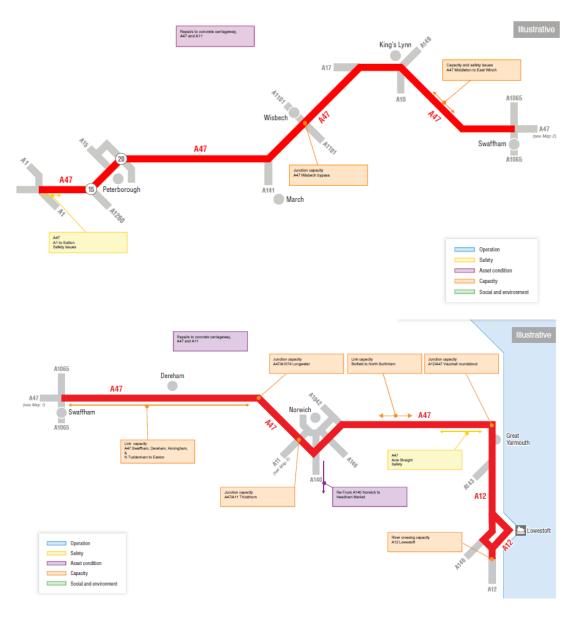


Figure 3-1: Summary of issues along A47 (Extract from East of England Route Strategy Evidence Report, Highways Agency)

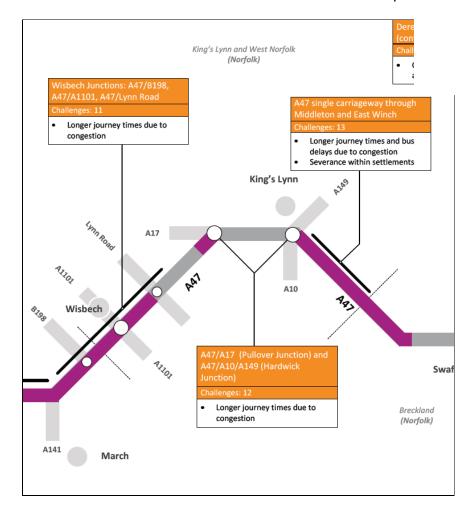
## 3.1.12 A47 Dualling Economic Assessment (Mouchel, July 2014)

- This assessment provided an indicative value for money calculation for dualling the A47. Overall, it is expected to deliver high value for money. The assessment considered the Acle Straight and East Winch sections:
  - Acle Straight dualling was expected to provide high value for money (BCR: 2.94)
  - Tilney to East Coast Business Park (junction with A17) was high value for money (BCR: 2.82);
  - o King's Lynn to Swaffham was medium value for money (BCR: 1.67).

## 3.1.13 A47/A12 Corridor Feasibility Study (AECOM Feb 2015) for HA

- The study area covered A47/A1 junction to Great Yarmouth and A12 link to Lowestoft.
- It noted that the widely held opinion by Local Authorities and businesses is that the current road is a significant constraint to growth.
- A47 Acle Straight has a perceived poor safety record and is congested at peak holiday periods.
- The area is expected to grow: 50,000 new jobs, 100,000 new homes in next 15 years.
- Main issues on the network relate to capacity journey time delays and unreliability.
- Figure 3-2 and Figure 3-3 illustrate the issues experienced at the Tilney to East Winch and Acle Straight sections of the A47.
- The main reasons for improvements cited in the report include:
  - Economic Growth
    - Facilitate growth at key centres
    - Facilitate growth in housing at key development hotspots
  - Improve capacity, resilience, safety
    - Reduce delay and gueues (peak hrs and seasonal)
    - Improve resilience and reduce incidents and their effects
    - Reduce collisions
  - Environmental concerns
    - Minimise unacceptable impacts on natural environment and landscape
    - East Winch Common SSSI SE of King's Lynn
    - Acle Straight runs through the Broads National Park and near to the Berney Marshes and Breydon Water (RAMSAR, SPA and SSSI) near Great Yarmouth.
  - Maintenance is an issue as many sections are single carriageway and there are few suitable alternative (diversion) routes.
  - A47/A17 Pullover junction and the A47/A10/A149 Hardwick interchange junctions experience capacity issues – affecting vitality of King's Lynn and viability of development in the area.

- A47/A17 queue data shows significant queuing on all arms, particularly A17 western arm and A47 southern arm due to high opposing flow (from A47 to A17 west).
- Signalisation of the roundabout was considered to have an overall poor performance due to a relatively low level of increase in capacity, it is remote from Peterborough's areas of growth and has potential to impact important habitats.
- Acle Straight average speed (eastbound) is approx. 22km/h slower in AM peak than average for the day.
- A47/A17 Pullover junction and the A47/A10/A149 Hardwick Interchange junctions were identified as having above national average accident rates.
- Traffic growth predicted to be 21% by 2021 and 45% by 2031 from 2013 base year (Acle Straight and Middleton to East Winch were not shown to exceed capacity in AM peak however, Acle Straight will exceed in PM peak by 2031). Given this, it was not considered appropriate to prioritise improvements on this link at the time of the study.
- It was noted that calculations for A47 Middleton to East Winch showed there isn't a current or future issue and current safety issues have been addressed with a reduction in speed limit.



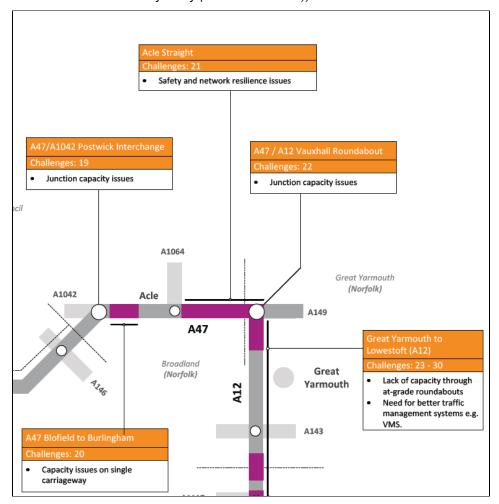


Figure 3-2: A47/A12 Corridor Feasibility Study issues around Tilney to East Winch section (source: A47/A12 Corridor Feasibility Study (AECOM Feb 2015))

Figure 3-3: A47/A12 Corridor Feasibility Study issues around Acle Straight section (source: A47/A12 Corridor Feasibility Study (AECOM Feb 2015))

The study stated there was no convincing evidence that dualling of the entire
route is required and would represent value for money, consequently a
number of locations that could be targeted for investment were identified.
With regard to the Tilney to East Winch and Acle Straight sections, only
safety improvements to Acle Straight were suggested to be progressed
further however, further investigation of the environmental constraints should
be undertaken.

## 3.1.14 Highways England Road Investment Strategy (Apr 2015)

- The strategy sets out that Highways England (HE) will modernise, maintain and operate the network.
  - Modernise develop a national spine of Smart Motorways adding capacity at key points and upgrading routes;

- Maintain upgrade busiest junctions and alleviate worst bottlenecks, resurface network and improve condition, design work to improve productivity and minimise disruption;
- Operate improve information for journeys, better plan road works, work with others to respond effectively to incidents creating congestion.
- It is noted that more than 140,000 new homes and 110,000 new jobs are expected by 2021 across the LEPs in this area.
- Lack of capacity on parts of the A47 is noted as a high priority issue.
- The RIS notes growing challenges of maintaining deteriorating assets, limited capacity to accommodate significant growth, network resilience and capacity weaknesses on lower standard routes.
- Key opportunities and challenges include: Junction capacity A47 Wisbech bypass, capacity and safety issues A47 Middleton to East Winch, link capacity A47 Swaffham to Easton, junction capacity at A47/A1074 Longwater, A47/A11 Thickthorn, Acle Straight safety issues.
- Committed schemes include (all with a construction start date of 2020):
  - A47 North Tuddenham to Easton, dualling to provide continuous dual carriageway between Norwich and Dereham,
  - A47 Blofield to North Burlingham dualling, combined with the North Tuddenham to Easton scheme this will provide full dualling between Dereham and Acle.
  - Acle Straight safety improvements at key hotspots together with safety barriers, junction improvements and road widening/capacity improvement (work with Natural England required due to environmental sensitivities).

## 3.1.15 Hardwick Transport Strategy Report (Mott MacDonald, May 2015)

- The report reviewed the issues at the junction including current traffic conditions, future developments, environmental constraints, initial options and potential strategies.
- It is commented that traffic growth is expected, as a result of 7,510 houses planned, and the junction needs to be assessed to determine if it can accommodate the growth.
- It is noted that the Borough Council of King's Lynn and West Norfolk Core Strategy highlights priority transport improvements focus on the strategic networks including bypasses for Middleton and East Winch, and West Winch; and junction improvements at key interchanges including A47(T)/A149.
- Delay on the A47 during peak hours was shown to be generally less than
   1 minute
- Estimates of growth resulting from nearby developments showed around 17% growth by 2020 and 55% growth by 2035.
- Environmental constraints in the vicinity of the junction include (amongst others) a SSSI approximately 1km southeast of the junction; 7 County

- Wildlife sites, 9 TPO trees and a conservation area within 2km of the junction.
- 20 options for improvements to the junction were initially suggested (via stakeholder events and a developer forum). These were sifted, using criteria based on the EAST assessment criteria, to produce a list of 13 options to be considered further. These were reduced to 3 options to cater for predicted growth by 2035:
  - A new housing link road from the A10 south of West Winch heading north to a new roundabout on the A47, approximately half a mile east of the Hardwick Interchange (£43.5m);
  - Upgrading the A47 to dual carriageway standard between this new roundabout and the existing roundabout immediately east of the Hardwick Interchange (£39.8m);
  - Improvements to the Hardwick signalised gyratory to maximise its capacity, through localised widening of the circulatory carriageway and exits (£31.9m).

#### Overview of key points from previous studies

- Traffic growth is expected on the A47 corridor due to large volumes of planned residential and employment developments.
- It is recognised that improvements to the A47 corridor can improve the economic performance of the region.
- A long term aspiration of local authorities and businesses in the area is for complete dualling of the A47, particularly given its importance as a Trans-European Network.
- Current lack of capacity is recognised on the network, in particular the Hardwick Interchange junction is identified as a key junction to be improved.
- Generally the A47 at East Winch is noted as suffering from congestion and lack of capacity, whereas Acle Straight is subject to safety concerns.
- Dualling Acle Straight and Tilney to King's Lynn is identified as being high value for money, whereas King's Lynn to Swaffham was identified as being medium value for money.
- Environmental issues, in particular relating to dykes, impact the ability to widen the carriageway at Acle Straight.

Figure 3-4: Summary of key points from previous studies and reports.

# 3.2 Strategic Traffic Models

The A47 / A12 Corridor Feasibility Study Stage 1 (AECOM, February 2015) provides an overview of the strategic and junction models for the entire A47 / A12 corridor. Details of the relevant models adjacent to the A47 Tilney to East Winch and Acle Straight sections is identified in Table 3-1.

Model	Geographic Scope	Model Base Year	Status
East of England Regional Model (EERM)	A47 and A12 routes	2006	Strategic SATURN model Age of base year data exceeds desirable time limit The 2006 re-validation was based on additional RSI surveys in parts of Norfolk and Suffolk
King's Lynn Transport Model (KLTM)	A47 (A17 to A149)	2007	Strategic SATURN model Base data is reaching time limit
Norwich Area Transportation Strategy (NATS)	A47 Dereham to Acle	2006/2012	Strategic SATURN model 2006 base data is reaching limit. Status of 2012 recalibration unclear.
Great Yarmouth Area Transport Strategy (GYATS)	Short section of A47 approaching Great Yarmouth A12 from A47 to Gorleston Golf Club on south edge of Great Yarmouth	2003	Strategic SATURN model Age of base year data exceeds desirable time limit

Table 3-1: Strategic Traffic Models (source: A47 / A12 Corridor Feasibility Study Stage 1 (AECOM, February 2015))

Figure 3-5 provides an overview of traffic models within the Norfolk region identified on the Highways England website.

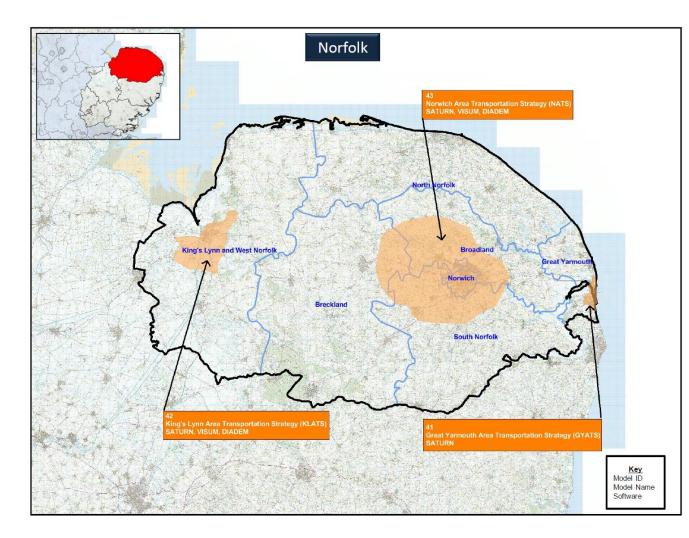


Figure 3-5: Highways England Traffic Model Plan for Norfolk (source: http://assets.highways.gov.uk/specialist-information/guidance-and-best-practice-regional-planning/EoE\_Traffic\_model\_Library\_20052013.pdf)

The A47 / A12 Corridor Feasibility Study Stage 1 (AECOM, February 2015) concluded that all existing models could be considered too old and not compliant with WebTAG. Therefore, no strategic modelling was undertaken as part of the feasibility study. The following approach was used:

- Evidence gathered from previous reports and datasets from local authorities and existing traffic flow data (Highways Agency Hatris TRADS database)
- Qualitative feedback was obtained from key stakeholders
- Traffic growth using TEMPRO and NTM
- Economic appraisal using WebTAG assumptions and key input data from traffic volumes, journey times, distances, traffic growth, DfT TUBA software to appraise transport user benefits for each option.

It is understood from discussions with Highways England (Alan Kirkdale) that the East of England Regional Model (EERM) is currently being updated. Completion of the base year model (2015) is anticipated in Spring / Summer 2016 with completion of the full model including forecast years towards the end of 2016.

# 4 Understanding the Current Situation (Step 1)

Step 1 is designed to contribute to developing an understanding of the current situation in the study area in terms of:

- · current transport and other policies;
- current travel demand and levels of service; and,
- current opportunities and constraints.

#### 4.1 Current Transport and Other Policies

This section sets out the wider strategic and policy context against which the proposed improvements could be developed, and the A47 Alliance as promoter of the scheme. The strategic aims and responsibilities of the Local Enterprise Partnership for the New Anglia and Greater Cambridge Greater Peterborough (GCGP) and any other policies impacting on the future situation are identified in later sections of this report.

#### 4.1.1 Highways England Strategic Business Plan 2015-2020

Highways England is the new company set up by Government to operate and improve the motorways and major A roads in England (Strategic Road Network – SRN). The primary role is to deliver a better service for road users and to support a growing economy.

The Highways England Strategic Business Plan 2015-2020 describes how the Road Investment Strategy (RIS) will be delivered and the requirements of the Performance Specification.

The Road Investment Strategy (RIS) sets out an ambitious vision for the future of the SRN. A vision that by 2040 the network will be smoother, smarter and more sustainable. In the RIS the Government highlights many of the key challenges faced by the network, namely:

- 1. The network is struggling to cope in the face of increasing demand and the volume of high speed traffic
- Delays to journeys deter investment and constrain the ability of business to compete
- 3. Stop-start funding available for roads investment has made it difficult to plan for the long term
- 4. Vehicle emissions and noise significantly impact local communities
- 5. Our customers need better and more up to date information to manage their journeys.

The RIS sets out the investment plan and performance requirements for the network for the next five years, together with a long term commitment to capital funding totalling more than £11bn. The long-term investment will enable Highways England to start work on delivering a modern and sustainable network that will tackle

congestion, supports economic growth and provides better connections across the country.

The Highways England Performance Specification sets out the eight key areas in which the Government and the Strategic Roads Network Monitor will measure both the network and company performance. These areas are set out in Table 4-1:

Key Area	KPI	Target
Making the network safer	Number of KSI's on the SRN	Ongoing reduction in KSI's to support a decrease of at least 40% by the end of 2020 against 2005-09 baseline
Improving user satisfaction	Percentage of National Road Users' Satisfaction Survey respondents who are Very or Fairly satisfied	Achieve a score of 90% by 31 March 2017 and then maintain or improve it
Supporting the smooth flow of traffic	KPI 1 – Network Availability – the percentage of the SRN available to traffic	Target 1 – Maximise lane availability so that it does not fall below 97% in any one rolling year
	KPI 2 – Incident Management – percentage of motorway incidents cleared within one hour	Target 2 – At least 85% of all motorway incidents should be cleared within one hour
Encouraging economic growth	Average delay (time lost per vehicle mile)	
Delivering better environmental outcomes	KPI 1 – Number of Noise Important Areas mitigated	Target 1 – Mitigate at least 1,150 Noise Important Areas over Road Period 1
	KPI 2 – Delivery of improved biodiversity, as set out in the Company's Biodiversity Plan	Target 2 – reduce net biodiversity loss on an ongoing annual basis outlined in the Company Biodiversity Action Plan
Helping cyclists, walkers and other vulnerable users	The number of new or upgraded crossings	

Achieving real efficiency	KPI 1 – Cost savings – savings on capital expenditure	Target 1 - Total savings of at least £1.212bn over Road Period 1 on capital expenditure
	KPI 2 – Delivery Plan Progress – progress of work, relative to forecasts set out in the Delivery Plan, and annual updates to the that Plan, and expectations at the start of Road Period 1	Target 2 – meet or exceed forecasts
Keeping the network in good condition	Percentage of pavement asset that does not require further investigation for possible maintenance	Percentage to be maintained at 95% or above

Table 4-1: - Highways England Performance Specification

Route Strategies were prepared to identify investment needs for the RIS period 1 (2015-2021). The East of England Route Strategy collated evidence on network performance issues, engaged local stakeholders, identified challenges and opportunities facing the strategic road network (SRN) including the A47. Following this, Option Assessment Reports (OAR) and Strategic Outline Business Cases (SOBC) were produced for those sections of the A47 deemed to identify schemes to include in RIS period 1. It is understood that the A47/A12 Corridor Feasibility Study (AECOM Feb 2015) formed a key part of the evidence base informing the East of England Route Strategy. The following schemes were announced as part of the Autumn Statement 2014 for inclusion in the trunk road programme 2015-2021:

- A47 North Tuddenham to Easton Dualling
  - Dualling to provide continuous dual carriageway between Norwich and Dereham. Combined with the Blofield to North Burlingham scheme, this will provide full dualling between Dereham and Acle.
- A47 Blofield to North Burlingham Dualling
  - Dualling to complete a gap in the dual carriageway between Norwich and Acle.
- A47/A12 Great Yarmouth Junction Improvements
  - Junction Improvements, including the reconstruction of Vauxhall roundabout.
- A47 Acle Straight Safety Measures
  - Safety improvements at key hotspots and joint working with Natural England to establish environmental impacts and mitigation for the medium and long term which could include installation of safety barriers, junction improvements and road widening or capacity improvements.
- A47/A11 Thickthorn Junction Improvement
  - o Improvement of the interchange to give improved access to Norwich.

- A47 Guyhirn Junction Improvement
  - Creation of a new larger junction linking ther A47 with the A141
- A47 Wansford to Sutton Dualling
  - Dualling the A47 between the A1 and Peterborough

#### 4.1.2 *A47 Alliance*

The A47 Alliance comprises key stakeholders including local authorities, MPs, LEPS and representatives from the business community along the length of the trunk road route between Peterborough and Lowestoft. The key function is for the partner organisations to work together to make the case for improvements to the A47 and secure the investment required to deliver them. The following summarises the key objectives of the A47 Alliance:

- To act as a special interest group to support the strategic case for improvements on the A47 corridor between the port at Great Yarmouth and the A1.
- The A47 Alliance shall support the transport authorities along the route, the New Anglia Local Enterprise Partnership (LEP) and the Greater Cambridge Greater Peterborough LEP. It shall achieve its objective by:
  - Developing clear evidence-based advice and business cases to support the strategic case or as requested by the LEPs or transport authorities
  - Co-ordinating support of local interests along the route, to assist in providing evidence or other help to support advocacy
  - Commissioning Task and Finish groups where necessary to take forward work to support the agreed priorities
  - Forming strategic alliances along the A47 between the A1 and Great Yarmouth including other LEPs, local authorities, communities and other advocacy groups on the route.

# 4.2 Policy Documents

#### 4.2.1 Norfolk County Council Local Transport Plan (LTP) 2011-26

The Norfolk County Council LTP sets out the county's policy framework and overall strategy for delivery up to 2026. It will help guide investment and decisions for transportation improvements.

- The LTP notes that the A47 experiences unreliable and lengthy journey times due to a lack of capacity which also impacts on the efficiency of the European TEN-T network.
- It is highlighted that the 2014 Autumn Statement government committed the following schemes in Norfolk to the 2015-2021 programme:
  - A47 North Tuddenham to Easton Dualling
  - A47 Blofield to North Burlingham Dualling
  - A47/A12 Great Yarmouth Junction Improvements
  - A47 Acle Straight Safety Measures
  - o A47/A11 Thickthorn Junction Improvement

- It is noted that improvements to A47 are a high priority for NCC and, through the A47 Alliance, NCC will look for opportunities to take forward improvement schemes on sections not included in the government's Roads Investment Strategy.
- 4.2.2 Borough Council of King's Lynn & West Norfolk Core Strategy (adopted July 2011)

  The Core Strategy is the main planning document setting out the long term strategy for the borough. It includes the vision, objectives and broad policies that will guide the use of land and new development up to 2025.
  - The Core Strategy highlights issues of high vehicular use in the borough including road accidents, pollution and congestion. It is noted that the A47 near King's Lynn in particular experiences congestion.
  - Policy CS11 states that the Council will work with relevant authorities to improve connectivity in the borough and a specific priority is to improve strategic networks and reduce congestion and improve reliability and safety of travel on A47.
- 4.2.3 Joint Core Strategy for Broadland, Norwich and South Norfolk (adopted Mar 2011 and amendments Jan 2014)
  - The Core Strategy notes the A47 has limitations, in particular to the east of Norwich.
  - Policy 6: 'Access and transportation' highlights that improvements to the A47 will be promoted, in particular the need to reduce the significant stretches that remain single carriageway.
  - It is noted that development in many locations requires improvements to the A47 and its junctions.
- 4.2.4 Great Yarmouth Borough Council Borough Wide Local Plan (2001)

The Local Plan provides the current framework for all new developments and informs planning application decisions in the Borough. Its saved policies form the extant development plan pending the production of the new Local Plan, which is currently underway.

The Local Plan identifies land for housing and employment. Housing development is directed towards existing towns and villages and similarly employment land allocations are proposed in close proximity to the urban centre of Great Yarmouth and in areas well accessed by the A47.

The Local Plan notes that an essential part of the strategy was for a start to be made on the proposed dualling of the A47 between Great Yarmouth and Acle at the earliest possible date to address issues of safety and congestion.

# 4.2.5 The Broads National Park Authority: Core Strategy 2007 – 2021 Development Plan Document (adopted in September 2007)

The Core Strategy is the principal planning document for the authority, replacing the 1997 Broads Local Plan. It sets out the main vision and objectives for the area up to 2021.

- The Core Strategy notes the A47 is a principal road crossing the national park and that 94% of its visitors arrive by car which creates seasonal congestion.
- Policy CS16 highlights that sustainable improvements to transportation to access facilities within the Broads will be sought.
- The Core Strategy states that "any new road building through the Broads or major upgrading scheme would constitute a "major development". This is something that strategic national policies would not allow in the Broads, unless there are exceptional circumstances."

#### Overview of key points from Policy Documents

- It is recognised the A47 suffers from congestion, delay and unreliable journey times.
- Development is proposed in the vicinity of the A47.
- Improvements to the A47 are supported in various policy documents.
- Acle Straight passes through the Broads National Park which is subject to a range of environmental designations.

