



**CLARION**  
HOUSING GROUP



A Feasibility Study by  
**CLARION HOUSING GROUP**

In respect of  
**Honingham Thorpe,  
NORFOLK**

**Phase I - Transport Strategy**

December 2018



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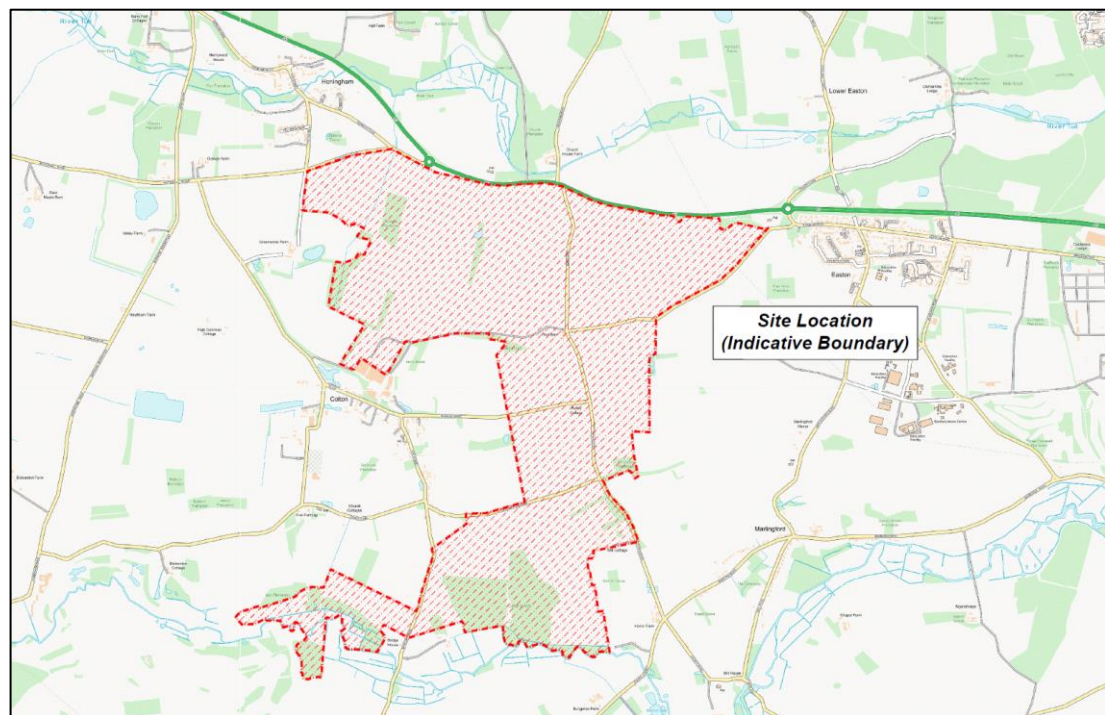
# 1 INTRODUCTION

- 1.1 Clarion Housing Group (the Client) has appointed Transport Planning Associates (TPA) to provide transport advice in support of representations for the Greater Norwich Local Plan (GNLP), being prepared by Broadland District Council, Norwich City Council and South Norfolk Council, who are working together with Norfolk County Council (NCC).
- 1.2 The Site that our Client is proposing to develop is Honingham Thorpe ('the Site'), a residential-led, mixed use scheme to the south of the A47 between the villages of Honingham, Easton, Colton and Barford. The Site will represent a new settlement in a currently undeveloped land.
- 1.3 At the time of writing, the Regulation 18 consultation on new, revised and small sites is underway, as a revised timetable for the GNLP was agreed by the Greater Norwich Development Partnership Board in June 2018. The revised GNLP timetable will be incorporated into the published Local Development Schemes of the three district councils making up the partnership.

## Site Location

- 1.4 As shown in **Figure 1.1**, the Site boundary abuts three villages; Honingham, Easton and Colton, located between the districts of Broadland and South Norfolk. The Site is situated to the east of Honingham and the west of Easton, immediately to south of the A47. The Site is located approximately 24 km west from Norwich.

**Figure 1.1 Site Location Plan**



Background mapping: © Openstreetmap contributors