Figure 4-1: Summary of key points from policy documents

#### 4.3 Current Travel Demand and Levels of Service

# 4.3.1 Highway Network

The A47 trunk road runs between the A1 at Peterborough and the A12 at Great Yarmouth. It forms the major east-west route across northern East Anglia, serving the major communities of Peterborough, Kings Lynn, Norwich and the town and port of Great Yarmouth. It forms part of the trans-European Transport (Comprehensive) Network (TEN-T) which is a European wide network that aims to facilitate the mobility of goods and passengers within the EU. The A47 also connects to other parts of the Strategic Road Network at the A1, A11 and A12 and also to other principal routes A15, A16, A17, A10 and A140.

The A47 varies considerably in standard over its length between single and dual carriageway, with at-grade and grade separated junctions, in what tends to be perceived as an incoherent manner in relation to its range of journey types. It is single carriageway between the A1 and Ailsworth bypass with at-grade junctions and accesses, handling predominantly longer distance trips but also providing the main road access to several smaller communities. The Peterborough section is mainly dual carriageway with grade-separated junctions and facilitates a significant proportion of both local trips and long distance traffic.

East of Peterborough the A47 is predominantly single carriageway with at-grade roundabouts and priority junctions. There are, however, a number of dual carriageway sections, these being at Thorney (with at grade junctions), Walton Highway to Tilney High End (grade separated and at-grade), Kings Lynn (grade separated and at-grade), Swaffham (grade separated), Dereham (grade separated and at-grade), Norwich (grade separated) and Acle (at-grade).

In terms of traffic flows the A47 experiences significant seasonal variations associated with tourism in the Broads and Norfolk coast. Table 4-2 and Figure 4-2 show traffic flows for the entire A47 based on Highways Agency TRADS database. The most applicable two-way Annual Average Daily Traffic (AADT) flows for the Tilney to East Winch section is approximately 15,000 vehicles (Middleton to East Winch) and the Acle Straight section is approximately 19,000 vehicles.

Feasibility Study ID	Two-way AADT (24hr) 2013	AM Peak % HGV	PM Peak % HGV
A47 Between A1 and Sutton (West of Peterborough)	22,719	19.2	10.2
A47 Eye to Thorney	24,562	28.4	17.2
Thomey to Walton Highway (Thomey to Guyhim)	18,537	36.5	18.7
Thomey to Walton Highway (Guyhirn to Wisbech)	22,126	31.8	18.0
Thomey to Walton Highway (South of Wisbech)	16,447	37.7	19.9
Thomey to Walton Highway (East of Wisbech)	15,814	27.4	15.5
A47 Middleton to East Winch	15,095	27.1	14.6
A47 Middleton to East Winch	14,627	24.8	14.7
A47 Around Swaffham, Dereham	16,810	23.0	12.9
A47 North Tuddenham to Easton	24,354	21.7	9.8
Norwich Bypass	42,380	22.3	10.1
A47 Blofield to Burlingham	27,443	25.7	11.6
A47 Acle Straight	18,960	17.9	6.5
Breydon Bridge	33,312	9.8	3.9

Table 4-2: A47 Traffic Flow Data (source: A47 / A12 Corridor Feasibility Study, AECOM, 2015)

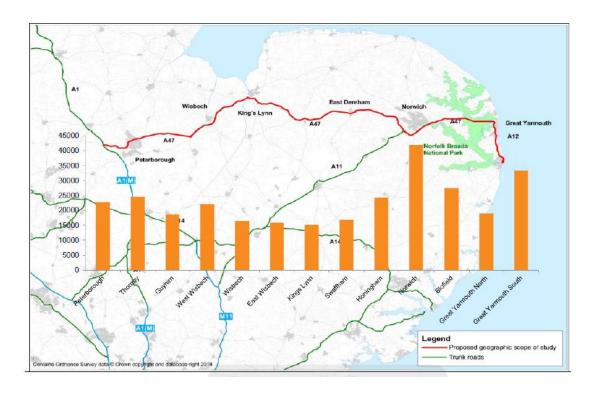


Figure 4-2: A47 Traffic Flow Chart (source: A47 / A12 Corridor Feasibility Study, AECOM, 2015)

Table 4-3 details a summary of a review undertaken by AECOM in February 2015 of the traffic speeds on various sections of the A47/A12 route for the AM peak hour (0800-0900). It was noted that the average speeds in the peak periods were lower than the daily average speed on a number of links, in particular the A47 Acle Straight (eastbound link) had considerably lower speeds during peak periods, indicating issues of congestion.

Feasibility Study ID	Daily Average Speed (km/h)	Average AM Peak Hour Speed (km/h)	Total Recorded Flow (Veh)
A47 Between A1 and Sutton (West of Peterborough)	87.5	81.5	1051
A47 Eye to Thorney 10 - Thorney to Walton Highway (Thorney to Guyhirn)	77.0	72.5	682
Thorney to Walton Highway (Guyhirn to East of Wisbech)	83.5	82.0	590
A47 Middleton to East Winch	73.0	73.0	590
A47 Around Swaffham, Dereham	79.0	79.0	685
A47 North Tuddenham to Easton	83.0	63.0	979
A47 Blofield to Burlingham	80.0	69.5	1207
A47 Acle Straight	72.0	49.5	768
Breydon Bridge	57.0	42.5	1394
A12 Bascule Bridge	29.0	29.5	1668

Table 4-3: – A47/A12 Traffic Average Speed Data for AM Peak: 08:00 – 09:00 (source: A47 / A12 Corridor Feasibility Study, AECOM, 2015)

#### 4.3.2 Road Safety

The A47/A12 Corridor Feasibility Study (Feb 2015) included a review of safety on the A47 based on the Highways Agency's Area 6 Quarterly Road Safety Reports. This review identified the A47/A148 Hardwick grade-separated roundabout junction as having an accident rate above the national average. It also highlighted that the majority of links with above national average accident rates were single carriageway which included links near Great Yarmouth and sections near Wisbech, Middleton and East Winch. The following Table and Figures illustrates the number of accidents over a five year period (2010 – 2014) on the links that are the focus of this study.

	Accident type (2010-2014)				
Location	Fatal	Serious	Slight	Total	
Acle Straight (11.5km)	3	10	29	42	
East Winch Section (12.2km)	2	8	31	41	
Tilney Section (3.3km)	1	3	11	15	

Table 4-4: Number and Severity of accidents in sections of A47 (Source: www.crashmap.co.uk, 2015).

Collision rates and severity rates for the two sections of the A47 are shown to be generally higher than the national average as shown in the A47 / A12 Corridor feasibility study.

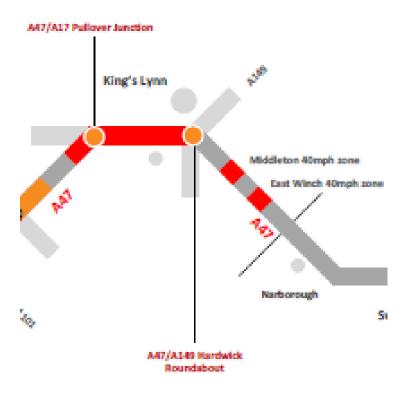


Figure 4-5: Kings Lynn links and junctions with collision rates above national average (Source: A47 / A12 Corridor Feasibility Study, AECOM, 2015)

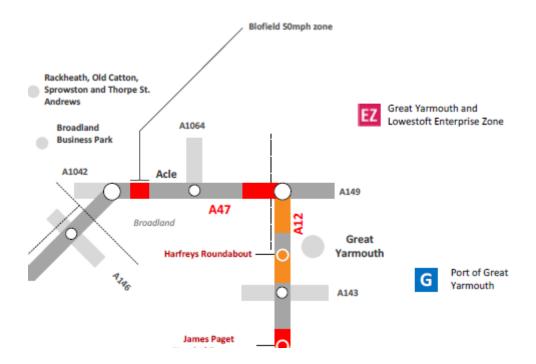
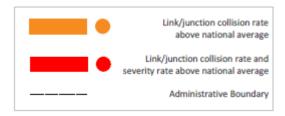


Figure 4-6: Acle Straight links and junctions with collision rates above national average (Source: A47 / A12 Corridor Feasibility Study, AECOM, 2015)

#### Key



# 4.3.3 Travel Demand

Figure 4-3 is an extract from the A47/A12 Corridor Feasibility Study undertaken by AECOM in 2015 and it illustrates the Method of Travel to Work in England and Wales based on the 2011 census data for the local authority areas in the vicinity of the A47.

The Tilney to East Winch section of the A47 mainly falls within the King's Lynn and West Norfolk Borough with journeys also likely to/from the Breckland (east of Kings Lynn) and Fenland (west of Kings Lynn) districts. Driving to work is the most common mode of commuting (approximately 75%), followed by walking / cycling (approximately 15%) and public transport (approximately 5%).

The Acle Straight section of the A47 is predominantly within the Broadland District Council boundary (but Broads Authority planning area) and also falls within the Great Yarmouth District Council area. Driving to work is the most common mode of

Work from home Public Transport Car/Van/Taxi/Motorcycle Walk/Cycle 100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0% Fenland Breckland Broadland Norwich South Waveney Peterborough Great King's Lynn

commuting but there is a higher proportion of walking / cycling journeys in Great Yarmouth compared with Broadland.

Figure 4-3: Travel Demand by Mode (source: A47 / A12 Corridor Feasibility Study, AECOM, 2015)

Census data also identified that both of the local authority areas of Great Yarmouth and Kings Lynn & West Norfolk experienced a net outflow of commuters; with net flows of -1,285 and -3,744 respectively. A significant proportion of in-commuting to Great Yarmouth is from Waveney (4,142) and the main areas for out-commuting from Great Yarmouth are to the Waveney (2,787) and Norwich (2,031) authority areas. Kings Lynn & West Norfolk receives most of its in-commuting from the Breckland (1,616) and Fenland (3,509) authority areas with the areas with the highest out-commuting from Kings Lynn & West Norfolk also being the Breckland (2,549) and Fenland (2,032) authority areas.

Acle Straight passes through Broadland District Council and The Broads National Park Authority areas. The National Park in particular generates a significant amount of movements and travel in the area; it attracts approximately 8 million visitors per year and 94% of its visitors arrive by car.

#### 4.3.4 Public Transport

#### Rai

There are rail passenger services between Norwich and Great Yarmouth and between Norwich and Lowestoft. There are no direct train services parallel to the A47 between Peterborough and Norwich; rail journeys between these areas travel



via Ely. Figure 4-4 and Table 4-7 detail the rail routes and journey times between key destinations including King's Lynn and Great Yarmouth.

Figure 4-4: Rail Routes in East of England (source: http://www.nationalrail.co.uk/static/documents/content/nationalrailnetworkmap.pdf)

From/To	Peterborough	Ely	King's Lynn	Norwich	Great Yarmouth	Lowestoft
Peterborough		33	64 (via Ely)	90 (via Ely)	122 (via Ely – Norwich)	127 (via Ely - Norwich)
King's Lynn	65 (via Ely)	30		87 (via Ely)	119 (via Ely - Norwich)	124 (via Ely - Norwich)
Norwich	93 (via Ely)	58	89 (via Ely)		32	37
Great Yarmouth	125 (via Norwich – Ely)	150 (via Norwich)	121 (via Norwich – Ely)	32		-
Lowestoft	129 (via Norwich – Ely)	94 (via Norwich)	125 (via Norwich – Ely)	36	-	

Table 4-7: Rail journey times in minutes (source: A47 / A12 Corridor Feasibility Study, AECOM, 2015)

#### Bus

There are bus services that currently operate along the A47 corridor. First Group run the X1 Excel which offers regular (up to every 15 minutes) and direct links between Lowestoft and Norwich as illustrated by the blue line in Figure 4-5 and also Norwich to Peterborough, via King's Lynn.

Norfolk Green run services with a focus on King's Lynn. Bus service Number 46 connects March and Kings Lynn using the section of the A47 that is the focus of this study to the south west of King's Lynn. This is effectively an hourly service during the day, operating reduced service levels on weekends and bank holidays. Bus service Number 38 connects King's Lynn and Middleton, it is referred to as a shopping bus, with a low level service running Monday to Saturday with typically 3 services in any one direction per day. The Number 1 service run by konectbus also

connects King's Lynn and East Winch along the A47 with an hourly service Mon-Fri and 2 hourly service on Saturdays, Sundays and Bank Holidays.

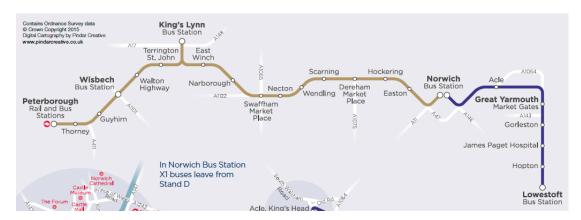


Figure 4-5: – X1 Excel route map (source: http://www.firstgroup.com/norfolk-suffolk/routes-and-maps/x1-excel-lowestoft-great-yarmouth-norwich)

Table 4-8 shows the level of connectivity and typical journey times between the key settlements in this area, illustrating relatively frequent services and reasonable journey times.

Deute	Bus Service (per day	Travel Time		
Route	Monday – Friday	Saturday	Sunday	Travel Time
Peterborough to Norwich (Peterborough - Wisbech - King's Lynn - Norwich)	22 buses	21 buses	11 buses	2 hrs 50 mins
Norwich to Peterborough (Norwich – King's Lynn – Wisbech – Peterborough)	22 buses	21 buses	12 buses	3 hrs 10 mins
Norwich to Great Yarmouth	41 buses	40 buses	24 buses	35 mins
Great Yarmouth to Norwich	42 buses	40 buses	38 buses	38 mins
Norwich to Lowestoft	40 buses	33 buses	9 buses	1 hr 15 mins
Lowestoft to Norwich	40 buses	33 buses	9 buses	1 hr 20mins

Table 4-8: Bus services between key settlements (source: A47 / A12 Corridor Feasibility Study, AECOM, 2015)

#### 4.3.5 Cycling and Walking

As noted previously the proportions of people walking and cycling to work are relatively low in the Broadland, Great Yarmouth and King's Lynn & West Norfolk areas although they are higher than the proportions of people commuting by public transport.

There is limited infrastructure provision for walking alongside the sections of the A47 being considered as part of this study. On the section near Great Yarmouth, between Tilney and East Winch there is a total of approximately 1.7km of footway. Approximately 1.5km of this is situated on the northern side of the A47 between the eastbound bus layby (near the junction with Pullover Road) up to where the A47 becomes dual carriageway approximately 500m south west of the roundabout junction with the A17.

The Department for Transport has traffic count sites providing street-level traffic data for every junction-to-junction link on the 'A' road and motorway network in Great Britain. Count sites along sections of the links within the study area have been reviewed (see Figure 4-6) these include:

- Count point ref 36511 is situated at the eastern end of the Acle Straight;
- Count point ref 36516 near East Winch;
- Count point ref 81049 near Tilney All Saints.

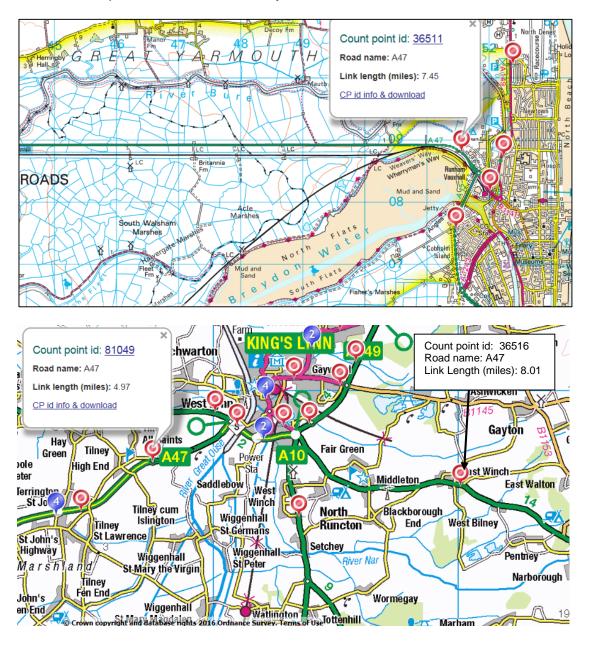


Figure 4-6: Locations of count sites on links within the study area (source DfT)

Table 4-9 details the AADF of the different modes at these locations; based on an average of the previous 5 year periods (2010- 2014). As can be seen there is, proportionally, very low numbers of cyclists using these sections of the A47. There

is no pedestrian count data for these links but it is unlikely that there would be many pedestrians walking this route. However, the A47 passes through a number of settlements east of King's Lynn including north Runcton, East Winch, Middleton and Bilney. There is likely to be a number of local trips, which could be undertaken by walking and cycling, generated from these settlements.

Count ID / Location	Pedal Cycles	Motorcycles	Cars / Taxis	Buses / Coaches	Light Goods Vehicles	All HGVs	All Motor Vehicles
36511	7	158	15035	194	3013	767	
Acle	(0.04%)	(0.8%)	(78%)	(1%)	(16%)	(4%)	19167
36516	8	74	9998	165	2396	1203	
East Winch	(0.06%)	(0.5%)	(72%)	(1%)	(17%)	(9%)	13836
81049	3	128	13561	152	2857	1534	
Tilney	(0.02%)	(0.7%)	(74%)	(0.8%)	(16%)	(8%)	18232

Table 4-9: Traffic Count Data at Acle Straight and A47 near King's Lynn (Source: DfT Traffic Count Data)

#### 4.4 Constraints

A summary of the constraints that could impact delivery of dualling of the sections of the A47 that are the focus of this study are set out below.

#### 4.4.1 Physical features

The section of A47 to the south-west of King's Lynn that spans over the Hardwick Interchange (A10/A149/A47) roundabout is grade separated. The bridge/flyover nature of this section of the A47 would require additional structures to accommodate a dual carriageway, which will be expensive to implement and therefore would adversely impact on a cost benefit ratio. Further investigation in to the exact impact of this is required.

The A47 passes through a number of settlements in the study area, which may impact the ability to dual the sections of single carriageway in those areas. These pinch points include Middleton, East Winch and West Bilney.

#### 4.4.2 Funding – Highways England RIS2

There is currently no allocated funding for any improvements to the A47 Tilney to East Winch and Acle Straight sections (other than the safety improvements and environmental trial noted). Indicative costs for dualling each of these sections is likely to be in excess of £100m each. Funding for schemes at this significant level would therefore need to be secured from central government with the likely route being the Roads Investment Strategy (RIS) period 2 which covers 2021-2025.

# 4.4.3 Land ownership

The land adjacent to the A47 in the study area is predominantly agricultural fields in a number of different ownerships. The Tilney to East Winch section also passes through small settlements, with buildings fronting the A47.

It is understood that there are several landowners adjacent to the Acle Straight section of the A47 also and any significant work including relocation of the dykes and widening would impact on third party land.

Use of these sections of land will likely require land deals or Compulsory Purchase in order to acquire sufficient land to dual these sections.

#### 4.4.4 Public and Stakeholder support

Stakeholder engagement has taken place as part of many of the previous studies. As highlighted in Section 2 the local authorities in this area are supportive of improvements to the A47 and full dualling of the entire length of the A47 is supported by many organisations. Facilitation of improvements to the local economy is perceived to be very important.

#### 4.4.5 Environmental

Overall in Norfolk the per capita carbon emissions (7.7 tonnes in 2008) is higher than the national and regional average. The rural nature of the county means people tend to travel longer distances for work and shopping.

The existing A47 is relatively heavily trafficked and noise levels at properties in close vicinity to the road (within 10 metres) are approximately 73-75 dBA.L10.18hr. It is considered that traffic noise is unlikely to result in annoyance beyond a distance of around 100 metres from the carriageway.

# Acle Straight

The Acle Straight section of the A47 is largely within the Broads National Park and is adjacent to a number of environmentally sensitive sites.

The dykes alongside this section of the A47 are known to contain a variety of species that are protected by UK and European legislation, notably the Lesser Whirlpool Ramshorn snail. To establish if the dykes could be relocated away from the carriageway without affecting the Lesser Whirlpool Ramshorn snail a trial is required. The trial is likely to last about 4 years as there will be a requirement to monitor the species in their new location for some time. The scope and methodology of the trial has been agreed with Natural England and is in its early stages.

Adjacent to the western section of the Acle Straight near to the settlement of Acle is an area designated as a Site of Special Scientific Interest (SSSI).

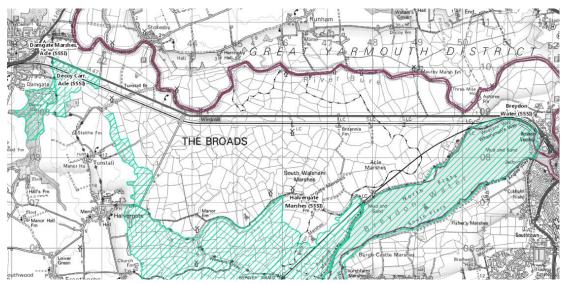


Figure 4-7: Acle Straight SSSI map (source http://magic.defra.gov.uk)

# Tilney to East Winch

The section of the A47 from Tilney (Main Road) to the A47/A17 junction falls within a Flood Zone 3 area adjacent to the River Great Ouse. The Environment Agency's Flood Zones refer to the probability of river and sea flooding ignoring the presence of man-made defences. Flood Zone 3 demarks land that could be flooded by a river with a 1 in 100 or greater annual probability. Flood Zone 2 demarks the area of land that could be subject to major flooding from a river with a 1 in 1000 annual probability. Flood Zone 1 is the remaining land area which has less than a 1 in 1000 annual probability of river flooding and is left "clear" on flood risk maps.

East Winch Common, an area of land adjacent to the A47 south east of East Winch, is designated as a SSSI.

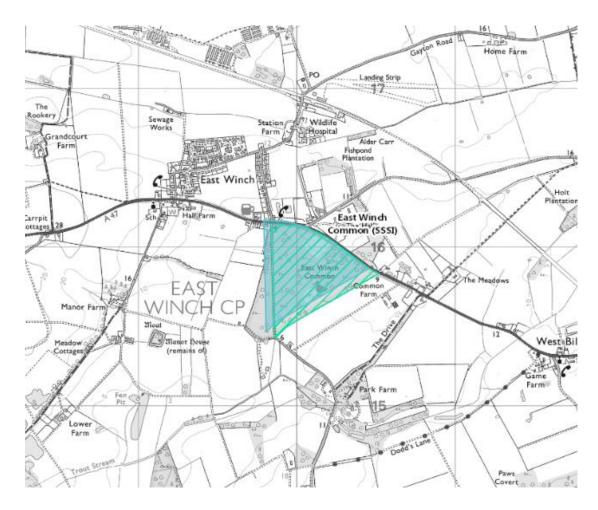


Figure 4-8: East Winch SSSI map (source http://magic.defra.gov.uk)

It is not anticipated that National Air Quality objectives are likely to be exceeded along the East Winch section of the A47 and there are no AQMA designations along the route. However, it is considered that the existing air quality in this section will be poor where traffic speeds are low due to congestion and as a result of slow moving heavy and agricultural vehicles.

# 4.5 Opportunities

Improvement to the A47 sections included in this study will aid delivery of developments planned in the various local authority areas accessed by the A47. The key developments that will benefit from improved transport infrastructure are set out in Section 5, in summary these include:

- 16,500 new dwellings and provision of 66ha of employment land in King's Lynn and West Norfolk authority area. The focus for development will be the urban area and extensions to King's Lynn.
- 1,000 new dwellings, 16,500 sqm employment and 14,200 sqm retail and leisure floorspace to be provided at the Waterside site in Great Yarmouth.
- 1,000 new homes and 10-15ha of new employment land at Beacon Park Extension south of King's Lynn.

• 540,000sqm of commercial floorspace in the Great Yarmouth and Lowestoft Enterprise Zones.

The following Figures identify the key development proposals for each of the scheme areas.

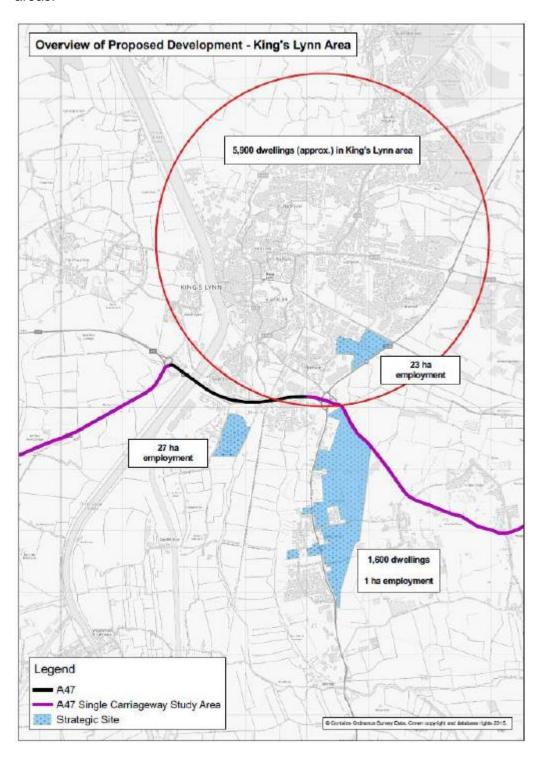


Figure 4-9: Site Allocations in Kings Lynn

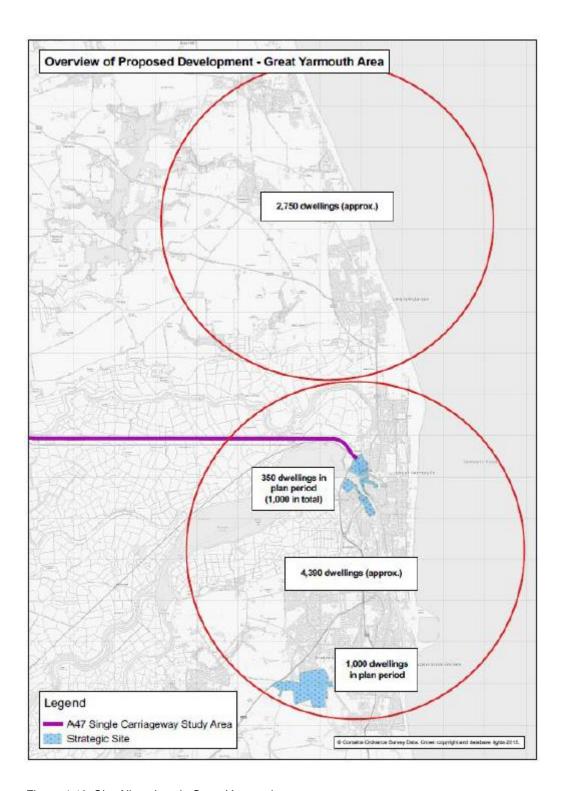


Figure 4-10: Site Allocations in Great Yarmouth

# 4.5.1 Economic Regeneration opportunities

An assessment of the economic growth and priorities for the two scheme areas has been undertaken by Regeneris with a copy attached as Appendix A. The key conclusions for the scheme areas is summarised in section 5.

# 4.5.2 Environmental – Acle Straight

The Acle Straight snail relocation trial could provide a positive outcome on how to mitigate a key environmental constraint. Although the trial is understood to take place over a four year period with likely conclusion towards the end of the RIS1 period (2015-2021), this timing could enable a scheme to be developed for the RIS2 period (2021-2025) if other aspects of the Value for Money assessment are shown to be positive.

# 4.5.3 Rail Line – Sand Line for Tilney to East Winch

A number of possible on and off line improvements have been assessed previously for the Tilney to East Winch section. It should be noted that the old railway alignment is in use as a freight line. It is understood that there is a possible offline improvement option from a point to the north of the A47 / A149 Hardwick roundabout using an old railway line alignment.

# **Summary of Current Situation**

- Tilney to East Winch AADT flows of approximately 15,000 vehicles and Acle Straight AADT flows of approximately 19,000 vehicles
- Acle Straight experiences significantly slower average traffic speeds in the AM and PM peaks compared with the daily average speeds.
- Single carriageway sections (Tilney to East Winch and Acle Straight) have above national average accident rates.
- The private car is the main mode of transport for commuting in the Great Yarmouth and King's Lynn & West Norfolk areas.
- Public transport services are available in the area with bus services running along the A47 and rail services serving the larger settlements.
- There is limited walking and cycling provision along the sections of the A47 forming part of this study.
- There are a number of constraints including land ownership (several along Acle Straight), physical features (including settlements of Middleton, East Winch and West Bilney), funding (nothing allocated for these schemes) and environmental (Acle Straight dykes and Lesser Whirlpool Ramshorn snail).

Figure 4-11: Summary of current situation

# 5 Understanding the Future Situation (Step 2)

Step 2 broadly parallels Step 1 in that it is concerned with developing an understanding of problems, but in the future rather than the present. It includes understanding:

- future land-uses and policies;
- future changes to the transport system;
- future travel demands and levels of service.

#### 5.1 Strategic Economic Plans

5.1.1 New Anglia Local Enterprise Partnership (LEP) Strategic Economic Plan (SEP) (2014)

The main aim of the New Anglia LEP through its Strategic Economic Plan is to transform the economy of Norfolk and Suffolk and establish the New Anglia area as a centre of global business excellence. In order to achieve this it aims to work with government and local partners to deliver 95,000 more jobs, 10,000 new businesses, improved productivity and 117,000 new homes. It is recognised that infrastructure improvements are required to help achieve this.

The main areas for growth are identified within the SEP, this includes King's Lynn and the Lowestoft and Great Yarmouth areas.

King's Lynn is expected to be a key area of growth with a target of 5,000 new jobs to be provided by 2021.

Lowestoft and Great Yarmouth are expected to grow business in the energy sector, particularly as there are incentives for businesses to locate there through the benefits of an Enterprise Zone. In addition, approximately 5,000 homes are planned in the two towns.

In terms of transport the A12/A47 is identified as a key strategic link in the region. The priorities identified include improvements to junctions on the A47 and A12 to maximise access to the enterprise zone sites, in particular the Hardwick A47/A10 junction.

5.1.2 Greater Cambridge Greater Peterborough (GCGP) LEP Strategic Economic Plan (SEP)

The key goal for the SEP is to develop an internationally competitive, nationally significant economy, bringing together the diverse strengths of the area. The main aim of the SEP is to release the area's significant potential for continued economic growth, through a targeted range of interventions.

In terms of transport the plan notes that the A47 is recognised as the most important east-west route in the north of the LEP area. It is highlighted that improvements are

required on the A47 including dualling and junction improvements to enable more reliable and efficient movement in the area.

The majority of the growth in the GCGP LEP region is expected in the Cambridge and Peterborough areas however, it is recognised that King's Lynn is the main employment, retail and cultural centre for a significant rural sub-region in the north east of the region and therefore is a key economic driver in this location. It is noted that it will provide for over 7,000 new homes through regeneration of brownfield land and urban extension as well as facilitating 3,000 new jobs.

# **5.2** Statutory Development Plans

5.2.1 Borough Council of King's Lynn & West Norfolk – Core Strategy (adopted July 2011)

The Core Strategy, adopted in July 2011, forms part of the Local Development Framework that will eventually replace the Local Plan and will guide development and the use of land up to 2025.

Policy CS03 states that King's Lynn will act as a growth point and develop as a subregional centre. Policy CS09 states that land for a minimum of 16,500 new dwellings across the Borough will be identified with King's Lynn providing at least 7,510 new dwellings, including sites at:

- West Lynn,
- South Wootton,
- North Wootton, and
- West Winch.

At least 1,000 of these dwellings will be provided as part of the regeneration of the central part of the town and the remaining number will be allocated within urban expansion areas to the north and south east of the town.

Policy CS10 states a target for delivery of 5,000 jobs and 66ha of employment land by 2021 and 2025 respectively. Approximately 50ha of employment land is to be provided in King's Lynn. The strategy will also provide at least 3,000 new jobs in existing and new employment areas to the east and south of the town at Hardwick Industrial Estate Extension, Saddlebow Road, as part of a balanced mix of uses within areas of renewal and replacement.

In terms of transport, Policy CS11 states that the Council will work with relevant authorities to improve connectivity in the borough and a specific priority is to improve strategic networks and reduce congestion and improve reliability and safety of travel on the A47. The policy states that priority will be given to improving the strategic networks, including the introduction of measures to reduce congestion, and improve reliability and safety of travel within the A10, A17, A134, A47 and A148/9 corridors. This will include seeking bypasses for Middleton and East Winch, and West Winch; and junction improvements at key interchanges including A47(T)/A149.

The Core Strategy also highlights issues of road accidents, pollution and congestion principally as a result of high vehicular use in the area. It is noted that the A47 near King's Lynn in particular experiences congestion.

5.2.2 Joint Core Strategy for Broadland, Norwich and South Norfolk (adopted March 2011 and amendments January 2014)

The Joint Core Strategy sets out the long term vision and objectives of the area, identifying broad locations for housing and employment growth as well as changes to transport infrastructure.

The document sets out the need to plan for 37,000 new homes and the creation of 27,000 jobs in the area, whilst minimising the impact on the environment. The majority of development will be in the Norwich area but smaller service centres such as Acle are earmarked for the provision of 100-200 dwellings.

The Core Strategy notes the A47 has limitations, in particular to the east of Norwich. Policy 6: 'Access and transportation' highlights that improvements to the A47 will be promoted, in particular the need to reduce the significant stretches that remain single carriageway. It is noted that development in many locations requires improvements to the A47 and its junctions.

5.2.3 Great Yarmouth Borough Council - Borough Wide Local Plan (2001)
The Local Plan provides the current framework for all new developments and informs planning application decisions in the Borough. Its saved policies form the extant development plan pending the production of the new Local Plan which is currently underway.

The Local Plan identifies land for housing and employment. Housing development is directed towards existing towns and villages. Policy EMP3 states that major new employment land allocations are proposed to be in close proximity to the urban centre of Great Yarmouth and where the allocations are well accessed by the A47. Policy EMP4 refers to the development of a high quality business park on 34ha of land at South Gorleston.

The Local Plan noted that an essential part of the strategy was for a start to be made on the proposed dualling of the A47 between Great Yarmouth and Acle at the earliest possible date to address issues of safety and congestion.

5.2.4 Great Yarmouth Borough Council Core Strategy (December 2015)

The Core Strategy, adopted in December 2015, sets out the planning strategy for the Borough up to 2030. The Core Strategy is subject to a six week period during which any legal challenges to its adoption can be made, this ends on 14<sup>th</sup> March.

The vision for the Borough is to create a more attractive and aspirational place to live, work and play, with strong links to its neighbours, including Lowestoft, the Broads, Norwich and the wider Anglia area. There is an emphasis on sustainable development, promotion of employment opportunities, provision of fit for purpose

employment land and travel within the borough is to become easier. The A47 is recognised as having a key strategic role in helping meet the borough's needs.

Policy CS2 highlights the need for growth in the borough to be sustainable. It notes that around 35% of all new development in the borough will be in the main towns, including Great Yarmouth. Promotion of development of the Great Yarmouth Waterfront area (Policy CS17) and the Beacon Park extension, south Bradwell (Policy CS18) is also noted.

Policy CS3 states that 7,140 new homes are planned for the area; 1,000 of which are planned for the Great Yarmouth Waterfront Area (350 within the plan period) and 1,000 at the Beacon Park Extension, South Bradwell all within the Plan period.

In terms of employment it is anticipated that there will be demand for around 35ha of employment land in the plan period. Policy CS6 refers to 'Supporting the Economy' highlighting that existing employment sites are to be the focus for redevelopment and intensification of employment uses. However, 10-15ha of new employment land is to be allocated with a further 22ha potential of reclaimed land to be used for employment uses at South Denes. Overall, a total of around 306ha of land at existing employment sites is to be safeguarded.

Policy SO7 illustrates that the Council recognises infrastructure improvements are required to accommodate the planned growth and the strategic role of the A47 is noted.

Support for improvements that reduce congestion and improve accessibility and road safety are noted, this includes supporting the dualling of the A47 (Policy CS16).

# Overview of key points from Policy Documents

- King's Lynn is expected to be a key area of growth with a target of 5,000 new jobs to be provided by 2021, 7,510 new dwellings up to 2026
- Lowestoft and Great Yarmouth are expected to grow business in the energy sector, particularly as there are incentives for businesses to locate there through the benefits of an Enterprise Zone. In addition, approximately 5,000 homes are planned in the two towns.

#### 5.3 Local Transport Plan and Transport Schemes

5.3.1 Norfolk County Council Local Transport Plan (LTP) 2011-26

Norfolk County Council is the Highways and Transport Authority for the area of the study, with responsibility for the preparation of the Local Transport Plan (LTP). This includes transport policies covering the period 2011-2026.

The LTP includes a number of objectives which seek to address transport issues relating to a relatively poor local economy and the need to regenerate the area and

enhance the role of a gateway between the region and Europe by enhancing strategic connections including the A47 with a long-term ambition to dual the remaining single carriageway. Policy 6 refers to provision of transport infrastructure to support growth, recognising that improvements are required on the highway network at bottlenecks.

The LTP notes that the A47 experiences unreliable and lengthy journey times due to lack of capacity which also impacts on the efficiency of the European TEN-T network. Policy 7 highlights the need to improve journey time reliability on the strategic connections.

In the LTP Implementation Plan covering 2015-21 it is highlighted that the Government's 2014 Autumn Statement committed the following schemes in Norfolk:

- A47 North Tuddenham to Easton Dualling to provide continuous dual carriageway between Norwich and Dereham. Combined with the Blofield to North Burlingham scheme, this will provide full dualling between Dereham and Acle.
- A47 Blofield to North Burlingham Dualling to complete a gap in the dual carriageway between Norwich and Acle.
- A47/A12 Great Yarmouth Junction Improvements including the reconstruction of Vauxhall roundabout.
- A47 Acle Straight Safety Measures at key hotspots and joint working with Natural England to establish environmental impacts and mitigation for the medium and long term which could include installation of safety barriers, junction improvements and road widening or capacity improvements.
- A47/A11 Thickthorn Junction Improvement to the interchange to give improved access to Norwich.

The LTP notes that improvements to the A47 are high priority and, through the A47 Alliance, NCC will look for opportunities to take forward improvement schemes on sections not included in the government's Roads Investment Strategy.

- 5.3.2 Hardwick Transport Strategy Report (Mott MacDonald, May 2015)

  The Hardwick Transport Strategy assesses the impact of proposed housing development in the vicinity of West Winch and North Runcton, as well as proposed employment development sites near to the A47 and A149 to the south of King's Lynn. The Strategy appraised a number of different options for improvements at the Hardwick Interchange to facilitate the proposed growth and sifted these down to 3 options to cater for predicted growth by 2035:
  - A new housing link road from the A10 south of West Winch heading north to a new roundabout on the A47, approximately half a mile east of the Hardwick Interchange (£43.5m);
  - Upgrading the A47 to dual carriageway standard between this new roundabout and the existing roundabout immediately east of the Hardwick Interchange (£39.8m);

 Improvements to the Hardwick signalised gyratory to maximise its capacity, through localised widening of the circulatory carriageway and exits (£31.9m).

# Overview of key points from Transport Policy Documents

- A47 experiences unreliable and lengthy journey times due to lack of capacity
- Long-term ambition to dual the remaining single carriageway sections of the A47
- Hardwick Transport Strategy identifies a number of improvement options to facilitate proposed housing and employment sites to the south east of Kings Lynn.

#### 5.4 Planned Growth

# 5.4.1 Key developments

There are a number of developments planned in the area which will further exacerbate the problems experienced at this location. A summary of the key developments that are considered to be relevant to the areas of this study are set out below.

# 5.4.2 Tilney to East Winch

The planned growth in the King's Lynn and West Norfolk Borough is for 16,500 new dwellings (2001-2026) and 5,000 jobs (2001-2021). Almost half of the new homes are to be provided in King's Lynn. Detailed allocations are to be proposed in the emerging Sites Plan. Around 66ha of employment land is to be allocated between 2010 and 2025 with at least 75% to be located within King's Lynn.

The King's Lynn and West Norfolk Borough Council Pre-submission Site Allocations and Development Management Plan (January 2015) identifies land at West Winch and North Runcton to provide 1,600 new dwellings, 1ha of employment land and a road linking the A10 and A47 to provide relief of the traffic volumes and congestion on the A10 around West Winch as shown in Figure 5-1.

Policy E1.12 'King's Lynn - Employment Land' identifies sites at Hardwick (E1.12-HAR) (27 hectares) and 23 ha at Saddlebow (E1.12-SAD) as the preferred locations for employment expansion in King's Lynn to provide for business, industrial and distribution uses.

It is recognised that the additional growth in this area will add to the traffic congestion issues already experienced at the Hardwick Interchange. Improvements to capacity are required and there is an aim to develop a strategy to facilitate the planned growth. One associated scheme is an A10 to A47 distributor road to provide access and permeability to the growth area.

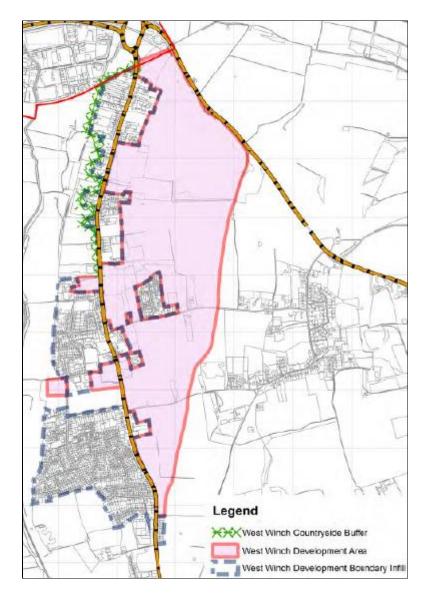


Figure 5-1: Proposed Allocation at West Winch and North Runcton (King's Lynn and West Norfolk Borough Council Pre-submission Site Allocations and Development Management Plan (January 2015)

# 5.4.3 Acle Straight

# Waterfront, Great Yarmouth

Great Yarmouth Borough Council has developed an Area Action Plan for the 40ha Waterfront area in order to coordinate development at that location. The Waterfront area is situated in the town centre and is to be the focus of much of the development in the borough and the vision is to create an outstanding place to live, work and visit. The area is immediately adjacent to where the A47 connects to Great Yarmouth at its junction with the A12 (see Figure 5-2).

Core Strategy Policy CS17 and the Area Action Plan sets out the requirements for proposals for the area. It is proposed that around 1,000 new homes will be developed in the area as well as provision of new job opportunities (16,500 sqm employment and 14,200 sqm retail and leisure floorspace) and enhanced transport

Runham

Breydon
Bridge

Cobholm
Island

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connections (including enhanced rail interchange, improved public transport routes and active mode transport provision).

Figure 5-2: Great Yarmouth Waterfront Area Action Plan Area (source: Great Yarmouth Waterfront Area Action Plan November 2010 Consultation draft)

# Beacon Park Extension, Great Yarmouth

The Beacon Park Extension site is considered the most sustainable option to deliver new employment land to cater for the growing renewable energy industry. The area has Enterprise Zone status which should reduce barriers to business wishing to locate there.



Figure 5-3: Beacon Park Extension Site, Great Yarmouth site (source: Draft Core Strategy November 2014)

Draft Core Strategy Policy CS18 sets out the requirements for proposals to extend the Beacon Park development at land south of Bradwell, situated at the southwest edge of the built up area of Great Yarmouth (see Figure 5-3). Beacon Park is currently a mixed use area of both residential and commercial uses. The proposal is to extend this to provide approximately 1,000 new homes and 10-15ha of new employment land.

# Great Yarmouth and Lowestoft Enterprise Zone

The Enterprise Zone covers over 120ha of land in Great Yarmouth and Lowestoft with the ability to accommodate at least 540,000sqm of commercial floorspace. It is expected that 150-200 businesses will locate to the area creating around 9,000 jobs by 2025 and a further 4,500 jobs indirectly from the uplift in activity. The Enterprise Zone will feature business rate relief for up to five years, simplified planning regulations and superfast broadband across six locations to help attract companies to locate there. Two of the locations are in Great Yarmouth; South Denes which has access to a deep-water harbour and Beacon Park Business Park.

Local Planning Authority / Policy Document	Planned Residential Development	Planned Employment Development	Key Sites
Borough of King's Lynn and West Norfolk / Core Strategy (2011)	• 16,500 dwellings (incl 7,510 in King's Lynn)	<ul> <li>5,000 jobs by 2021</li> <li>66ha by 2025 (75% in King's Lynn)</li> </ul>	Hardwick – 27ha of employment     Saddlebow – 23 ha of employment
Broadland, Norwich and South Norfolk / Joint Core Strategy (Mar 2011 / Jan 2014)	• 37,000 dwellings (Incl 100-200 in Acle) by 2026	• 27,000 jobs by 2026	Approx 33,000 of the dwellings will be provided in the Norwich City Council area.
Great Yarmouth Borough Council / Local Plan (2001) and Draft Core Strategy (May 2015)	• 5,700 by 2029	35ha employment land (Incl. 10-15 ha new employment land and 22ha of reclaimed land)	Waterfront – 1,000 dwellings, 10-15ha new employment     Beacon Park – 1,000 dwellings, 10-15ha new employment     Great Yarmouth and Lowestoft EZ – 9,000 jobs by 2025 (plus 4,500 indirectly)

Table 5-1: Summary of planned developments in vicinity of Acle Straight and Tilney to East Winch sections of A47

#### 5.5 Economic Growth and Regeneration

An assessment of the economic growth and priorities for the two scheme areas has been undertaken by Regeneris with a copy attached as Appendix A. The key conclusions for the scheme areas is summarised below.

# 5.5.1 King's Lynn and West Norfolk (Tilney to East Winch)

King's Lynn is a growth orientated area in a predominantly rural borough and in a county where growth is driven by the larger urban area of Norwich. Historically, the borough has encountered economic challenges linked to its location, a low value economy and lack of employment sites, which has knock on effects for attracting workers and businesses.

However, more recently the population in the borough has grown from 135,600 in 2001 to over 150,000 in 2014 – a growth rate of 11%, slightly exceeding the county and national average (both growing by 10%). Recent employment trends in the borough show 7% growth between 2011 and 2014, with employment recovering from the contraction during the recession. This compares to 6% across the county and 5% nationally, and is stronger than for Norwich.

The local authorities aspiration for the borough and King's Lynn in particular is for the town to continue to be a key focus for growth. The population of King's Lynn and West Norfolk is forecast to increase by 13,100 between 2011 and 2026, growing by

9%. The town of King's Lynn is expected to be the main growth spot for the borough, with population expected to grow to 50,000 by 2026. To accommodate this population growth, housing completions have been averaging 623 per annum, falling slightly short of the 660 target. This represents 8,850 completed houses between 2001 and 2014, and would require 700 new houses to be completed on average every year until the end of the planning period in 2026 to meet the required target of 16,500 dwellings.

The local authority's Core Strategy outlines the ambition to create 5,000 jobs in the borough by 2021. The East of England Forecasting Model (EEFM 2012) estimates the employment growth for in the County of Norfolk and its local authorities for the 20 year period up to 2021 and relates these to the context of the corresponding Core Strategy job targets. However, it predicts that King's Lynn and West Norfolk will met 76% of its job target by 2021, falling short by 70 jobs annually. In contrast, Norfolk as a whole is expected to exceed its employment targets by 20 jobs per annum, driven by the growth in the Norwich urban area.

The development prospects in King's Lynn are considered in the context of just under half (3,495 out of 7,500) of allocated dwellings having been completed and committed between 2001 and 2013. The recent 2015 Site Allocation and Development Management Policies document has allocated further 4,200 dwellings for King's Lynn, some of which are in close proximity to the A47 and so their development is likely to have an impact on the road. Out of the 11 site allocations identified in King's Lynn, progress has been identified at the following locations so far:

- Construction is already underway on site infrastructure for Marsh Lane and Lynnsport (to the north of the A47) and parts of the proposed residential development have been granted a planning permission (130 dwellings). It is difficult to get a full picture of the progress on these sites due to multiple ownerships and planning applications only covering parts of the development.
- The West Winch urban extension site in particular lies south of the A47 single carriage way. If the development of the planned 1,600 dwellings goes ahead in this period, it is likely to create increased traffic on the A47, as it is a major access road going east and west of King's Lynn. The developer submitted an outline planning application for 1,100 homes (and is pending), of which 750 would be completed before 2026.

The employment sites at Hardwick Extension and Saddlebow that have been identifies in the Site Allocations DPD are aiming to create 3,000 jobs in the town of King's Lynn. The sites lie in close proximity to the A47, to the north and south of the road respectively. The site at Hardwick is constrained by flood risk and the need for additional utilities infrastructure, but the latest Employment Land monitoring report shows that planning permissions have been granted for Hardwick Extension. The section of the road with access to the Hardwick Extension has been dualled. However, if all 27ha of the employment site is brought forward and developed, there

are likely to be a knock on effect for the single carriageway section of the road as it is in close proximity to the sites. Dualling the sections east and west of the site would have connectivity benefits for businesses that are likely to locate there.

# 5.5.2 Great Yarmouth (Acle Straight)

The performance of the Great Yarmouth economy shaped by its location on the east coast of Norfolk and its sectoral mix, including the historic dependence on the port and related sectors as well as the tourism sector. However, the offshore energy sector presents a major opportunity for the local economy, offering the potential to growth employment across a range of direct and supply chain sectors.

Historic trends show that population growth has been slower than in Norfolk as a whole, growing by 8% between 2001 and 2014 (from 91,000 to 98,000 people). Employment growth has also been slower than the county average, increasing by 5% since 2011 (compared to 6% across Norfolk). It is in this context that the development of the onshore industries is seen as a major growth opportunity locally, enabling the use of underutilised assets, the growth of high value jobs and the development of supply chains serving the core offshore sector. This ambition is clearly set out in the Core Strategy, which aims to deliver 9,000 direct jobs through the Enterprise Zones at Beacon Park and South Denes, with the latter being designated for businesses operating in or servicing the offshore industry.

Looking forward across the planning period, the population of the district is forecast to grow by 9,200 people across the borough between 2013 and 2029 (9%), less the half the rate of Norfolk County (20%). Employment forecasts from the EEFM are also showing lower expected employment growth rate than across the county and lower than the ambition set out in the Core Strategy for the borough:

- The 2012 forecasts predict that Great Yarmouth would meet 68% of its employment target by 2025, delivering 3,000 of the 5,000 jobs. In contrast, the county as a whole is expected to exceed employment targets.
- However, the forecasts take no account of the Enterprise Zones and the
  effect these are likely to have on employment growth. If these ambitions are
  met, Great Yarmouth will exceed the forecast employment growth.

The housing allocations to accommodate growth in the borough are 7,140 new dwellings between 2013 and 2030. The two key sites have been identified as the Great Yarmouth Waterfront Area, and the Beacon Park Extension. The sites lie south of the A47 single carriageway just off the A12. They are expected to deliver 350 and 1,000 dwellings respectively in this plan period:

• The identified sites in the Waterfront Area currently have a number of constraints that need to be overcome, limiting the deliverability of the sites. Sites have a high likelihood of contaminated land and are located in high flood risk areas. Additionally, there are severe highway constraints that need to be addressed. There are currently no planning consents on the identified sites in the Waterfront Area, but the Council aims to unlock the developments

and bring delivery forward. It is likely that the majority of the development will occur in the next plan period, with just 300 out of the 1,000 dwellings likely to come forward in this period.

The two designated employment sites at South Denes and Beacon Park, both of which are partly covered by Enterprise Zone status, will be a key driver of growth both in offshore and related sectors but also other business sectors. Both sites were been granted an LDO in 2012, providing a simplified planning regime. These sites present considerable opportunities for Great Yarmouth, and could unlock the potential to deliver 9,000 direct and 4,500 indirect jobs through the Enterprise Zones, boosting employment in the borough.

Given the location of the proposed sites, they likely to have an indirect impact on the A47 and the demand for dualling. The developments will drive the general demand for the road infrastructure and A47 in particular, in two ways:

- Growth in the offshore energy sector, the associated supply chains and more general economic stimulus to the town has the potential to increase vehicle traffic using the A47. The growth of manufacturing, engineering and logistics businesses in particular will require improved connectivity between the port and key employment sites and markets and suppliers beyond.
- The residential developments and associated population growth are likely to create increase the use of the highway when accessing key service centres and jobs (Norwich). Dualling the road would benefit the general economy and improve accessibility of Great Yarmouth and links with key centres to the west, in turn increasing its attractiveness for employers and the residents.

# Overview of key Economic Growth and Regeneration

- The population of King's Lynn and West Norfolk is forecast to increase by 13,100 between 2011 and 2026, growing by 9%. Associated housing growth target of 16,500 new dwellings and 5,000 new jobs (by 2021).
- Key strategic employment sites at Hardwick Extension and Saddlebow and West Winch urban extension site would benefit from Tilney to East Winch section of A47 being dualled (possibly bringing forward development).
- The population of the Great Yarmouth district is forecast to grow by 9,200 people across the borough between 2013 and 2029 (9%).
   Associated housing allocations of 7,140 by 2030.
- Great Yarmouth Enterprise Zones are likely to have a positive effect on employment growth targets of 5,000 new jobs by 2025 (possibly mean that the targets are exceeded). Two designated employment sites at South Denes and Beacon Park, both of which are partly covered by Enterprise Zone status, would benefit from dualling of A47 Acle Straight and improving access to Great Yarmouth.

#### 5.6 Predicted Traffic Growth

Previous studies have looked at predicting the traffic growth along the A47 to inform potential interventions required. The A47/A12 Corridor Feasibility Study undertaken in February 2015 predicted traffic growth using factors for trunk roads using the National Transport Model (NTM) and the DfT TEMPRO uplift factors, specifically for Norfolk. Overall, it was shown traffic would increase by 21% by 2021 and 45% by 2031 from a 2013 base year. Table 5-2 and Table 5-3 are extracts from the A47/A12 Corridor Feasibility Study and they illustrate where and when capacity will be reached. As it can be seen the links which are the focus of this study are not predicted to exceed capacity in the AM peak period by 2035, although the Acle Straight section is expected to exceed by 2031.

Link	2013	2021	2031	2035
A47 Between A1 and Sutton (West of Peterborough)	1.107	1.365	1.699	1.829
A47 Eye to Thorney	0.716	0.813	0.943	0.988
Thorney to Walton Highway (Guyhirn to Wisbech)	0.835	0.947	1.099	1.151
A47 Middleton to East Winch	0.593	0.671	0.778	0.815
A47 Around Swaffham, Dereham	0.567	0.641	0.744	0.779
A47 North Tuddenham to Easton	0.839	0.949	1.101	1.153
A47 Blofield to Burlingham	1.210	1.371	1.583	1.666
A47 Acle Straight	0.673	0.754	0.865	0.904
Breydon Bridge	1.163	1.304	1.497	1.564

Table 5-2: AM peak link flow stress factors (Source: A47 / A12 Corridor Feasibility Study, AECOM, 2015)

Link	2013	2021	2031	2035
A47 Between A1 and Sutton (West of Peterborough)	0.997	1.234	1.551	1.674
A47 Eye to Thorney	0.643	0.736	0.866	0.912
Thorney to Walton Highway (Guyhirn to Wisbech)	0.811	0.929	1.092	1.149
A47 Middleton to East Winch	0.566	0.644	0.755	0.794
A47 Around Swaffham, Dereham	0.628	0.715	0.838	0.881
A47 North Tuddenham to Easton	0.956	1.088	1.276	1.341
A47 Blofield to Burlingham	1.089	1.229	1.418	1.491
A47 Acle Straight	0.771	0.867	1.001	1.047
Breydon Bridge	1.074	1.207	1.394	1.458

Table 5-3: PM peak link flow stress factors (Source: A47 / A12 Corridor Feasibility Study, AECOM, 2015)

The Hardwick Transport Strategy Report (Mott MacDonald, May 2015) identified link stress issues on the A47 to the east of Hardwick Interchange from 2026 with theoretical link capacity being exceeded both eastbound and westbound. This shows that predicted growth in the area is likely to cause capacity constraints to the east of Kings Lynn.

Traffic flows and congestion levels are variable along the length of the A47 and it also experiences significant seasonal variations associated with tourism in the Broads and coastal areas of Norfolk. Figure 5-4 illustrates the congestion on the Strategic Road Network in 2010 and the forecasted congestion in 2040 as calculated by the National Transport Model. It can be seen that the Acle Straight section is identified as experiencing severe congestion in both 2010 and 2040. The Tilney to East Winch sections are identified as having occasional congestion in 2010 which become moderate congestion by 2040. Both the western section and the eastern section are forecast to have no change in congestion levels with congestion remaining occasional over the time period.

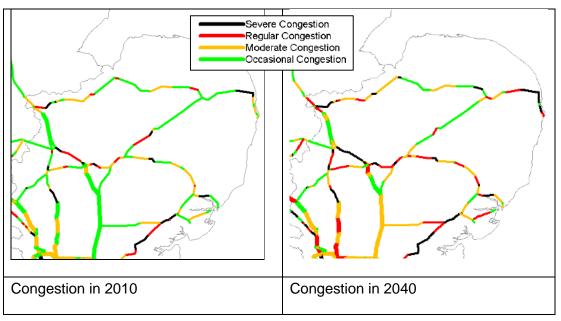


Figure 5-4: Extract of Congestion on the Strategic Network plan in 2010 and 2040 (Source: National Policy Statement for National Networks, DfT)

Daily average speeds have been noted to be significantly lower on the Acle Straight section during AM and PM peak periods, reducing on average by approx. 25% from an average daily traffic speed of 64.5mph to a peak average traffic speed of 47.5mph.

# Overview of predicted traffic growth

- Link capacity issues noted on sections of the A47 to the east of Kings Lynn / Hardwick Interchange from 2026, and Acle Straight by 2031.
- Acle Straight is identified as experiencing congestion in 2010 and 2040 as calculated by the National Transport Model.

# 6 Establishing the Need for Intervention (Step 3)

Step 3 identifies the problems and underlying causes identified through a review of the existing evidence base and consultation with key stakeholders. The following will be assessed:

- Government policy
- current transport-related problems;
- future transport-related problems;
- underlying causes.

# 6.1 Government Policy

Government Policy makes reference to the importance of investing in infrastructure and recognising the importance to the UK economy through supporting growth in employment and housing.

The National Infrastructure Plan (2011) highlights that investment in infrastructure is a key part of the Government's economic strategy. Priority for investment is based on the proposed infrastructure's potential contribution to economic growth; delivery of enhanced quality, sustainability and capacity; and attract or unlock significant private investment.

The National Policy Statement for National Networks (December 2014) sets out the Government's policies to deliver development of nationally significant infrastructure projects (NSIPs) on the national road and rail networks in England. It sets out that the Government will deliver national networks that meet the country's long term needs to support a prosperous and competitive economy and improving overall quality of life. This will provide:

- Networks with the capacity and connectivity and resilience to support national and local economic activity and facilitate growth and create jobs.
- Networks which support and improve journey quality, reliability and safety.
- Networks which support the delivery of environmental goals and the move to a low carbon economy.
- Networks which join up our communities and link effectively to each other.

Local Government is also supportive of improvements to the A47 as highlighted in Section 5.

The Highways England Performance Specification sets out the eight key areas which the Government and the Strategic Roads Network Monitor will measure both the network and company performance. These areas are:

Key Area	KPI	Target	Tilney to East Winch	Acle Straight
Making the network safer	Number of KSI's on the SRN	Ongoing reduction in KSI's to support a decrease of at least 40% by the end of 2020 against 2005-09 baseline	✓	•
Improving user satisfaction	Percentage of National Road Users' Satisfaction Survey respondents who are Very or Fairly satisfied	Achieve a score of 90% by 31 March 2017 and then maintain or improve it	✓	<b>√</b>
Supporting the smooth flow of traffic	KPI 1 – Network Availability – the percentage of the SRN available to traffic	Target 1 – Maximise lane availability so that it does not fall below 97% in any one rolling year	<b>√</b>	<b>√</b>
	KPI 2 – Incident Management – percentage of motorway incidents cleared within one hour	Target 2 – At least 85% of all motorway incidents should be cleared within one hour	<b>√</b>	<b>√</b>
Encouraging economic growth	Average delay (time lost per vehicle mile)		<b>√</b>	<b>√</b>
Delivering better environmental outcomes	KPI 1 – Number of Noise Important Areas mitigated	Target 1 – Mitigate at least 1,150 Noise Important Areas over Road Period 1	×	×
	KPI 2 – Delivery of improved biodiversity, as set out in the Company's Biodiversity Plan	Target 2 – reduce net biodiversity loss on an ongoing annual basis outlined in the Company Biodiversity Action Plan	×	×
Helping cyclists, walkers and	The number of new or upgraded crossings		Possibly	Possibly

Key Area	KPI	Target	Tilney to East Winch	Acle Straight
other vulnerable users				
Achieving real efficiency	KPI 1 – Cost savings – savings on capital expenditure	Target 1 - Total savings of at least £1.212bn over Road Period 1 on capital expenditure	Unknown	Unknown
	KPI 2 – Delivery Plan Progress – progress of work, relative to forecasts set out in the Delivery Plan, and annual updates to the that Plan, and expectations at the start of Road Period 1	Target 2 – meet or exceed forecasts	Unknown	Unknown
Keeping the network in good condition	Percentage of pavement asset that does not require further investigation for possible maintenance	Percentage to be maintained at 95% or above	Unknown	Unknown

Table 6-1: Highways England Performance Specification

# 6.2 Current and Future Problems identified

There are a number of existing problems identified on the A47. With regard to the sections of the A47 that are the focus of this study the A47 single carriageway section through Middleton and East Winch has been identified as having longer journey times and bus delays due to congestion as well as some issues of severance of the settlements. The Acle Straight is identified as having safety and network resilience issues.

The issues future strategies should seek to address are described in the following sections.

	Tilney to East Winch	Acle Straight
Highway	<ul> <li>Congestion noted at A47/A10/A149 Hardwick Interchange.</li> <li>Middleton to East Winch 2013 AADT approximately 15,000 vehicles with high HGV proportions (AM peak more than 25%).</li> <li>Future link flow stress factors do not indicate significant link capacity issues on A47 section (A47 / A12 Corridor Feasibility Study, AECOM, 2015), but there are some noted to the east of Hardwick Interchange (The Hardwick Transport Strategy Report (Mott MacDonald, May 2015))</li> </ul>	<ul> <li>Average speeds slower in AM peak eastbound indicating congestion.</li> <li>Acle Straight 2013 AADT approximately 19,000 vehicles with high HGV proportions (AM peak more than 17%).</li> <li>Future link flow stress factors indicate link capacity issues on A47 Acle Straight section (A47 / A12 Corridor Feasibility Study, AECOM, 2015).</li> </ul>
Safety	<ul> <li>Hardwick interchange and adjacent single carriageway sections noted as having above national average accident rates.</li> <li>A47 Middleton to East Winch safety issues addressed by reduction in speed limit.</li> </ul>	<ul> <li>Single carriageway sections on A47 Acle Straight have above national average accident rates.</li> <li>Safety and network resilience issues. Small scale safety scheme currently being progressed at a hot spot.</li> </ul>
Environmental	East Winch Common SSSI - SE of King's Lynn	<ul> <li>The dykes alongside Acle         Straight are known to contain a         variety of species that are         protected by UK and European         legislation, notably the Lesser         Whirlpool Ramshorn snail.</li> <li>To establish if the dykes could         be relocated away from the         carriageway without affecting the         Lesser Whirlpool Ramshorn         snail a trial is required. The trial         is likely to last about 4 years as         there will be a requirement to         monitor the species in their new         location for some time. The         scope and methodology of the</li> </ul>

	Tilney to East Winch	Acle Straight
		trial would has been agreed with Natural England and is in its early stages.
Economic Growth	<ul> <li>Planned growth will result in increased traffic flows</li> <li>In the King's Lynn and West Norfolk Borough growth of 16,500 new dwellings (2001-2026) and 5,000 jobs (2001-2021).</li> <li>West Winch and North Runcton development site adjacent to A47 includes 1,600 dwellings and 1ha employment land.</li> <li>Employment land identified at Hardwick (27 hectares) and Saddlebow (23ha).</li> <li>Key strategic employment sites at Hardwick Extension and Saddlebow and West Winch urban extension site would benefit from Tilney to East Winch section of A47 being dualled (possibly bringing forward development).</li> </ul>	<ul> <li>Planned growth in Great Yarmouth mainly focussed around employment land (35ha).</li> <li>Key developments include Waterfront (1,000 dwellings, 10-15ha new employment), Beacon Park (1,000 dwellings, 10-15ha new employment) and Great Yarmouth and Lowestoft EZ (9,000 jobs by 2025 (plus 4,500 indirectly)).</li> <li>Assumed increased in demand between Norwich and Great Yarmouth</li> <li>Great Yarmouth Enterprise Zones are likely to have a positive effect on employment growth targets of 5,000 new jobs by 2025 (possibly mean that the targets are exceeded). Two designated employment sites at South Denes and Beacon Park, both of which are partly covered by Enterprise Zone status, would benefit from dualling of A47 Acle Straight and improving access to Great Yarmouth.</li> </ul>
Local communities / severance	<ul> <li>Some small built up areas of Middleton, East Winch, West Bilney would be impacted on with any widening works to the A47 with properties fronting the A47.</li> <li>Same communities would benefit from reduction in traffic flow if bypassed, reduce severance and associated issues of the</li> </ul>	No built up areas on Acle Straight section of A47.

	Tilney to East Winch Acle Straight		
	road e.g. noise, vibration, visual impact etc		
Maintenance	Maintenance generally is noted as being an issue for single carriageway highway and there are few suitable alternative (diversion) routes.	Acle Straight noted for difficulty of maintenance and management particularly during peak holiday periods (East of England Route Strategy Evidence Report, April 2014).	
Vulnerable users	<ul> <li>This section of A47 passes through number of communities.</li> <li>Low use by pedestrians and cyclists (less than 1%)</li> </ul>	Low use by pedestrians and cyclists (less than 1%)	
Land ownership	Land adjacent to A47 is predominantly under numerous agricultural ownership. The Tilney to East Winch section also passes through small settlements, with buildings fronting the A47.	Land adjacent to A47 is predominantly under numerous agricultural ownership.	
Previous studies / BCR	<ul> <li>Mouchel A47 Dualling         Economic Assessment (July 2014) indicated Tilney to         East Coast Business Park         (junction with A17) was high value for money (BCR: 2.82);</li> <li>King's Lynn to Swaffham was medium value for money (BCR: 1.67) (note this section is longer than that being investigated as part of this study).</li> </ul>	Mouchel A47 Dualling Economic Assessment (July 2014) indicated Acle Straight dualling was expected to provide high value for money (BCR: 2.94)	

#### 7 Conclusion

This document has provided a summary of previous work undertaken, baseline conditions, future growth commitments and aspirations, and an initial assessment of challenges and opportunities for two widening two sections of the A47 from single to dual carriageway - Tilney to East Winch and Acle Straight.

The evidence reviewed indicates that there is currently congestion on the A47 primarily around the Hardwick Interchange which is also noted as having above national average accident rates. Traffic flows do indicate a high proportion of HGV's use the A47 (AM peak more than 25%) on single carriageway sections running through small settlements with houses fronting onto the A47.

The population of King's Lynn and West Norfolk is forecast to increase by 13,100 between 2011 and 2026, growing by 9%. The associated housing growth target is 16,500 new dwellings and 5,000 new jobs (by 2021). A review of the proposed growth and regeneration highlights that key strategic employment sites at Hardwick Extension and Saddlebow and West Winch urban extension site would benefit from a Tilney to East Winch section of A47 being dualled (possibly bringing forward development).

There is currently no clear evidence of existing or future highway capacity issues on the link stretches of the A47 from Hardwick Interchange to West Bilney / Narborough. However, traffic speeds are relatively low reducing the effectiveness of the A47 as a major strategic link. The A47 passes through a number of settlements and the traffic flows, containing a high proportion of HGVs, cause community severance issues, presenting a barrier for local trips. Given the planned growth it is likely that there is a case to investigate possible schemes further (both on and off line) which may facilitate economic growth and reduce the impact of the road on local communities.

The evidence reviewed indicates current congestion problems on the A47 Acle Straight particularly eastbound in the AM peak with lower than average speeds recorded. Traffic flows do indicate a high proportion of HGVs use the A47 (AM peak more than 17%). There are noted safety issues on this stretch of the A47 with particular reference to vehicles leaving the carriageway and overturning in the adjacent dyke. There is a current existing small scale safety improvement being introduced but this will not address this issue over the entire length of Acle Straight.

The population of the Great Yarmouth district is forecast to grow by 9,200 people across the borough between 2013 and 2029 (9%). The associated housing allocations over this period is an additional 7,140 dwellings by 2030. Great Yarmouth Enterprise Zones are likely to have a positive effect on employment growth targets of 5,000 new jobs by 2025 (possibly resulting in the targets being exceeded). A review of the proposed growth and regeneration highlights that two designated employment sites at South Denes and Beacon Park, both of which are partly covered by

Enterprise Zone status, would benefit from dualling of A47 Acle Straight and improving access to Great Yarmouth.

There is evidence to suggest a case to investigate possible schemes further to address capacity and safety issues and encourage economic growth. However, a significant constraint to any scheme is the Lesser Whirlpool Ramshorn snail trial that is currently being undertaken with anticipated completion in 2020. If the snail trial determines that relocation is not possible, then any scheme is unlikely to progress.

In order to progress any scheme a WebTAG compliant Business Case would need to be developed to form part of the evidence base to enable Highways England to assess and compare against other schemes for the RIS 2 period (2021-2025). It is understood that the Highways England RIS 2 requirements are currently being developed and so early engagement with Highways England would be needed to fully scope out the Business Case.

The evidence collected as part of this document indicates that the Tilney to East Winch and Acle Straight sections of the A47 are distinct in terms of issues / constraints and are in excess of 65km apart. It is therefore recommended that if progressed then two separate Business Cases be prepared.

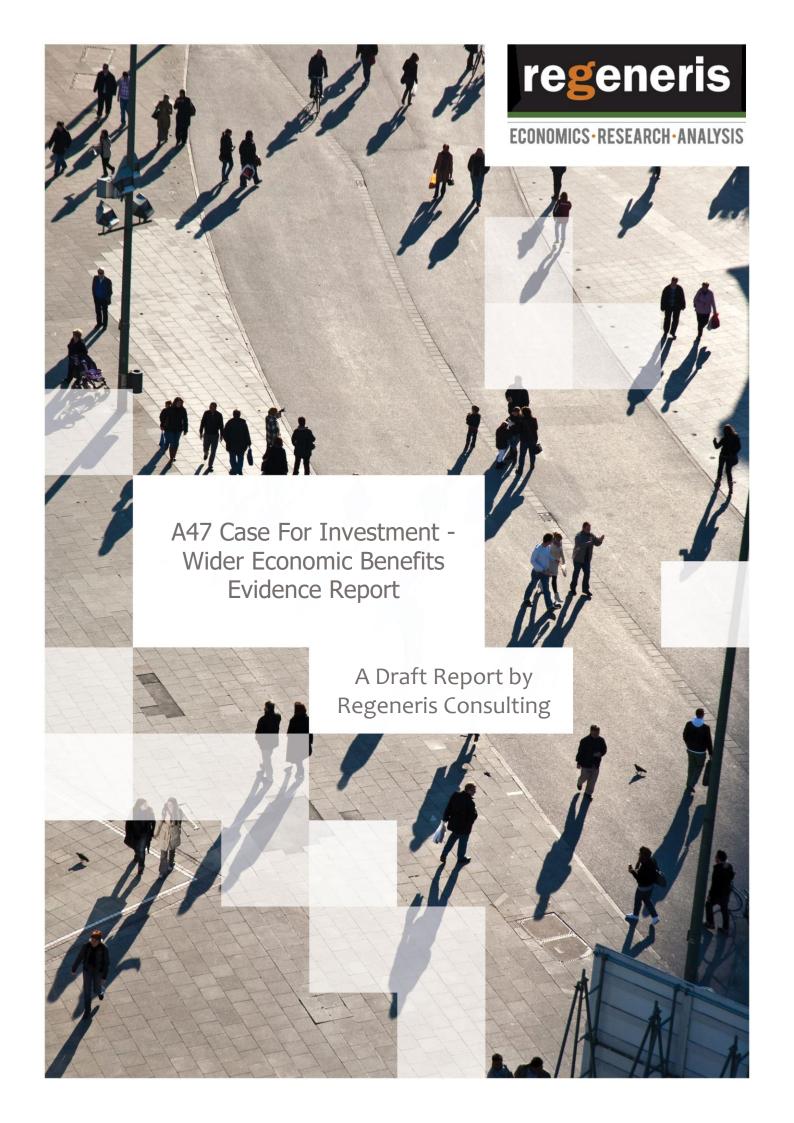
However, there is more work required to demonstrate a sufficient case for investment. The possible next steps could involve:

- Further engagement with Highways England regarding:
  - RIS 2 period (2021-2025) Business Case requirements, process and timescales.
  - The East of England Regional Model (EERM) which is currently being updated. Completion of the base year model (2015) is anticipated in Spring / Summer 2016 with completion of the full model including forecast years towards the end of 2016.
- Engagement with local communities, businesses and key stakeholders to understand general and specific issues and opportunities linked to Highways England KPIs.
- Identify land ownerships.
- For Tilney to East Winch:
  - Engage relevant authorities regarding proposals at / adjacent to Hardwick Interchange
  - Engage local planning authority to better understand future development and growth sites
  - Define objectives and consider route options, associated costs and risks
- For the Acle Straight:
  - Engage with Highways England / Natural England to understand the Lesser Whirlpool Ramshorn snail trial, timescales, opportunities and risks to developing a scheme

- Engage local planning authority to better understand future development and growth sites
- Define objectives and consider route options, associated costs and risks
- Explore opportunities to include the dualling as a sensitivity test in ongoing schemes in Great Yarmouth area, most notably the Highways England A12 scheme and the NCC led Third River Crossing

# Appendix A

Regeneris – Economic growth and Priorities across A47 Improvement Areas



# Norfolk County Council

A47 Case For Investment - Wider Economic Benefits Evidence Report

December 2016

Regeneris Consulting Ltd www.regeneris.co.uk

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### 1. Introduction

- 1.1 The A47 is a key strategic east-west route across Norfolk and is an important route within the Trans European Network. The A47 links key centres across the County including Great Yarmouth, Norwich and King's Lynn, as well as linking Norfolk to the East Midlands and to other strategic roads serving northern and southern locations.
- 1.2 Given the A47's importance, there has been a long-standing aspiration amongst stakeholders<sup>1</sup> across Norfolk and the wider East Midlands and Eastern regions for the complete dualling of the A47 between the A1 and Great Yarmouth. In the 2014 Autumn Statement the Government committed over £300m of investment to the A47 including a number of areas to be upgraded from single to dual carriageway, as part of the Road Investment Strategy (RIS) period 1 2015-2021.
- 1.3 However, the sections between Tilney and East Winch (South of King's Lynn), and the Acle Straight (linking to Great Yarmouth) were not identified as schemes to be taken forward in the RIS 1 period. There have been a number of previous studies undertaken over the last 10-15 years which have considered the issues on the A47 (e.g. highway capacity; safety; environmental constraints; economic growth). The identified sections have been previously highlighted as having capacity issues and the Acle Straight has particular safety concerns.

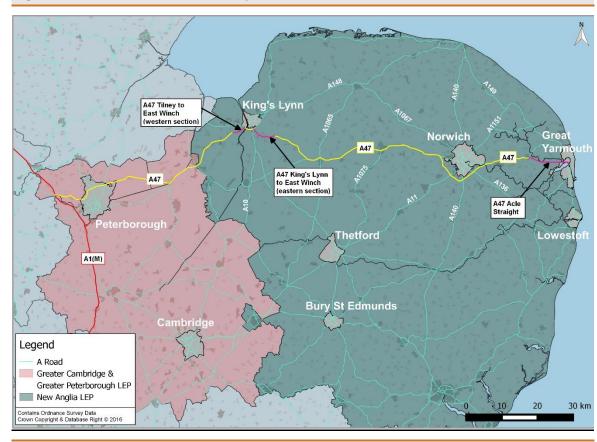


Figure 1.1 Overview of the A47 and Key Road Sections Considered for Investment

Source: Mouchel

<sup>&</sup>lt;sup>1</sup> Stakeholders include the Norfolk and Cambridgeshire County Councils, local authorities, the local enterprise partnership, business and sector groups, road user groups.



- 1.4 As a consequence, Norfolk County Council commissioned Mouchel to undertake a high-level review of the evidence surrounding these two sections to explore the potential case for investment. Regeneris Consulting also contributed to this assessment, focussing upon the issues of economic growth. We provided a review of the area's economic performance and prospects, economic vision and plans, as well as an overview of key employment land and housing locations. Mouchel published this technical report in June 2016.
- 1.5 Following this, Mouchel were commissioned in Autumn 2016 by Norfolk County Council to develop specific investment case making documents for the road sections between Tilney and East Winch and the Acle Straight. Mouchel's work has focussed upon traditional transport appraisal techniques and considerations in line with WebTAG guidance. Regeneris was commissioned to lead on a strand of work considering the potential **wider economic benefits** arising from investing in dualling these road sections. This report sets out the evidence and conclusions from our research on wider economic benefits and will be drawn upon and incorporated within Mouchel's investment case making papers.
- 1.6 The following provides an overview of the structure of the report:
  - Section 2 Economic and policy context
  - Section 3 Nature of constraints on the A47
  - Section 4 Research approach
  - Section 5 Business and sector benefits
  - Section 6 Development of particular locations
  - Section 7 Conclusions



# 2. Economic and Policy Context

2.1 Our previous work focused on the economic aspirations for Norfolk, and the local enterprise partnership (LEP) which it falls into. We have drawn on this work to illustrate the economic and policy context in which Norfolk businesses operate. This sets the scene for how the proposed improvements to the A47 can impact on businesses and economic growth in Norfolk.

### **Policy Environment**

- 2.2 Norfolk is part of New Anglia LEP alongside Suffolk. The vision for the LEP is set out in its Strategic Economic Plan (SEP), which identifies the growth ambitions for the LEP up to 2026. The SEP identifies the following targets between 2012 and 2026, supplemented by the SEP impact report published in July 2016 outlining the progress so far:
  - **Delivering 95,000 additional jobs**, of which 32,300 jobs have been achieved so far (34%)
  - Creating 10,000 new businesses, of which 4,980 (50%) have been achieved
  - Improving productivity by narrowing the gap with the UK average from 7.8% in 2012 so far limited progress has been made and the current gap stands at 7.6%
  - **Delivering 117,000 new houses**: 18,850 (16.1%) have been achieved so far.
- 2.3 The key sectors that are expected to deliver this growth are advanced manufacturing, agri-tech, energy, ICT/digital and life sciences. In addition to these, the sectors underpinning New Anglia's economic performance are agriculture, professional and business services, ports and logistics, and tourism.
- 2.4 Spatially, King's Lynn and Great Yarmouth are identified among the key growth locations in New Anglia. The respective Core Strategies for local authorities provide a more detailed spatial picture of how growth is expected to occur:
  - King's Lynn:
    - King's Lynn is located in a predominantly rural borough of King's Lynn and West Norfolk. As we identified in our previous study, the economy of the borough is faced with a number of challenges, including the concentration employment in low value sectors and skills challenges linked to this. The tourism sector is seen as an important driver for the borough, supporting an estimated 5,500 jobs in the borough and generating £395m of visitor expenditure annually.
    - As a key growth location in the borough, the town of King's Lynn is expected to created 3,000 jobs by 2021, and 7,500 dwellings by 2026. 2
  - Great Yarmouth:
    - Great Yarmouth is a coastal location and its location shapes the nature of its economy and growth prospects. The economy of the borough is underpinned by the offshore energy sector, the port and the visitor economy.
    - The establishment of the two Enterprise Zones (EZ's) in the borough Beacon Park and South Denes - aims to support the development of the energy sector and the borough's wider economy, attracting new businesses and job creation. The long term vision is to have 150-200 businesses across the two Enterprise Zones, directly



<sup>&</sup>lt;sup>2</sup> King's Lynn and West Norfolk Borough Council, Core Strategy, Adopted July 2011

creating 9,000 new jobs by 2025 and a further 4,500 jobs indirectly in the supply chains. It is the location for one of the UK's six Centre for Offshore Renewable Engineering, which are intended to attract investment particularly in wind farm assembly and manufacturing.

Wells-next-the-sea North Walsham Kings Lynn Dereham O Downham Wymondham Market Attleborough C O Peterborough OLong Thetford St Edmunds A Sizewell Cambridg Stowmarket Haverhill 🤇 **Ipswich** Felixstowe Colchester O Harwich Clacton Map not to scale MAP KEY Major Energy Infrastructure Trunk Routes A12/A47 Key Links Primary Routes **Growth Location** Wind Farms Enterprise Zone Rail Routes Ports Growth Corridor International Airport

Figure 2.1 New Anglia LEP: Growth Locations

Source: New Anglia LEP Strategic Economic Plan 2012

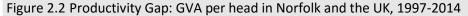
### **Economic Context**

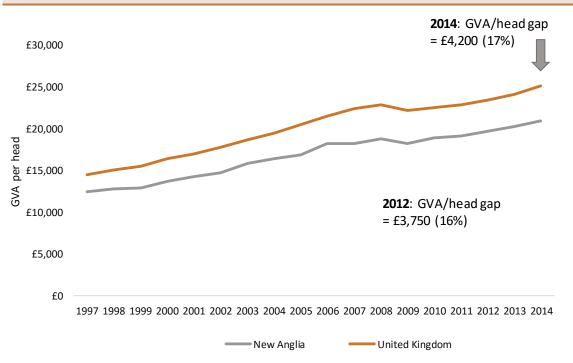
2.5 New Anglia's economy contributes £35bn to the UK economy every year, of which £19bn is driven by Norfolk. <sup>3</sup>Norfolk's economy has seen steady growth since 2011, growing on average by 4% annually every year, in line with the national average.



<sup>&</sup>lt;sup>3</sup> ONS, Regional GVA 2015

- 2.6 However, productivity challenges are still present. New Anglia's GVA per head is £20,970 compared to £25,140 across the UK, with the GVA gap having widened somewhat between 2012 and 2014 (the latest year for which LEP data is available).
- 2.7 Within Norfolk itself, GVA per head is even lower, ranging from £18,650 in North and West Norfolk to £23,340 in Norwich and East Norfolk.4

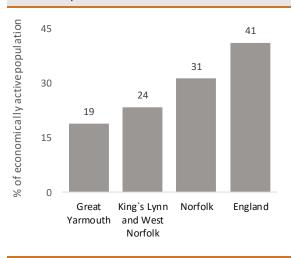




Source: ONS Regional GVA 1997-2014

- A contributing factor to underperforming 2.8 productivity is the lack in higher level skills. Around a third of economically active workingage population have higher level skills (Level 4and above) in Norfolk compared to over 40% nationally. The challenge is even more stark in King's Lynn and West Norfolk (24%) and especially Great Yarmouth where less than a fifth of the population have higher level skills.
- 2.9 Norfolk has over 348,300 employees employed across around 32,230 businesses. Employment levels have been recovering steadily since the economic downturn and the employment growth rate is roughly in line with the national average over the last five years.
- 2.10 Moreover, employment in the county is concentrated in low value sectors: wholesale

Figure 2.3 Share of population with higher level skills, 2015



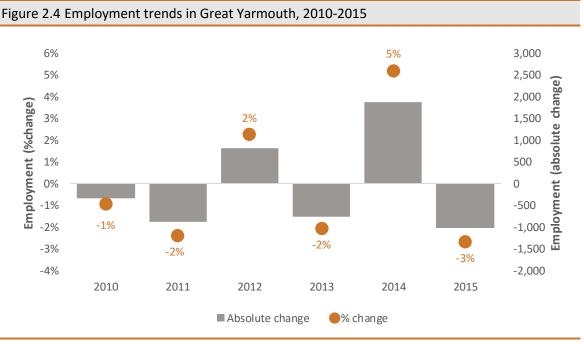
Source: ONS, Annual Population Survey 2015

and retail make up almost a fifth of employment in Norfolk.



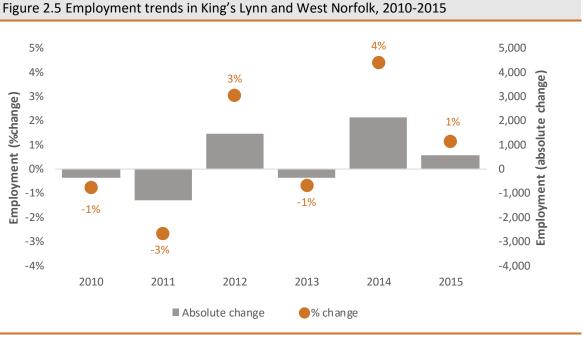
<sup>&</sup>lt;sup>4</sup> ONS, Regional GVA 2015

2.11 Locally, however, employment trends look volatile. In Great Yarmouth there was no overall employment change between 2010 and 2015. The graph below shows that annual employment growth rates fluctuated significantly in this time period, ranging from 5% growth to 3% contraction.



Source: ONS BRES 2010-2015

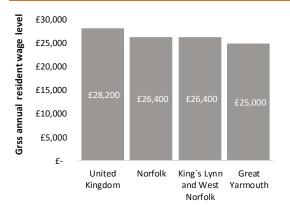
2.12 In King's Lynn and West Norfolk employment picture is somewhat more positive: in five years, the number of employees grew by 5%, or 2,500 jobs. While there are still some fluctuations, King's Lynn and West Norfolk'd employment looks more stable in comparison to Great Yarmouth.



Source: ONS BRES 2010-2015



Figure 2.6 Gross Annual resident wage (median)



Source: ONS Annual Survey of Hours and Earnings 2016

- 2.13 Reinforcing the messages from Core Strategies, average resident wage levels across Norfolk lag behind the national level. In King's Lynn and Great Yarmouth this gap is even more significant, with the gross annual wage gap equivalent to 6% and 11% respectively.
- 2.14 This economic environment provides a context for the types of challenges Norfolk businesses are facing. This will important in understanding the prospects for growth in the area, as well as the opportunities that A47 improvements could present.



# 3. Nature of the Constraints Linked to the A47

- 3.1 As part of the technical evidence report, Mouchel undertook a review of the constraints within the road sections between Tilney and East Winch and the Acle Straight. The review drew upon their analysis, as well as a review of a number of studies over the last 10-15 years which were commissioned in respect of improvements on the A47.
- 3.2 They identified key themes to categorise the existing problems and constraints within these sections of the A47. The following tables do not include the level of detail included in the Mouchel analysis, but provide a brief summary of the full range of issues and constraints caused in these locations. The aim is to highlight the range of constraints and the underpinning context for these sections of the A47 to provide a helpful backdrop for our research around the potential wider economic benefits of investing in these sections of the A47.
- 3.3 It is important to note that Mouchel's work on assessing the benefits from tackling the A47's constraints focus upon the user benefits which arise from dualling these sections, there is some potential cross-over with our business survey and consultation processes. However, our approach aims to consider the business/sector perspectives on constraints linked to the A47, as well as focus upon specific locations and sites which might be currently constrained as a result of the A47.

### **Tilney to East Winch**

Thematic Issue	Key Points on Constraints
Highway Capacity	<ul> <li>Current traffic flows on the A47 between Middleton and East Winch are approximately 15,000 vehicles per day, including a high HGV proportion (25% in the AM peak)</li> <li>Congestion arises at the A47/A10/A149 Hardwick Interchange. This is expected to worsen given planned housing and employment sites to the south east of Kings Lynn, as well as the forecast general traffic growth.</li> </ul>
Resilience	<ul> <li>The section's resilience is a key challenge, particularly in response to incidents (accidents or breakdowns) which can add to congestion as there is limited space on the carriageways or alternative routes to access.</li> </ul>
Safety	<ul> <li>The Hardwick interchange and the adjacent single carriageway sections have above national average accident rates.</li> </ul>
Environmental	<ul> <li>A number of environmental constraints need to be considered in light of dualling these sections.</li> <li>The section of the A47 from Tilney (Main Road) to the A47/A17 junction falls within a Flood Zone 3 area adjacent to the River Great Ouse, and East Winch Common, an area of land adjacent to the A47 south east of East Winch, is designated as a SSSI</li> </ul>
Economic Growth	<ul> <li>There is significant planned growth within the King's Lynn and West Norfolk Borough - growth of 16,500 new dwellings (2001-2026) and 5,000 jobs (2001-2021).</li> <li>There are strategic site allocations in West Winch and North Runcton, adjacent to A47, which provide for 1,600 dwellings and 1ha employment land, while employment land is identified at Hardwick (27 hectares) and Saddlebow (23ha).</li> <li>This planned growth is likely to result in increased traffic flows which will impact on the current safety and capacity issues, while it is anticipated</li> </ul>



Community Severance	•	There are some small built up areas of Middleton, East Winch, West Bilney with properties fronting the A47. The communities would be negatively impacted with any widening works to the A47.
Highway Maintenance	•	Highway maintenance is an issue for single carriageways as there are few suitable alternative (diversion) routes and this is certainly the case in these sections.
Land Ownership	•	The land adjacent to these sections of the A47 is predominantly agricultural with numerous ownerships. This section also passes through small settlements and any widening scheme would require discussions with several land owners.

Note: the theme of non-motorised users is not a significant issue for this section of the A47.

# The Acle Straight

Thematic Issue	Key Points on Constraints
Highway Capacity	<ul> <li>Current traffic flows on the A47 at Acle Straight along the single carriageway are approximately 19,000 vehicles per day. This includes a high HGV proportion (more than 17% in the AM peak).</li> <li>Average speeds on the Acle Straight (in particular eastbound) in the peak periods are lower than the daily average speed highlighting congestion issues.</li> <li>Incident records collected by Norfolk County Council show that delays are more often to occur due to congestion suggesting that the link (and junctions) operates at over capacity.</li> </ul>
Resilience	<ul> <li>The section's resilience is a key operational challenge, particularly in response to incidents which could cause traffic to find alternative routes. In the event of a closure or congestion on either section of the single carriageway, there is no appropriate local diversion for eastbound or westbound traffic, particularly for HGVs.</li> <li>Potential safety issues can also be associated with poor resilience as traffic diverts across the network.</li> </ul>
Safety	<ul> <li>The Acle Straight has above national average accident rates (59 injuries between 2011-16 including 3 fatal accidents and 16 serious injury accidents).</li> <li>The proportion of fatal and serious accidents for this section of single carriageway is significantly higher at 32% compared to a national average of 12%.</li> <li>Accidents lead to road closures (average delay time of 132 minutes), as do vehicle breakdowns, with limited diversion options available on suitable routes.</li> </ul>
Environmental	<ul> <li>The Acle Straight is largely within the Broads National Park and is adjacent to a number of environmentally sensitive sites.</li> <li>The dykes alongside the road contain a variety of species protected by UK and European legislation, notably the Lesser Whirlpool Ramshorn snail. Relocation trials are currently underway but will last 4 years.</li> <li>There is also a SSSI designated area adjacent to the western section of the Acle Straight, near to the settlement of Acle.</li> </ul>
Economic Growth	<ul> <li>Anticipated growth in Great Yarmouth, in addition to other urban areas in East Anglia, will have a negative impact on highway capacity and congestion through increased demand for travel both locally and between key origins and destinations.</li> </ul>



	Key developments in Great Yarmouth include the Waterfront (1,0 dwellings and 10-15ha new employment), Beacon Park (1,000 dwand 10-15ha new employment) and Great Yarmouth and Lowesto (9,000 jobs by 2025 plus 4,500 indirectly).  In addition, the anticipated growth of the Port will also play a role demands placed upon the Acle Straight, as well as traffic flows be Norwich and Great Yarmouth.	vellings oft EZ e in
Highway Maintenance	As this section is a single carriageway, it is noted for being difficul maintain and manage, particularly during peak holiday periods, g of diversionary routes.	
Land Ownership	Adjacent land is predominantly in multiple agricultural ownership road widening or other improvement will require negotiations wi various landowners.	

Note: the themes of community severance and non-motorised users are not relevant for this section of the A47.

**Note:** This section would also benefit from data on the increased use of the A47 over the last decade – traffic volumes - and linked to economic growth



# 4. Our Research Approach

- 4.1 Our focus in upon assessing the wider economic benefits that arise from the investment in the improvements on the A47. There is little in the way of formal guidance to assess such issues, although this position is evolving. DfT is currently consulting upon a proposed approach to integrate the assessment of wider economic benefits more comprehensively into the traditional WebTAG transport investment decision making processes.
- 4.2 Our chosen approach focused on two strands of research which were used to inform the study:
  - Consultations with stakeholders: local authority economic development and planning officers, business representative groups, sectoral groups and key businesses (e.g. the Port in Great Yarmouth) and property agents (full list of consultees is provided in Appendix A).
  - A web-based survey of businesses that use the A47 in Norfolk and Cambridgeshire.

**Note:** We have struggled to book consultations with some groups and property agents. However, our full list of consultees is appended.

- 4.3 The approach was used to gain insight into business perceptions of the road and its impact on their activities, as well as investment decisions, business ability to grow and expand, the attractiveness of specific locations around Norfolk, access to labour and markets.
- 4.4 Our approach synthesises messages and understanding from these strands to identify the potential for wider economic benefits to arise.

#### **Stakeholder Consultations**

- 4.5 The research strand was used to gather local knowledge about the characteristics of Norfolk's economy as well as the specific issues and opportunities presented by A47. The issues covered in the discussions can be summarised in the following strands:
  - Economic performance: the drivers and barriers to growth in Norfolk, covering key growth sectors and locations
  - Impact of A47 on economic growth: the perceived constraints on economic performance and productivity, and how this impacts on access to markets, labour and attractiveness of the area for business
  - Views on the potential benefits of dualling the proposed sections: discussing the types and scale of business benefits, and how the improvements could benefit access to workers, suppliers and markets.

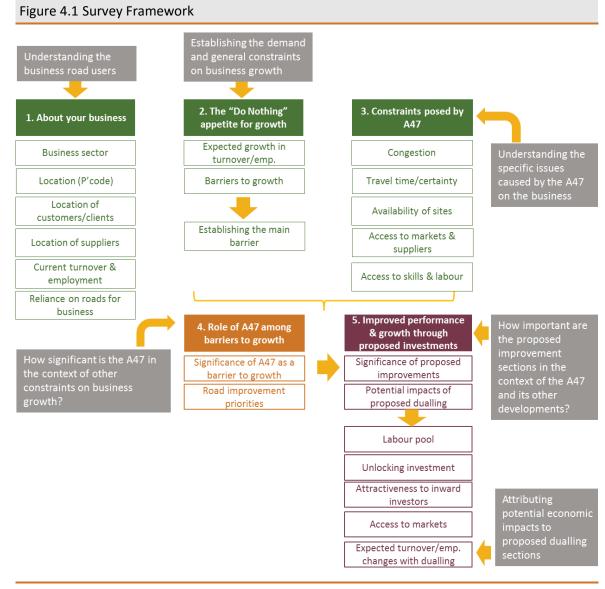
## **Survey Method**

- 4.6 The web-based survey of businesses helped to assess the scale and types of economic benefits that the proposed improvements on the A47 at Acle Straight and Tilney to East Winch could bring about. The survey had two parallel aims:
  - To provide intelligence on the potential barriers currently imposed by the road on the business, how these rank relative to each other and against other perceived barriers to growth, including travel time and reliability, safety and accessibility.
  - To explore the extent to which dualling the proposed sections of the road can lead to changes in business operation and performance such as reducing operating costs,



improving access to labour and markets, and hence the potential to unlock investment and business growth.

4.7 The diagram below illustrates the framework for the survey, broadly covering five themes. Under each theme is a summary of the types of information the survey was designed to capture – the findings from these are discussed in the next section.



Source: Regeneris Consulting

- 4.8 The target population for the business survey are local businesses that rely on the A47 sections proposed for development, including major employment sites nearby. In an ideal world, the assessment would want to cover the regional, national and international businesses using the road in transit (throughout Norfolk and beyond). However, this presents a practical challenge as these businesses are difficult to identify. This part of the research is supplemented by consultations with sector and business representatives.
- 4.9 Considerable thought was given to the best way of distributing the survey in order to secure a meaningful response rate and representative sample. As a result, the survey was distributed using a number of business databases:
  - The membership database of Norfolk Chamber of Commerce through a weekly newsletter



- Through social media channels (ie Twitter and Facebook) on behalf of Cambridgeshire Chamber
- The business databases held by Broadlands and Great Yarmouth local authorities
- Though Visit East Anglia communication channels
- Though Peel Ports and port users.
- 4.10 The chosen approach had a number of benefits, including the access to good quality and up-to-date contacts data which enabled us to secure a good number of overall responses (132 responses). However, it is important to highlight the risks of the chosen approach:
  - As the survey was distributed through secondary sources, it is difficult to assess the representativeness of the sample against the business population, nor can we measure the response rate against the sample.
  - There is potential for bias in the sample as the survey was distributed through channels that are in support of the road improvements, some of which are also members of the A47 alliance which is actively promoting the improvements. This means there is a risk that businesses that feel strongly about the improvements are more likely to respond to the survey, hence skewing the results.

#### **Business Respondent Characteristics**

- 4.11 The final sample of survey respondents included 132 businesses. Compared to the business base in Norfolk, the survey sample is skewed towards larger-sized businesses: 45% of respondents employ more than 50 people compared to only 2% of businesses in Norfolk. This will in part reflect the distribution of the survey through the Chamber of Commerce, with its membership being concentrated amongst larger businesses.
- 4.12 The vast majority of survey respondents are based in Norfolk (97%) as we would expect given the routes of distributing the survey and the relevance of the A47 to the respondents' business. The geographical distribution of respondents seems to reflect the areas in which the constraints imposed by the A47 are a bigger issue for businesses, with Broadlands, Norwich and King's Lynn and West Norfolk overrepresented.
- 4.13 Section 5 provides further analysis of the business survey, including the distribution of respondents by sector and turnover.



Figure 4.2 Employment distribution

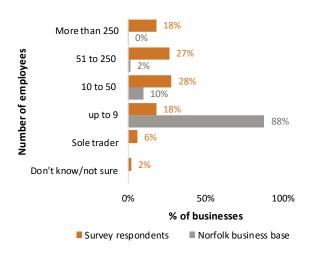
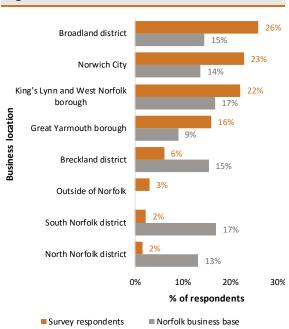


Figure 4.3 Business location



Source: Regeneris Consulting, A47 Improvements Business Survey 2016; UK Business Counts 2016

Source: Regeneris Consulting, A47 Improvements Business Survey 2016; UK Business Counts 2016



# 5. Potential Business & Sector Benefits

- 5.1 This section draws upon all strands of our research, to provide insight on local business performance and how it is affected by the A47. In order to understand the benefits of proposed investments, we aim to distinguish between the identified constraints and the opportunities to grow as a result of improved A47 infrastructure.
- 5.2 The section draws on the survey for a business perspective, supplemented by the key messages from the consultations, and where possible, draws out the messages for key growth sectors. In particular, the focus will be on the following sectors due to their local importance and reliance on roads for moving goods, services and people:
  - Renewables and off-shore
  - Manufacturing
  - Agriculture and food processing
  - Tourism.
- 5.3 The logistics sector cuts across the above industries, as logistics operators connect these businesses with the markets and supply chains.

### **Business performance and drivers**

- 5.4 The economic context for Norfolk set out earlier in Section 2 provides an overview of key performance indicators and high level economic performance. Here we dwell into the specific issues and opportunities Norfolk and how the A47 affects these.
- 5.5 Norfolk's employment has grown by 7% in the last five years a growth which was largely driven by Norwich and Breckland geographically. The chart below shows which sectors had grown by more than 1,000 employees between 2010 and 2015 alongside their location quotients to highlight employment concentrations.
- 5.6 This shows that elements of professional services are among the most growing sectors (ie employment activities, office administrative services and legal), as well as elements of the visitor economy (food and drink serving, rental and leasing services). Food manufacturing stands out as being almost twice as concentrated in Norfolk as in the rest of the UK presumably reflecting the strategic move towards food processing and agritech activities.



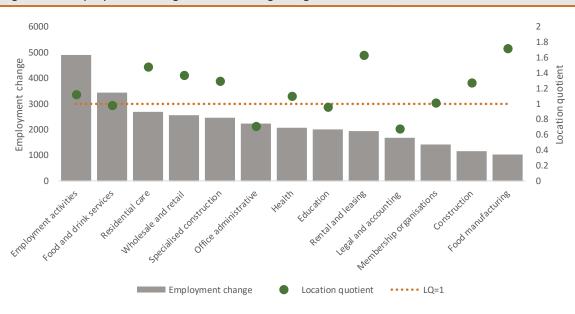


Figure 5.1 Employment change in Norfolk: highest growth sectors, 2010-2015

Source: ONS BRES 2010-2015

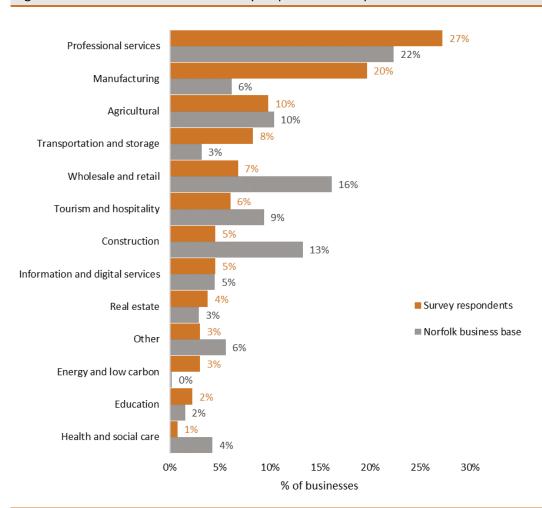
- 5.7 Consultations with economic development officers across Norfolk reinforce the sectoral drivers of economic growth identified in the New Anglia SEP and Core Strategies for local authorities:
  - Renewables and off-shore. The sector has a historic presence in Great Yarmouth, where offshore gas production has taken place for decades. In recent years, gas production has seen a decline due a fall in energy prices, which gave rise to renewables, particularly offshore wind. The port at Great Yarmouth is an important enabler of offshore activity: the purchase of the port by Peel Ports has brought additional opportunities, and is seen as vital infrastructure for the capture of local economic benefits from the sector's expansion.
  - Agriculture and food processing. Agriculture is a prominent sector in the rural areas of Norfolk. The strategic goal is to move to the high-value end of agriculture and introduce food processing facilities in Norfolk and bring food production closer to consumers. The activities will be supported through the Food Enterprise Zone in South Norfolk (Greater Norwich Food Cluster), which will include food production, research, education and ancillary businesses. Food processing is seen as a significant growth opportunity in Norfolk. The fall in the value of the pound opens up export opportunities for the sector, which the industry is keen to build on.
  - Tourism. The visitor economy in Norfolk is an important sector, bringing in almost 43 million visitors who spend around £143m annually<sup>5</sup>. It is estimated to be the largest sector in Norfolk, accounting for 15% of all employment. Visit East Anglia is keen to turn Norfolk into a year-round visitor destination and tourism attractions have been actively investing into wet weather proofing their facilities. Another important driver for the industry has been the fall in the value of pound sterling post Brexit, which is seen as benefiting the industry through rising levels of domestic tourism. The profile of visitors to Norfolk has also been changing, turning from day trips to short stay visitors, hence bringing in more expenditure in the Norfolk economy.



<sup>&</sup>lt;sup>5</sup> Volume and Value of Tourism, 2015

- Manufacturing. The sector is seen as having high growth potential, particularly in the advanced element of manufacturing. Consultations with local decision makers suggest there is a strong appetite for growth among the businesses in the industry. The advanced engineering cluster in Hethel is home to Lotus Cars, which is said to be attracting other companies to locate in the area and generating spin-out activity. Moreover, businesses are aiming to maximise the opportunities from the Technology Corridor along the newly-dualled A11 -consultees cite a strong appetite for investment among manufacturers along the corridor.
- 5.8 The business survey provides additional insight into the economic performance of the business base.
- 5.9 The chart below shows the sectoral distribution of the survey respondents compared to the overall business base in Norfolk. Some of the sectors in the survey are clearly overrepresented this not surprising, as businesses in these sectors are more likely to be affected by road connectivity, and hence more likely to respond to the survey (ie manufacturing, transportation and storage, wholesale and retail and construction). Where possible, we draw out sector insights from the business survey in the analysis.

Figure 5.2 Sectoral distribution of survey respondents compared to Norfolk businesses overall



 $Source: Regeneris\ Consulting,\ A47\ Improvements\ Business\ Survey\ 2016;\ UK\ Business\ Counts\ 2016$ 

5.10 In order to understand the impact which A47 improvements can have on businesses, it is important to consider the economic environment in which they operate, as well as their appetite to grow:



- Over half (57%) of respondents plan to grow their turnover in over the next three years, with around 44% planning growth in employment and business investment.
- However, a fifth indicated no plans to grow (20%), with a fraction of expecting a decline in their business performance. Decrease in employment is expected by almost a tenth of businesses (9%), followed by turnover (7%), and business investment (6%).
- 5.11 The barriers which the businesses are facing echo the perceptions of consultees:
  - The general economic conditions are seen as a common barrier to growth by the majority
    of business respondents (60%). Consultations with business representatives provide sector
    insight the perception in the energy and renewables sector links these to the uncertainty
    associated with Brexit, and linked to this, the lack of clarity on Government policy.
  - Skills and ability to recruit are a commonly cited barrier in Norfolk. The challenge in attracting and retaining skilled workers has been cited by most economic development officers, and is reinforced by the survey findings with 44% of businesses struggling to recruit workers with the right skills. This echoes the concerns of consultees, and links to the perception of Norfolk as peripheral with low density labour markets, influenced by the weaknesses in its connectivity.
  - Infrastructure. This was particularly prevalent among consultees, as mobile connectivity, broadband and road infrastructure were quoted as a constraint on economic growth in Norfolk. Poor infrastructure quality was linked to local businesses readiness to invest locally, as well as to the attractiveness fo inward investment. We focus on businesses' perceptions of road connectivity and the A47 in particular later in this section.

Economic conditions 60% 44% Ability to recruit 30% Government regulations Access to workers 29% 22% Access to markets Access to business finance 13% Accessing supply chains 12% Marketing 12% Availability of business premises 10% Other 0% 20% 60% 40% % of respondents

Figure 5.3 Business barriers to growth



### Attractiveness of Norfolk as a business location

5.12 The potential for business investment in Norfolk has two dimensions: indigenous investment by businesses based in the area, and inward investment. In order to get an understanding of this potential, especially in the context of the A47, we draw on the perspectives of strategic stakeholders and the findings from the business survey about Norfolk as a business location.

#### **Inward investment**

- 5.13 The key message which came out of the consultation process is the peripherality issue which characterises Norfolk. There is a strong feeling among the strategic consultees that the A47 is hindering inward investment, and that inward investment levels are low. The perception is of Norfolk as an isolated and inaccessible location, seen to be "further than it actually is".
- 5.14 A key driver of inward investment activity is the arrival of Peel Ports in Great Yarmouth. The port serves the growing offshore energy sector and Peel are keen to capitalise on this activity through this investment, as well as establishing an east coast presence. The port has subsequently been selected for construction and installation activities for ScottishPower Renewables £2.5bn East Anglia ONE offshore windfarm. Moreover, the port has been selected as Siemens's assembly location and installation base as part of the 56 turbine offshore Galloper Wind Farm project.
- 5.15 Consultation with Peel Ports has provided insight into how its activities are affected by the A47, and the Acle Straight in particular. The Acle straight is seen as a major bottleneck for getting staff, lighter equipment and goods to and from the port. Lack of resilience on the road has knock-on effects on the users of the port, as well as its activities. For example, a grain vessel coming into the port would require c. 5 tonnes per day to be distributed by road to the port. If issues occur on the Acle Straight, this sometimes leads to only a third of the daily load being distributed, causing major delays in getting the goods to the vessel. Consequently, the vessel is required to remain in the port for longer, leading to cost implications for the business, as well as for the port as it delays other vessels docking.
- 5.16 The local authorities which did have a positive story to tell on inward investment are ones that were able to benefit from the dualling of the A11 completed in the last couple of years. Consultees suggest that the A11 has played an important role in retaining businesses in Norfolk that were considering relocating in order to be closer to markets and suppliers. While it is too early to gather concrete evidence on the impact the dualling has had in inward investment, consultees are very positive on its effect so far and an inward investment campaign is being developed to maximise the economic development benefits of the A11.

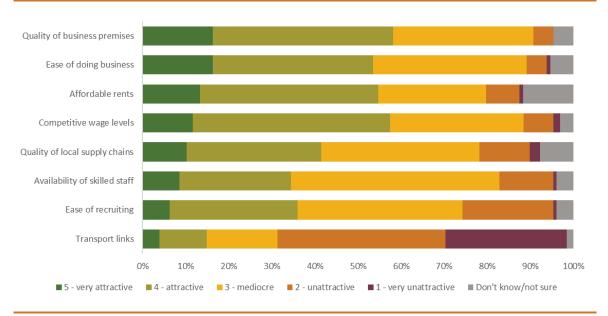
#### The Business Perspective

- 5.17 Businesses that are based in Norfolk were asked to rate the attractiveness of the county as a business location based on various factors. The results can be summarised as follows:
  - Norfolk is seen as an affordable location based on rent levels and competitive wages, alongside the quality of premises and ease of doing business – more than half of respondents rated the location as attractive or very attractive on these factors
  - Reinforcing the messages above about the barriers to business growth, availability of skilled staff and the ability to recruit are a challenge –
  - The least attractive factor by far is transport links more than two thirds of respondents ranked these as unattractive or very unattractive. This was most significant for businesses



based in Great Yarmouth, where 76% of respondents found Norfolk unattractive or very unattractive based on transport links.

Figure 5.4 Business perceptions on attractiveness of Norfolk as a business location



Source: Regeneris Consulting, A47 Improvements Business Survey 2016

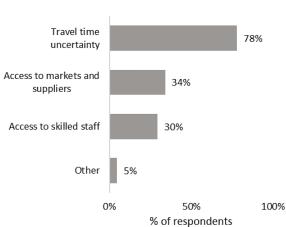
5.18 Moreover, businesses were asked about how satisfied they are with their current business location and whether they are considering to relocate. A fifth (20%) of businesses said they had plans to relocate, the vast majority of which said that road connectivity was influencing their decision (14% of all respondents).

Q. Does the County Council have examples of specific businesses that relocated due to the road?

## Constraints posed by the A47 on businesses

- 5.19 This sub-section aims to get understanding of how the A47 affects the businesses their operations. We aim to dwell into the specific constraints on business that the road presents, and in turn how that impacts on performance and productivity.
- 5.20 The A47 is seen to cause constraints on four fifths (79%) of the respondents' business activities, with the main causes being:
  - Travel time uncertainty was cited as the main constraint, while access to markets, suppliers and skilled staff was also an issue.
  - Additional issues mentioned include increased business costs as a result of delays, and the perceived remoteness of

Figure 5.5 Constraints of A47 on business



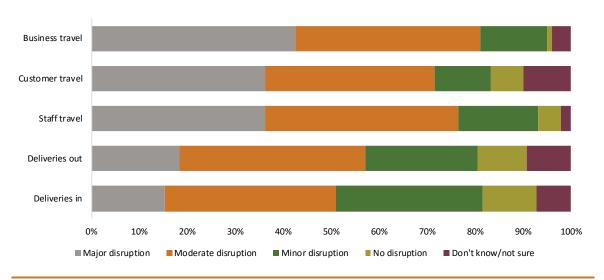
Source: Regeneris Consulting, A47 Improvements Business Survey 2016



Norfolk among clients. This links to the issues identified earlier and how they impact on business investment.

- 5.21 These challenges have consequences for the businesses, causing disruption to their operations. Figure 5.6 demonstrates that the vast majority of survey respondents are experiencing some disruption as a result of constraints on the A47:
  - 43% experience major disruption to business travel, with a further 52% indicating moderate to minor level
  - Staff and customer travel are also significantly affected, with over a third of business respondents experiencing major disruptions.

Figure 5.6 Impact of A47 Constraints on Different Aspects of Business Related Travel

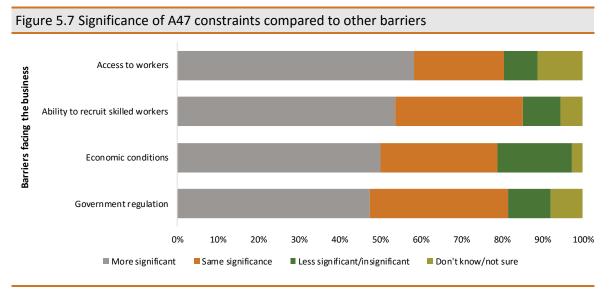


Source: Regeneris Consulting, A47 Improvements Business Survey 2016

Note: business travel means travel for business purposes (eg meetings); staff travel relates to commuting, and customer travel relates to customers accessing the business's goods/services

- 5.22 The effects that poor road connectivity is having on business brings about uncertainty, which in turn bears additional costs for business. To understand the scale of constraints posed by A47 on businesses, we asked the survey respondents to compare their level of significance to the barriers to business growth which they identified previously.
- 5.23 Economic conditions, access to skills, workers and government regulation were the most commonly-cited barriers to growth as demonstrated earlier. In order to get an understanding of how significant the A47 constraints are in the context of other barriers faced by the business, the survey asked them to compare these based on perceived significance relative to each other. Figure 5.7 shows that the vast majority indicated that A47 related constraints are at least as significant as these barriers to growth.





### Constraints on Tilney to East Winch and Acle Straight

- 5.24 To get a better understanding of specific constraints businesses are experiencing along the sections which are proposed for improvements, the business survey asked respondents on their use of these stretches of road and the issues they encounter.
- 5.25 A little less than two thirds (64%) of respondents currently use the Tilney to East Winch section of the A47. The main issues that they encountered on the stretch include:
  - Delays and slow-moving traffic are the main issues cited. The single carriage way and many junctions create hold ups and bottlenecks along the way.
  - Staff and business travel is affected, reinforcing the earlier message about disruptions to business operations as a result of the A47.
  - The use by large and heavy vehicles, including lorries and tractors, on single carriageways affects the road and causes delays. The infrastructure is unable to deal with the heavy traffic.



Figure 5.8 Tilney to East Winch: analysis of responses



- 5.26 The Acle Straight is used by two thirds of survey respondents. The issues encountered on this section are much more acute. Survey responses suggest the Acle Straight is "slow, unpredictable and dangerous". The long stretch of the road has few alternative routes so when there is a problem or an accident on the road, there are no diversion options. "Frequent accidents cause major disruption" and the road is said to be often brought to a standstill. This causes considerable delays
- 5.27 Problems on the Acle straight have knock on effects on entering and leaving Great Yarmouth, exacerbated by road capacity issues within Great Yarmouth itself. The investment in a third river crossing is expected to help the flow of traffic in and out of the town, but the Acle Straight is expected to remain a key issue.
- 5.28 Part of the significance of the constraint on the Acle Straight lie in the effect it is having on the key drivers for economic growth, particularly the energy and tourism sectors:
  - The Acle Straight causes particular concerns for the tourism industry. Consultees suggest that 44% of tourism value goes through the Acle Straight as it is seen as having a negative impact on tourism in the area. It is thought to impact on perceptions about Norfolk as a tourism destination, as well as causing negative associations for those who visited. In tourism, recommendations from friends and relatives are an important generator of trips, and there is a concern that bad traffic along the Acle Straight leaves a poor lasting impression.
  - The Acle Straight is the connection between Great Yarmouth with its port and offshore activity, to the west of the country. The energy sector uses the Acle Straight for getting in workers, and has knock-on effects for air connectivity as the road leads to Norwich airport, which in turn provides links with the energy sector in Aberdeen. The route also hinders the connectivity with the Midlands, that is particularly important for supply chains.



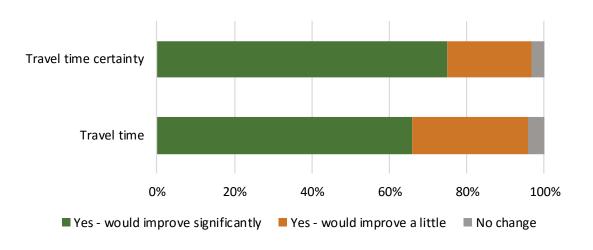
Figure 5.9 Acle Straight: analysis of responses



# Business opportunities from proposed improvements

- 5.29 The proposed A47 improvements present an opportunity in overcoming the current constraints encountered along the two sections and unlocking investment.
- 5.30 In order to get a sense for the likely types and scale of benefits, businesses were first asked about the expected changes in travel time and travel time certainty. Almost all respondents expect the improvements to lead in travel time reductions and greater travel time certainty (96% and 97% respectively).

Figure 5.10 Expected changes in travel time and travel time certainty among businesses



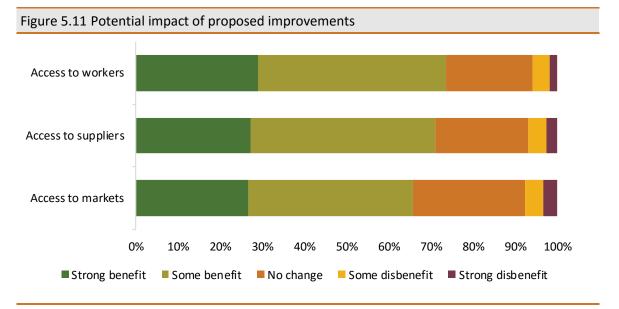
Source: Regeneris Consulting, A47 Improvements Business Survey 2016

5.31 Travel time reduction and the added certainty have the potential to translate into lower operating costs through savings. These can be brought about through increased fuel efficiency and foregoing



the costs associated with delays and penalty charges, for example. The survey suggests that around half of businesses expect reduced travel times and improved travel time certainty to lead to reduced operating costs. Delays and reduced penalties is cited as the main source of cost savings, followed by reduced fuel costs and lower staff costs.

5.32 It is important to also consider the potential for better access to markets, skills and supply chains as a result of A47 improvements. These are factors which would ultimately lead to business growth and investment, if the businesses are able to access new markets and skilled workers.



Source: Regeneris Consulting, A47 Improvements Business Survey 2016

- 5.33 As shown above, the vast majority would expect to see at least some benefit from the improvements on their ability to access markets, suppliers and workers. The qualitative comments indicate that businesses would hope to access new business development opportunities in new locations. Furthermore, expected benefits would include the ability to retain personnel as well as attract new workers due to the business location being more attractive as a result of better connectivity.
- 5.34 Finally, taking into account the improvements in travel time, travel time certainty and the potential benefits in accessing markets and workers, around half of respondents indicated they would expect to make increased levels of business investment.
- 5.35 Quantifying the business benefits as a result of proposed improvements is challenging and subject to much uncertainty. As the survey analysis so far has shown, there are many factors influencing business growth, and we cannot say with certainty what the economic and business environment will be when the improvements are delivered.
- 5.36 The survey did ask businesses to estimate the additional turnover that they think is likely to materialise (if any) as a result of the improvements, over and above the expected growth trajectory without the A47 investments. The analysis shows that around a third of respondents would expect the improvements could lead to increased turnover.

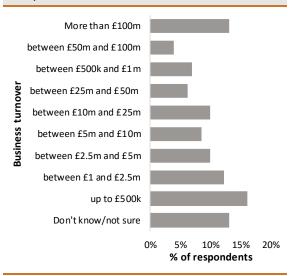


- 5.37 For illustrative purposes, we have estimated the likely scale of this impact on turnover. For our sample of 132 businesses the aggregate additional turnover expected as a result of the proposed improvements is around £41m, delivered by a third of the sample. This, on average, represents a 14% increase in annual turnover (or £1.2m per business) for those expecting to see changes as a result of improvements.
- 5.38 This is a relatively modest increase in the context of the businesses' current turnover levels, but again, we need to highlight the uncertainty linked to these estimates.

#### **Summary of Key Findings**

5.39 This section has highlighted that there is a consistent message among businesses and strategic decision makers about how the A47 impacts on business growth:

Figure 5.12 Turnover Distribution of Business Sample



Source: Regeneris Consulting, A47 Improvements Business Survey 2016

- Businesses show a strong appetite for growth. However, are faced with barriers including
  economic conditions and the ability to recruit workers with the right skills, and poor
  connectivity. The A47 ranks highly among these constraints.
- The A47 has an impact on inward and indigenous investment by businesses. This is partly
  due to how peripheral Norfolk is perceived as a business location, exacerbated by poor
  road infrastructure. Strategic consultees suggest Norfolk is underperforming in inward
  investment, although there are some positives:
  - The arrival of Peel Ports in Great Yarmouth has brought in additional investment and opportunities for the development of the offshore energy sector
  - The dualling of the A11 has brought investment optimism to the areas which it runs through, and anecdotally has played a role in retaining businesses in Norfolk that would otherwise have left. While the benefits from dualling the road have not had time to take effect in full, the impact it has had on perceptions can serve as a good comparator to the A47.
- Businesses based in Norfolk value the location for a number of factors (competitive wages, quality of business premises and ease of doing business), but transport links are an issue.
   14% indicated they are considering to relocate due to the road constraints. In fact, business activities and their potential to grow is being constrained by the A47.
- Addressing these constraints through the proposed improvements can bring opportunities
  for businesses. There is a strong feeling that the improvements can reduce travel time and
  improve travel time certainty. In some cases this can lead to reduced operational costs for
  businesses, which in turn improves business growth prospects.
- About a third of business respondents indicated they would expect to see additional turnover growth as a result of proposed improvements. While this is highly speculative and subject to much uncertainty, this indicates the investments in A47 can deliver tangible economic benefits for businesses.



# 6. Development of Particular Locations

6.1 Through our evidence from consultations with local economic development and planning officers and property agents, as well as other desk-based research, the analysis in this section of the report seeks to determine the extent to which investments to improve these specific sections of the A47 will contribute towards overcoming barriers to the development of locations and specific development sites in Kings Lynn and West Norfolk, as well as in Great Yarmouth. In addition, our analysis seeks to assess the extent to which investment will contribute to the delivery of wider economic benefits in these locations.

[Note: Our consultations with local authority planning and economic development officers were very helpful in informing this section. We also supplemented these with consultations with businesses or sector representative bodies, as well as speaking with some property agents who knew the areas. However, the general response rate from property agents was limited, particularly with regard to Great Yarmouth. This section of the report would benefit from some further insights around take-up rates, occupiers etc at the EZ sites in Great Yarmouth to provide more detail around the market and opportunities for development.]

## King's Lynn and West Norfolk

#### **Development Context**

- 6.2 King's Lynn and West Norfolk is a large and predominantly rural borough in the west of the county area, with King's Lynn as the major urban centre and the main identified driver of growth for the borough. The A47 passes through the borough to the south of King's Lynn connecting with the A10 at the Hardwick Interchange.
- 6.3 Historically, the borough has encountered economic challenges linked to its location, an economy with an overdependence on low value sectors and a lack of good quality employment sites, all factors which have knock on effects for attracting workers and businesses. However, more recently the population in the borough has grown from 135,600 in 2001 to over 150,000 in 2014 a growth rate of 11% and slightly exceeding the county and national average (both growing by 10%). Recent employment trends in the borough show 7% growth between 2011 and 2014, with employment recovering from the contraction during the recession. This compares to 6% across the county and 5% nationally and is a rate which is stronger than for Norwich.
- 6.4 In light of this population and employment growth, the Core Strategy aims to plan for sustainable population and economic growth. The Core Strategy highlighted that the borough's economy faces a number of challenges linked to the need to provide sufficient sites to accommodate new housing, as well as sufficient employment sites to enable the borough to both attract businesses and workers.
- 6.5 The growth ambitions for King's Lynn and West Norfolk borough (Policy CS10) include:
  - 5,000 new jobs created through the delivery of 66ha of employment land up to 2021
  - 16,500 new homes between 2001 and 2026 (across a range of sites, including urban expansion)
  - Strengthening the visitor economy offer, including new accommodation in rural areas.
- 6.6 The Core Strategy identifies King's Lynn as a key growth location and a driver for the whole borough. Improving its retail, leisure and tourism offer is seen as a priority in delivering economic



growth, employment and regeneration. In order to deliver this growth, policy CS03 outlines a number of commitments in King's Lynn up to 2026:

- allocating 7,510 dwellings to the town, with at least 1,000 located in the town centre to aid regeneration
- delivering 3,000 new jobs at Hardwick Estate Extension, Saddlebow Road
- providing 20,000m2 of retail floorspace south of Railway Road.
- 50ha of employment land.
- 6.7 The recently adopted Site Allocations and Development Plan Document (September 2016) highlights specific policies for employment land at Hardwick and Saddlebow, as well as the urban expansion proposed for West Winch. These are the key strategic sites within close proximity to the A47, which will play a major role in accommodating the borough's future growth. In addition, other housing schemes within the King's Lynn growth area will also come forward and place additional pressures on the local and strategic road infrastructure.

# Employment Land & Housing Policies – Site Allocations & Development Plan Document, Adopted September 2016

### Policy E1.12 King's Lynn Employment Land

Sites at Hardwick (E1.12-HAR) (27 hectares) and Saddlebow (E1.12-SAD) (23 hectares) are the
preferred locations for employment expansion in Kings Lynn. The development of these sites
to provide for business, industrial and distribution uses. This is in line with Core Strategy policy
CS10 – The Economy

### Policy E2 - West Winch, Settlement adjacent to King's Lynn

- The adopted Core Strategy designated West Winch as one of the key strategic 'urban expansion' areas around King's Lynn.
- Policy CS09 of the Core Strategy provides for an allocation of at least 1,600 new homes and supporting infrastructure. It also establishes this area as a growth location beyond the Local Plan period (2026), with the potential for more housing to come forward in the future.

### **Strategic Development Sites**

- 6.8 Our previous report focussed upon a headline assessment of a number of development sites in proximity to the A47 and provided some initial commentary upon the context of these sites and proposed development schemes (if scheme detail was available), as well as aspects of deliverability.
- 6.9 The following section takes this analysis a step further for the three key strategic housing and employment site covered by Policies E1.12 and E2. The analysis draws upon evidence from our consultations with local economic development and planning officers and property agents to determine the extent to which investments to improve the A47, through dualling these two sections, will contribute towards **overcoming barriers** to their development and the extent to which it will contribute to **the delivery** of wider economic benefits for King's Lynn and West Norfolk, as well as the wider Norfolk economy.
- 6.10 Figure 6.1 provides an overview of the locations of these strategic sites in relation to King's Lynn and the A47. Figure 6.2 provides a more detailed view on the West Winch Urban Expansion area and the proposed development site to the north. This development site is subject to an existing



planning application by Hopkins Homes for up to 1,100 dwellings. The proposed link road through the site to the A47 and to the A10 is also highlighted.

Figure 6.1 Overview of key Housing & Employment Land Development Locations

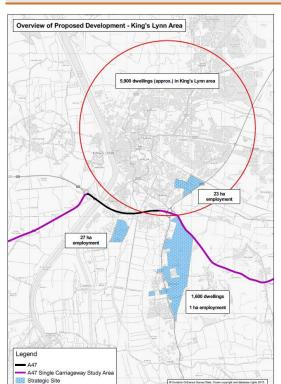


Figure 6.2 The 'Hardwick Green' Site within the West Winch Urban Expansion Area



Source: Mouchel

Source: Hopkins Homes/Turley

### **Contribution to Delivery & Wider Economic Benefits**

6.11 The following section provides an overview of the key messages on the potential contribution an enhanced A47 can make to the delivery of the strategic employment sites and the economic benefits they could deliver, as well as strategic housing site at West Winch. These messages have been shaped and informed through our consultations with stakeholders, as well as by our research and professional judgement.

Employment Sites - Hardwick & Saddlebow

- The two allocated employment sites provide the borough with the appropriate level of employment land (for manufacturing and distribution uses) in order to accommodate future growth, while being located in close proximity to the strategic road network. However, the sites, in particular Hardwick, have a series of site constraints which will need to be overcome in order for them to be brought forward viably (e.g. on-site site infrastructure and enabling works). In addition, market demand will play an important role in the development timeframes alongside site infrastructure factors.
- Consultation with the local authority planning officer has indicated that while the sites
  were allocated for employment uses, the scale of the proposed development dictates that
  their full future development was always going to be dependent upon ensuring that the
  highway network could accommodate the additional traffic volumes the employment sites



would generate. It is therefore important to provide the appropriate road capacity in order to accommodate growth from these employment sites, but also to accommodate the traffic growth associated with new housing sites. In addition, the A47 will also need to accommodate the generalised increase in traffic using this strategic east-west route linking Norfolk and the East Midlands.

- There was a general consensus amongst consultees that the proposed road investment will play an important part in the delivery of these sites and the economic benefits which they deliver (e.g. 3,000 jobs). However, it is clear that investment in improving the A47 is just one component of what is a wider package of on and off site infrastructure investment that will be required to deliver the sites.
- There was a clear view from consultees, that further investment in dualling the A47 will play an important role in **enhancing the attractiveness** of the area for business investment. Enhanced attractiveness applies to both indigenous businesses who are looking to grow, but also inward investors. There are a number of other factors which inward investors consider in their location searches (e.g. wage levels, access to labour and skills, distance to markets etc). However, modern road infrastructure which delivers suitable capacity and travel-time certainty will be **high** on their agenda, particularly amongst some sectors (e.g. manufacturers, distribution and agriculture/food processing related operators).
- While King's Lynn will always be reasonably peripheral in the context of other parts of the UK, an enhanced A47 will play a significant role in providing greater certainty to businesses in terms of recruiting staff, accessing markets and in running their businesses with fewer disruptions and costs associated with congestion and delays. This will have important implications for operational cost savings, as well as leading to enhancements in business productivity. Businesses' effective catchment areas will also improve, which is beneficial in terms of sales/customer reach, supply chains and labour supply.
- While developments at these strategic employment sites are dependent on delivering an
  enhanced A47, given this is a strategic east-west link, economic benefits will also be
  realised by road users who pass through the area heading towards the East Midlands or to
  the A10, or across to other parts of Norfolk. These benefits are assessed as user benefits
  within Mouchel's WebTAG analysis.
- 6.12 It is clear from our analysis is that the provision of modern road infrastructure ('economic infrastructure' as set out in the 2016 Autumn Statement) will play a **critical role** in bringing forward potential development and employment benefits at these sites. However, while there is a **dependent link** between road investment and in achieving the sites' maximum development and employment generating prospects, it is also important to view any future A47 investment as forming an important component of a **broader package of activities**. These activities, such as other on-site infrastructure investments being made, necessary planning consents achieved and the appropriate economic/market conditions arising, are all needed to align in order for the full economic benefits for the borough to be delivered.
- 6.13 Depending upon the timescales for investment, an enhanced A47 could also lead to economic benefits arising at the Site at an **accelerated** pace than would have otherwise been the case without the investment. Under a without investment scenario, planning applications and their approval are likely to continue to be constrained by current highways capacity, while developer interest in the site would continue to be influenced by the road's congestion and resilience issues.



### West Winch Urban Expansion

- Given changing demographic conditions (e.g. smaller household sizes, an ageing population, migration, growing employment base), there is a need for new housing sites in the borough. The West Winch Urban Expansion area seeks to contribute towards meeting the borough's future housing needs via the delivery of around 1,600 new dwellings.
- While our consultation evidence has pointed to the challenges in attracting national housing developers to this part of Eastern England (i.e. given lower values which can be achieved, levels of demand<sup>6</sup> not being as high compared to locations such as Cambridgeshire), there is still interest in development sites in the area being shown from regional developers.
- This is illustrated by part of the West Winch Urban Expansion site (Hardwick Green) currently being subject to a planning application for up to 1,100 homes by Hopkin's Homes, a Suffolk based developer. The Hardwick Green site lies to the north of the expansion area and is adjacent to the A47 (see Figure 6.2), but the application remains under consideration by the Borough Council.
- One of the key hurdles in determining this planning application is related to the adverse impact that the proposed housing development at West Winch will have on highways, in particular on the A10 and A47, as well the type/scale of on-site infrastructure required and the funding/viability issues surrounding this. The Hardwick Green site will need to include a new junction connecting to the A47 for the development to proceed, while there is also a planning requirement to provide a link road through the site between the A10 and the A47 (see Figure 6.2).
- As with the strategic employment sites, consultations with the local authority planning and economic development officers have pointed to there always being an acceptance when the site was allocated that the full development of new housing at West Winch would be dependent on further highway improvements to the A47. While improvements have been made to the Hardwick Interchange, the available capacity would only accommodate a certain level of future traffic growth. Further improvements to the A47 was cited as a long-standing ambition of the Council and one which previous studies on the interchange had already highlighted a need for.
- An Infrastructure Delivery Plan (IDP) for the Urban Expansion area is currently being prepared which will set out the scale and breadth of infrastructure required to bring forward the housing area. The IDP will set out the anticipated costs, as well as a method to apportion costs for developers and the public sector. This work is important as it will provide greater certainty and transparency on developer financial contributions towards infrastructure costs. It will also help to inform future viability appraisals for other housing applications which may come forward within the Urban Expansion area.
- 6.14 As with the Strategic Employment Sites, we judge that there is a **clear dependency** between the successful full delivery of the West Winch Urban Expansion housing area and other associated uses, with access to an enhanced A47. However, the A47 will not be the only answer to ensuring that the housing area is a success. There are a number of **other factors** which will also need to align, particularly contributions to on-site infrastructure costs, including the link road to the A10, that

<sup>&</sup>lt;sup>6</sup> The borough's latest Annual Monitoring Report (2015/16) highlights how the borough has not keep on target with housing completion levels in line with Core Strategy policy (c. 660 dwellings per year). The borough now has a deficit (backlog) of around 970 homes. While this will arise for a number of reasons, demand and developer interest in locations will play an important role.



31

will need to be borne by an anticipated mix of private and public sector partners, in order for the housing units to be developed.

6.15 Nonetheless, any potential commitment to fund enhancements to the A47 could lead to **greater certainty** amongst the developer community that the area's wider road infrastructure needs are being addressed. This is turn has the potential to lead to development opportunities becoming more attractive and values rising, as a result of shorter travel times between residential and employment locations in Norfolk and further afield.

Table 6.1 Strategic Sites: King's Lynn and West Norfolk - Summary				
Site Name & Scale	Use type	Key issues/Deliverability		
King's Lynn – Hardwick (policy E1.12) 27 ha Alongside Saddlebow c.3,000 jobs	Employment Land Business, industrial and distribution uses	<ul> <li>Multiple ownerships</li> <li>The allocation brought forward from the 1998 Local Plan.</li> <li>It is a key strategic employment site for the County and now has a planning consent</li> <li>The site is currently available, but also has constraints that require extra development costs: flood mitigation measures (ie land raining) and utilities infrastructure.</li> <li>Given the site's scale and site servicing requirements, market demand and viable development propositions will be critical to successful development here.</li> <li>Amongst other factors, an enhanced A47 would provide additional road capacity to enable substantive employment uses to come forward at this site.</li> </ul>		
King's Lynn — Saddlebow (policy E1.12) 23 ha Alongside Hardwick <b>c.3,000 jobs</b>	Employment Land Business, industrial and distribution uses	<ul> <li>Multiple ownerships</li> <li>The site currently has no planning permission (monitoring report 2015).</li> <li>The site is currently vacant, and could be developed within the next 5 years. However, consultations with agents suggests that this will be determined by a suitable planning application being submitted and market demand for this location.</li> <li>Amongst other factors, an enhanced A47 would provide additional road capacity to enable substantive employment uses to come forward at this site.</li> </ul>		
West Winch (policy E2.1) 1, 600 dwellings, 1 ha of employment land	Residential and employment land	<ul> <li>This site is in multiple ownership (including ZAL and Hopkins Homes).</li> <li>While consultation evidence points to general challenges in attracting national housebuilders to this part of Norfolk, given the lower values that can be achieved and lower levels of demand<sup>7</sup>, there is interest in developing the site from regional housebuilders.</li> <li>Suffolk based Hopkins Homes submitted an outline planning application for the development of part of the Urban Expansion site for 1,100 dwellings, of which 750 would be completed within the plan period to 2026.</li> <li>The application remains under consideration given the major on-site infrastructure works required. This includes access to</li> </ul>		

<sup>&</sup>lt;sup>7</sup> The borough's latest Annual Monitoring Report (2015/16) highlights how the borough has not keep on target with housing completion levels in line with Core Strategy policy (c. 660 dwellings per year). The borough now has a deficit (backlog) of around 970 homes. While this will arise for a number of reasons, demand and developer interest in locations will play an important role.



- the A47, as well as the delivery of a link road through the site connecting to the A47 and the A10.
- An infrastructure development plan is being prepared to agree the scale, phasing and costs required to service the site, as well as an agreement on who bears these costs.
- An enhanced A47 will play an important role in supporting the
  delivery of housing at this site, providing additional capacity to
  accommodate more users. It will also provide greater certainty
  to developers/investors looking at the urban expansion area
  that the wider economic infrastructure needs of the area are
  being addressed.

Source: Core Strategy/Regeneris Consultations

### **Great Yarmouth**

### **Development Context**

- 6.16 Access to Great Yarmouth from Norwich and the West comes primarily via the A47 and the Acle Straight. It is one of the town's key strategic routes, alongside the A12 and the A143. The performance of the Great Yarmouth economy is shaped by its location on the east coast of Norfolk and its sectoral mix, including the historic dependence on the port and related sectors, as well as the tourism sector. However, the offshore energy sector presents a major opportunity for the local economy, offering the potential to grow employment across a range of direct and supply chain sectors.
- 6.17 Historic trends show that population growth has been slower in the borough than in Norfolk as a whole, growing by 8% between 2001 and 2014 (from 91,000 to 98,000 people). Employment growth has also been slower than the county average, increasing by 5% since 2011 (compared to 6% across Norfolk). Looking forward across the Local Plan period, the population of the district is forecast to grow by 9,200 people across the borough between 2013 and 2029 (9%), although this is less than half the rate of Norfolk County (20%).
- 6.18 It is within this population and economic context that the development of the offshore industries is seen as a major growth opportunity locally, enabling the use of underutilised assets (e.g. the Port, employment land assets), the growth of high value jobs and the development of supply chains serving the offshore sector.
- 6.19 The borough's economic and housing ambitions are clearly set out in the Core Strategy. This includes:
  - Development of the two allocated Enterprise Zones in the borough: Beacon Park and South Denes. These are expected to play a vital role in attracting new businesses into the area, and creating employment. The long term vision is to have 150-200 businesses across the two Enterprise Zones, directly creating 9,000 new jobs by 2025 and a further 4,500 jobs indirectly. Given its proximity to the Port, the South Denes EZ has been designated as a location for for businesses operating in or servicing the offshore industry.
  - To facilitate growth, the Core Strategy aims to provide 52.48ha of undeveloped employment land of which around 15ha will be at Beacon Park.
  - The Core Strategy commits to delivering 7,140 new houses in total by 2030, with an annual rate of 300 dwellings per annum (dpa) between 2013 and 2020, and 504 dpa between 2021 and 2030. This compares to an average of 276 completions between 2001 and 2013.

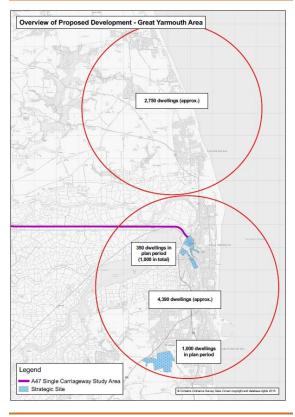


 To accommodate for economic growth, around 1,000 dwellings are planned at the Great Yarmouth Waterfront Area (with 300 delivered over the plan period), and another 1,000 at the Beacon Park Extension.

### **Development Sites**

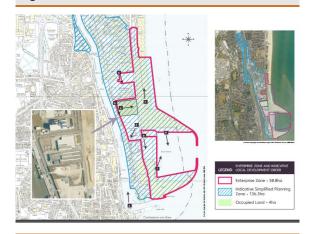
- 6.20 Our earlier analysis, which fed into Mouchel's technical evidence, provided a headline assessment of a number of key strategic housing and employment development sites in Great Yarmouth. It provided some initial commentary upon the context of these sites and proposed development schemes (where scheme detail was available), as well as aspects of deliverability.
- 6.21 As with the King's Lynn spatial assessment, the following section takes this analysis a step further for the key strategic housing and employment sites (e.g. the EZ areas, including the Port), but also draws upon evidence from our consultations with local economic development and planning officers and property agents. This approach has been undertaken to determine the extent to which the investment to dual the Acle Straight will contribute towards overcoming barriers to the development of these identified sites in Great Yarmouth and the delivery of wider economic benefits for the borough, as well as the wider Norfolk economy.

Figure 6.3 Key Housing Development Areas



Source: Mouchel

Figure 6.4 South Denes EZ Area



Source: New Anglia LEP

Figure 6.5 Beacon Park EZ Area



Source: New Anglia LEP



### **Contribution to Site Delivery & Wider Economic Benefits**

- 6.22 The following section provides an overview of the key messages on the potential contribution an enhanced A47 Acle Straight section can make to the delivery of the strategic employment sites and the economic benefits they could deliver, as well as strategic housing sites in Great Yarmouth. These messages have been shaped and informed through our consultations with stakeholders, as well as by our research and professional judgement.
- 6.23 Unlike in King's Lynn, our research has **not** identified that the key employment and housing sites in Great Yarmouth are **specifically dependent** upon investments in the A47 to bring them forward. This is not that unexpected given the different spatial context in this part of Norfolk. Unlike the King's Lynn sections, the development sites are not adjacent to or in immediate proximity to the proposed dualling of the Acle Straight. The South Denes EZ site is approximately a 1.5-2 mile drive from the Acle Straight, while Beacon Park is approximately 4.5-5 miles.
- 6.24 In addition, there are a number of other factors which will act as constraints on the pace and scale of development at these sites. For example, the identified sites in the Waterfront Area currently have a number of constraints that need to be overcome, limiting the current deliverability of the sites. It is understood that some sites have a high likelihood of contamination, as well as being located in high flood risk areas. Additionally, there are severe highway constraints that need to be addressed in the immediate local area of the sites. There are also no planning consents for these sites, while it is anticipated that only around 30% of the dwellings will actually come forward in the current Local Plan period.
- 6.25 The two designated employment sites at South Denes and Beacon Park, both of which are partly covered by Enterprise Zone status, are identified as being key drivers of growth both in offshore and related sectors, but also other business sectors in Great Yarmouth. Both sites have been granted a Local Development Order (LDO) in 2012, providing a simplified planning regime and to encourage/accelerate development within the EZ's. These sites present considerable opportunities for Great Yarmouth, and could **unlock** the potential to deliver an estimated 9,000 direct and 4,500 indirect jobs<sup>8</sup>, boosting employment in the borough.

[Note: Re opportunities – as said above, it would be useful to have some further information on take-up rates, vacancy and development activity within the EZ to date, as well as enquiries data]

- 6.26 However, given the location of the proposed housing and employment sites in Great Yarmouth, it is judged that they are likely to have an **indirect impact** on the A47 and lead to **greater demands** being placed upon the Acle Straight, and the A47 more generally, given the flows of goods, services and labour which use this strategic east-west route. The developments will drive the general demand for the road infrastructure and A47 in particular, in two ways:
  - Growth in the offshore energy sector, the associated supply chains and more general economic stimulus to the town has the potential to increase vehicle traffic using the A47. The growth of manufacturing, engineering and logistics businesses in particular will require improved connectivity between the port and key employment sites and markets and suppliers beyond. Some businesses within these sectors are dependent upon links between the port and airport, then others operating in the area.
  - Once developed, the residential developments and associated population growth are likely
    to create increased use of the highway when accessing key service centres and jobs in the
    hinterland (including flows to Norwich and other employment centres).



<sup>&</sup>lt;sup>8</sup> Estimates from New Anglia LEP

- 6.27 The proposed dualling of the Acle Straight will therefore play an important role in providing the required economic infrastructure to support the current and future growth aspirations of the town and the borough over the next few decades. The A47 is already considered one of the key constraints for the Great Yarmouth economy. While the spatial site dependencies and associated economic benefits are different within this investment context to King's Lynn, the importance of the A47 to the economic wellbeing of the area has been evidenced through both our consultations and the business survey.
- 6.28 As both of these research strands have demonstrated (highlighted in Section 5), it is the improvements to accessibility and connectivity to and from the town and borough which is of strategic importance for businesses, as well as for workers coming in to the area or residents commuting out. In addition, a dualled A47 along the Acle Straight would also help change business and investor perceptions on the reliability of the road network, provide greater certainty to users that they will be able to meet their business objectives as the route is more resilient to the issues of congestion caused by accidents or other incidents. These points are also of particular relevance to the visitor economy, given visitor perceptions and recommendations are a crucial component in shaping short-break and holiday destination choices.
- 6.29 While it is more challenging to attach economic outcomes to investments at this stage, it is these types of factors, working in a **complementary** fashion alongside others (e.g. a good mix of well serviced and attractive sites, supply chain opportunities, a skilled population) which will play an important role shaping the area's future economic success and generating the full range of economic benefits (e.g. 9,000 direct and 4,500 indirect jobs) and new housing for Great Yarmouth.

[Note: It would be useful to have some further information from property agents and consultees on take-up rates, vacancy and development activity within the EZ to date, as well as enquiries data. It will help us to better understand the current demand for the site and how much road connectivity plays a part in this vis-à-vis other factors.

Table 6.2 Strategic Sites: Great Yarmouth - Summary				
Site Name & Scale	Use type	Key issues/Deliverability		
Beacon Park Extension, South Bradwell 16 hectares 1,000 units 9,000 direct jobs across the EZ sites	Housing & Employment land (Office and light industrial)	<ul> <li>Beacon Park and South Denes are expected to attract up to 200 businesses into the area, creating 9,000 jobs directly, and further 4,500 indirectly. This should help to reduce the unemployment rate</li> <li>The site has been identified as deliverable, with no major constraints.</li> <li>A LDO was granted to cover Phase 1 development. It is valid for 10 years, and reduces the number of planning permissions required for B1 and B8 developments in order to speed up the process.</li> <li>This grants permission to conduct site investigation, and the development of office and light industrial buildings.</li> <li>Part of the proposed housing development has undergone a public consultation (around 290 homes), while around a further 800 homes to the west of the Park have received planning permission.</li> <li>Given the A47 is not in close proximity to the site, there is no direct dependency placed upon the road investment and specific developments coming forward at this site. However, the greater certainty around connectivity and reliability will play</li> </ul>		



		an important role in shaping investor perceptions of this location.
South Denes 136 ha (59 ha in the EZ) 9,000 direct jobs across the EZ sites	Employment land	<ul> <li>Fostering economic growth; attracting new businesses and expanding the energy sector (offshore wind).</li> <li>Beacon Park and South Denes are expected to attract up to 200 businesses into the area, creating 9,000 jobs directly, and further 4,500 indirectly. This should help to reduce the unemployment rate</li> <li>LDO granted in 2012, covering 136.3ha of employment land, of which 58.8ha is an Enterprise Zone. Around 54ha is undeveloped. The LDO aims to encourage the growth of the energy sector. It permits development of port and energy industries.</li> <li>The site is located in a flood risk zone, but is protected by flood defences.</li> <li>There is no direct dependency placed upon the road investment and specific developments coming forward at this site. However, the greater certainty around connectivity and reliability will play an important role in shaping investor perceptions of this location.</li> </ul>
The Waterfront Area Up to 1,000 dwellings 16,500m2 of employment floorspace 14,200m2 retail & leisure	Housing Employment floorspace Retail and leisure floorspace	<ul> <li>Employment floorspace will support the offshore sector.</li> <li>Some of the identified sites have severe highway constraints, and are located in a flood risk zone 3.</li> <li>Some parts of the land could be contaminated.</li> <li>These constraints will need to be overcome before any development could take place.</li> <li>There are currently no planning consents on the identified sites in the Waterfront Area. The Council aims to unlock the developments and bring delivery forward.</li> <li>It is understood that it is likely that the majority of the development will occur in the next Local Plan period, with just 300 out of the 1,000 dwellings likely to come forward in this period.</li> <li>No direct dependency upon the A47, but indirectly demands will be placed upon the road from the new residents</li> </ul>

Source: Core Strategy/Regeneris Consultations



## 7. Conclusions

- 7.1 The A47 is the key strategic east-west route across Norfolk linking key centres including Great Yarmouth, Norwich and King's Lynn, as well as linking Norfolk to the East Midlands and to other strategic roads serving northern and southern locations. There has been a long-standing aspiration for the complete dualling of the A47 between the A1 and Great Yarmouth following earlier investment programmes (e.g. RIS 1 2015-21).
- 7.2 However, the sections between Tilney and East Winch (South of King's Lynn), and the Acle Straight (linking to Great Yarmouth) remain single carriageways and suffer from peak time delays and congestion problems, as well as safety concerns (Acle Straight). In making the case for investment to Highways England, it is important to look beyond just the traditional transport appraisal analysis and to consider the extent to which wider economic benefits can arise from investing in dualling these road sections.
- 7.3 The following section sets out the key conclusions on wider economic benefits which we have drawn from our research on business and sector perspectives on the A47, as well as the implications for wider economic benefits to arise from specific sites or in spatial locations.

## **Business Survey Conclusions**

- 7.4 The business survey has provided some very important contextual and qualitative information about sectoral and business perspectives on the constraints and barriers the A47 poses, as well as the potential benefits they see arising from the proposed investments in the A47. It should be noted that our survey highlights a range of business benefits that accrue as a result of the proposed investments. However, there is some overlap here with the user benefits analysis that will have been covered by Mouchel's work.
  - Surveyed businesses who use the A47 showed that they have a strong appetite for growth.
     However, these businesses are faced with a number of barriers, including economic conditions and the ability to recruit workers with the right skills, alongside poor connectivity. The A47 was ranked highly among these constraints.
  - The A47 was judged by businesses to have an impact on perceptions of Norfolk as an attractive business location, impacting upon inward and indigenous investment by businesses. This is partly due to how peripheral Norfolk is perceived as a business location, exacerbated by poor road infrastructure which connects to ports and other employment and population centres. While Norfolk is underperforming in terms of inward investment, there are some positives:
    - The arrival of Peel Ports in Great Yarmouth has brought in additional investment and opportunities for the development of the offshore energy sector.
    - The dualling of the A11 has brought investment optimism to the areas which it runs through, and anecdotally has played a role in retaining businesses in Norfolk that would otherwise have left. While the benefits from dualling the road have not had time to take effect in full, the impact it has had on perceptions can serve as a good comparator to the A47.
  - However, despite poor transport links and its peripheral location, businesses based in Norfolk did value the location for a number of factors (competitive wages, quality of business premises and ease of doing business). Nonetheless, our research found that 14%



of businesses indicated they are considering relocating due to the road constraints affecting their businesses.

- The survey has shown that the A47 is seen to cause constraints on four fifths (79%) of the respondents' business activities, with the main causes being:
  - Travel time uncertainty cited as the main constraint, while access to markets, suppliers and skilled staff was also an issue.
  - Additional issues included increased business costs as a result of delays, and the perceived remoteness of Norfolk among clients.
- Focussing on those surveyed businesses (64%) who use the Tilney to East Winch sections, the identified constraints in using this section of the A47 were:
  - Delays and slow-moving traffic are the main issues cited. The single carriage way and many junctions create hold ups and bottlenecks along the way.
  - Staff and business travel is affected, reinforcing the earlier message about disruptions to business operations as a result of the A47.
  - The use by large and heavy vehicles, including lorries and tractors, on single carriageways affects the road and causes delays. The infrastructure is unable to deal with the heavy traffic.
- The Acle Straight is used by two thirds of survey respondents. The issues encountered on this section are much more acute.
  - The road was considered "slow, unpredictable and dangerous", with few alternative routes to divert on to when major incidents arise causing considerable delays.
  - Problems on the Acle straight have knock on effects on entering and leaving Great Yarmouth, exacerbated by road capacity issues within Great Yarmouth itself. The investment in a third river crossing is expected to help the flow of traffic in and out of the town, but the Acle Straight is expected to remain a key issue without further investment.
  - Part of the significance of the constraint on the Acle Straight lie in the effect it is having on the key drivers for economic growth, particularly the energy and tourism sectors which the region is looking to capitalise further on.
- The survey results showed that addressing the A47's constraints through the proposed improvements can bring opportunities for businesses. There was a strong sentiment amongst respondents that the improvements can reduce travel time and improve travel time certainty. In some cases, this can lead to reduced operational costs for businesses, which in turn improves business growth prospects.
- About a third of business respondents also indicated they would expect to see additional turnover growth as a result of proposed improvements. While this is highly speculative and subject to much uncertainty, this indicates that investments in A47 can deliver tangible economic benefits for businesses.



## **Development of Particular Locations - Conclusions**

7.5 Through our evidence from consultations with local economic development and planning officers and property agents, as well as other desk-based research, our analysis has sought to determine the extent to which investments to improve these specific sections of the A47 will contribute towards overcoming barriers to the development of locations and specific development sites in Kings Lynn and West Norfolk, as well as Great Yarmouth and across the Norfolk economy more generally. In addition, our analysis has sought to assess the extent to which investment will contribute to the delivery of wider economic benefits.

**Note:** In this assessment we have not sought to apportion the housing units and employment benefits which arise at employment and housing sites to the potential road investment as part of this assessment. While we have seen this approach undertaken in other studies, the evidence base which supports these judgements often ignores the complex inter-relationships between a range of economic, financial, market and planning factors which all contribute towards the successful delivery of the site.

### King's Lynn and West Norfolk

- 7.6 The borough has three strategic employment and housing sites in close proximity to the A47 which have been allocated for development within the Local Plan, while King's Lynn itself is to the north of the A47. The employment land sites at Hardwick and Saddlebow, as well as the urban expansion proposed for West Winch will play a major role in accommodating the borough's future economic and housing growth.
- 7.7 It is clear from our analysis is that the provision of modern road infrastructure ('economic infrastructure') will play a critical role in bringing forward the maximum potential housing and employment benefits at these sites (e.g. 3,000 new jobs, 1,100 new homes). However, while there is a **clear dependent link** between road investment and the sites' development prospects, it is also important to view any future A47 investment as forming part of a **broader package of activities.** These activities, such as other on-site infrastructure investments, necessary planning consents and the appropriate economic/market conditions, will all need to align in order for the **full** identified economic and housing benefits for the borough to be realised.
- 7.8 Depending upon the timescales for investment, an enhanced A47 could lead to the economic benefits and new housing arising at the Sites at an **accelerated pace** than would have otherwise been the case without the investment.
- 7.9 In addition, there was a clear view from consultees, that further investment in dualling the A47 will play an important role in:
  - Enhancing the attractiveness of the area for business investment. Enhanced attractiveness
    applies to both indigenous businesses who are looking to grow, but also inward investors.
    While there a range of factors which inward investors consider in their location searches
    suitable road capacity and travel-time certainty will be high on agendas.
  - Providing greater certainty to businesses in terms of recruiting staff, accessing markets
    and in running their businesses with fewer disruptions and costs associated with
    congestion and delays. This will have important implications for operational cost savings,
    as well as leading to enhancements in business productivity.
  - **Increasing businesses' effective catchment areas**, which is beneficial in terms of sales/customer reach, supply chains and labour supply.



Delivering greater certainty to the development community that the area's wider road
infrastructure needs are being addressed. This is turn has the potential to lead to
development opportunities become more attractive and values rising, as a result of shorter
travel times between residential and employment locations.

#### **Great Yarmouth**

- 7.10 The messages on supporting development sites and enabling economic benefits for Great Yarmouth are different to King's Lynn and West Norfolk. For this location our research has **not** identified that the key employment and housing sites in Great Yarmouth are **specifically dependent** upon investments in the A47 to bring them forward. This is not that unexpected given the different spatial context in this part of Norfolk. The development sites are not adjacent to or in immediate proximity to the proposed dualling of the Acle Straight.
- 7.11 In addition, our research has shown that there are likely to be a number of other factors which act as constraints on the pace and scale of development at these sites (e.g. at the Waterfront area there are flood risks, contamination, and local highways issues). In terms of the EZ sites, market demand will be key to ensuring that the proposed employment benefits (9,000 direct and 4,500 indirect jobs in the borough) can be unlocked.
- 7.12 As a result of the proposed development of housing and employment sites in Great Yarmouth, it is judged that they are likely to have an **indirect impact** on the A47 and lead to **greater demands** being placed upon the Acle Straight, and the A47 more generally, given the flows of goods, services and labour which use this strategic east-west route (e.g. increased demand from new residents accessing employment in other parts of the county, increased demand linked to the off-shore sector).
- 7.13 The A47 is already considered one of the key constraints for the Great Yarmouth economy. The proposed dualling of the Acle Straight will therefore play an important role in providing the **necessary economic infrastructure** to support the current and future growth aspirations of the town and the borough over the next few decades.
- 7.14 As with King's Lynn, our research has demonstrated that investments in the A47's Acle Straight capacity and accessibility will be important in helping to change business and investor perceptions on the reliability of the road network connecting to Great Yarmouth, while also providing **greater certainty** to users that they will be able to meet their business objectives as the route is more **resilient** to the issues of congestion caused by accidents or other incidents.



# **Appendix A - Consultees**

## Strategic Consultees

Name	Organisation	Role
Robert Campbell	Breckland Council	Inward Investment Manager
David Glason	Great Yarmouth	
David Glasoff	Great farmouth	Group Manager: Growth  Economic Development Manager
Stephen Scowen	Broadland	(Partnerships and Growth)
Ellen Tilney	Norwich City	Economic Development Manager
		Head of Growth and Economic
Julian Monson	South Norfolk	Development
	King's Lynn and West Norfolk	Regeneration & Economic
Ostap Paparega	Council	Development Manager
Robert Campbell	Breckland Council	Inward Investment Manager
Chris Starkie	New Anglia LEP	Managing Director

### **Business and Sector Representatives**

Name	Organisation	Role
		Infrastructure, security and
Chrys Rampley	Road Haulage Association	business affairs
Peter Waters	Visit East Anglia	Executive Director
Simon Gray	East of England Energy Group	CEO
Jonathan Cage	Norfolk Chamber of Commerce	President of Norfolk Chamber
Richard Goffin	Peel Ports	Port Director

### **Property Agents**

Name	Organisation	Role	
	Roche (Agency & Chartered		
James Allen	Surveyors)	Senior Partner, Commercial	
John Long	<b>Bidwells Property Consultants</b>	Partner, Planning Services	
John Weston	Brown & Co	Commercial Associate Partner	



# **Appendix B - Consultations Aide-Memoire**

## Introduction to the study

- B.1 Regeneris Consulting are working with Mouchel to provide additional evidence for an investment case for A47 improvements, commissioned by Norfolk County Council. The investment case is focused on two sections of the A47 improvements: Tilney to East Winch, and the Acle Straight. Regeneris's assessment focuses on the economic growth and potential investment benefits that the proposed improvements could unlock.
- B.2 As part of the assessment, we are speaking to local economic partners to get an understanding of the study area and its specific characteristics, as well as views on the benefits that the investments could deliver.

## Questions

### Recent economic performance

- 1) Could you tell us about the recent economic performance in your area, including:
  - Main drivers of growth (eg sectors, particular businesses etc)
  - Key growth locations (within Norfolk, and within your local authority)
  - Main barriers to growth
- 2) And looking ahead, what are your views on growth prospects and appetite for growth among businesses?
  - Main drivers of growth (eg sectors, particular businesses etc)
  - Key growth locations (within Norfolk, and within your local authority)
  - Main barriers to growth

### Barriers currently imposed by the A47 on economic growth in your area

- B.3 There are planned improvements to A47 that have already taken place or are in the pipeline. These are not part of this particular assessment. The questions aim to capture the constraints posed by the A47 first as a whole, as well as the more specific examples that could be provided as evidence.
  - 3) Congestion /Travel time and certainty /Accessibility /Resilient network /Reliability
  - 4) What are the constraints posed by A47 on economic performance and productivity in your area, particularly around:
    - Access to markets
    - Access to labour and pool of workers in the catchment area (agglomeration effects)
    - Access to and attractiveness of development sites (including housing and employment land)
    - Attractiveness of the area for investment (including by businesses located in the area and potential inward investors)



Image and perceptions of the area as a business location.

A forward view on the potential impact of dualling the A<sub>47</sub> segments

- B.4 The questions aim to establish the role of the two segments in the wider context of A47 improvements. We would like to get an understanding of the likely impacts the specific improvements could unlock, in what ways these would impact on businesses, as well as the particular types of benefits that could be brought about.
  - 5) How significant are the proposed two sections in the context of other investments?
  - 6) What is the potential for the improvements to unlock economic benefits (across particular sectors/locations/types of businesses). How do these relate to the constraints outlined above including:
    - Access to markets
    - Access to labour and pool of workers in the catchment area (agglomeration effects)
    - Access to and attractiveness of development sites (including housing and employment land)
    - Attractiveness of the area for investment (including by businesses located in the area and potential inward investors)
    - Image and perceptions of the area as a business location.
  - 7) To what extent are the benefits from these sections contingent on other improvements?
  - 8) The role of dualling the sections in enhancing connectivity & accessibility (across Norfolk, and more specifically access to towns and employment locations)
  - 9) Is it likely to impact on the developments in other ways? (eg the developments happening more quickly/leading to changes in decision making)
  - 10) What could role of these improvements be in unlocking investment across sites (including employment land/housing sites/business investment)
  - How contingent are the strategic sites in your area on the road investments? (Scale of development, uses, timelines and constraints. Explore updates since previous work)
  - 12) Any information on landowners and developers (contact details)
  - 13) Views on changes in the road's usage (volume, new users that may result from improvements)



# Appendix C - Busines Survey Questionnaire

## A47 Improvements - Business User Survey

- 7.15 Regeneris Consulting has been commissioned by Norfolk County Council to assess the wider economic benefits of the proposed dualling of two sections of the A47.
- 7.16 The two proposed sections of the A47 being considered for dualling by Highways England are:
  - The Acle Straight
  - Tilney to East Winch (western and eastern sections)
- 7.17 We are interested in the views of businesses who use the A47 and, in particular, those businesses who currently use either or both of these sections of the A47. The findings will be used to contribute to the evidence base around the road's use, function and economic role.
- 7.18 Please note that your responses will be treated with the strictest confidence and you will not be identified in the reporting.

### Reliance on roads

- 7.19 To help us ask you questions that are relevant to your business, please answer the following questions on the reliance of your business operations on road usage.
  - 1) What % of your business costs are associated with moving goods to and from your business?
    - Less than 10%
    - 10 − 25%
    - 25 to 50%
    - More than 50%
    - Don't know/not sure
  - 2) What % of trips taking goods to and from your business involve the A47?
    - Less than 10%
    - **10 25%**
    - 25 to 50%
    - More than 50%
    - Don't know/not sure
  - 3) What % of your clients or customers rely on the A47 to access your services?
    - Less than 10%
    - **10 25%**
    - 25 to 50%
    - More than 50%
    - Don't know/not sure



### About your business

We would now like to ask a few questions to understand the nature of your business.

- 4) Which of the following sectors best describes your business? *Please select one* 
  - Agricultural
  - Manufacturing
  - Energy and low carbon
  - Tourism and hospitality
  - Transportation and storage
  - Wholesale and retail
  - Construction
  - Professional and business services
  - Information services
  - Education
  - Social work
  - Real estate
  - Healthcare
  - Other (Please state)
- 5) How many people does your business employ? *Please select one* 
  - Sole trader
  - 9 or fewer
  - 10 to 50
  - 21 to 250
  - More than 250
  - Don't know
- 6) What is your business's current turnover? Please select one
  - Less than £500k
  - £500k to £1m
  - £1m to £2.5m
  - £2.5m to £5m
  - £5m to £10m
  - £10m to £25m
  - £25m to £50m
  - £50m to £100m



- More than £100m
- Don't know/not sure
- 7) Would you be willing to state the exact amount? *Please note: your answers are strictly confidential*
- 8) Does your business operate from a single of multiple sites? *Please select one* 
  - Single site
  - Multiple sites
- 9) Where is your business's main location in Norfolk? Please select a local authority area
  - Great Yarmouth borough
  - Norwich City
  - King's Lynn and West Norfolk borough
  - Broadland district
  - South Norfolk district
  - North Norfolk district
  - Breckland district
  - Outside of Norfolk
- 10) How would you rate the attractiveness of Norfolk as a business location based on the following factors? *Please rate on a scale of 1 to 5, where 1 is unattractive, and 5 is excellent* 
  - Availability of skilled staff
  - Ease of recruiting
  - Competitive wage levels
  - Quality of business premises
  - Affordable rents
  - Transport links
  - Quality of local supply chain
  - Ease of doing business
- 11) Are you satisfied with your current business location?
  - Yes
  - No
  - Don't know/not sure
- 12) Do you have plans to relocate in the next 5 years? Yes/no
- 13) [if yes] Is road connectivity influencing your decision to relocate?
  - Yes



- No
- Don't know/not sure
- 14) [If yes] What role (if any) does the A47 play in this decision?

What does the future look like for your business

- 15) Does your business expected any of the following to change in the next three years?
  - Turnover
  - Employment
  - Business investment
  - No changes expected
- 16) [If yes to any in 15)] By how much?
  - Large increase (more than 20% year on year)
  - Small increase (up to 20% year on year)
  - Small decrease (up to 20% year on year)
  - Large decrease (more than 20% year on year)
  - Don't know/not sure
- 17) What do you see as the main barriers to growing your business? *Please select all that apply* 
  - Economic conditions
  - Access to markets
  - Access to workers
  - Ability to recruit workers who have the right skills
  - Marketing
  - Availability of business premises
  - Accessing supply chain
  - Government regulation
  - Access to business finance
  - Other (please state)

Impact of traffic on your business

- 18) Does the A47 cause constraints for the conduct or performance of your business? Yes/No/Don't know
- 19) What are the constraints caused by the A47 on your business? *Please select all that apply* 
  - Travel time and uncertainty
  - Ability to access to markets and suppliers



- Ability to access skills and labour
- Other (Please state)
- 20) [if more than 1 selected] Which is the main constraint?
- 21) [if congestion or travel times and uncertainty selected in previous Q] How do these constraints impact on your business? *Please indicate using the scale*

Scale from no disruption to major disruption

- Deliveries in
- Deliveries out
- Staff travel
- Business travel
- Customer travel
- You mentioned (17) as barriers to growing your business. How do the constraints on the A47 compare in relation to these barriers? *Please indicate using the scale below, where* 1=insignificant in comparison, and 5= much more significant

### **Proposed Improvements**

The study is focusing on two proposed sections for investments along the A47:

- Dualling the sections from Tilney to East Winch
- And the dualling of the Acle straight

While there are other improvements that had been approved along the A47 and will be taking place, please try to **think about the dualling of Tilney to east Winch and the Acle straight only** only when answering the following questions.

- 23) Do you currently use any of the proposed improvement sections of the A47 for business?
  - Tilney to East Winch
  - Acle Straight
  - Both
  - Do not use either
  - Don't know/not sure
- 24) [if yes] What are your views on the specific problems encountered on these sections?
  - Tilney to East Winch
  - Acle Straight
- 25) [If don't use either/don't know] Would you be more inclined to use the segments if they were improved?
  - Yes / No/ Don't know/ The sections are not relevant to our business operations
- 26) If the Tilney to East Winch section and the Acle straight were dualled, would this lead to any changes in the following for your business... *Please indicate using scale blow*



No change, Yes – would improve a little, Yes – would improve a lot

- Travel time
- Travel time certainty
- 27) Would you expect the dualling to lead to a reduction in your operating costs? Yes/No/Don't know
- 28) How would you expect these changes to come about? Please select all that apply
  - Reduced fuel costs
  - Reduced staff costs
  - Reduced costs associated with penalties
  - Lower vehicle maintenance and repair costs
  - Other expenses (please state)
- 29) If the sections were dualled, would this lead to a benefit or disbenefit in any of the following aspects of your business... *Please indicate using the scale below* 
  - Access to markets
  - Access to workers
  - Access to suppliers
- 30) Are the outlined changes likely to result in increased levels of business investment? Please indicate using the scale below, where 1=not at all likely, 5=almost certainly
- Finally, what would the expected change in your business performance be if the two sections were dualled over and above the changes you expect without the dualling?

  Please give your best estimate
  - Turnover change
  - Employment change
- 32) If you have any other comments about the impact of the proposed improvements on your business, please outline them below. [Open question]



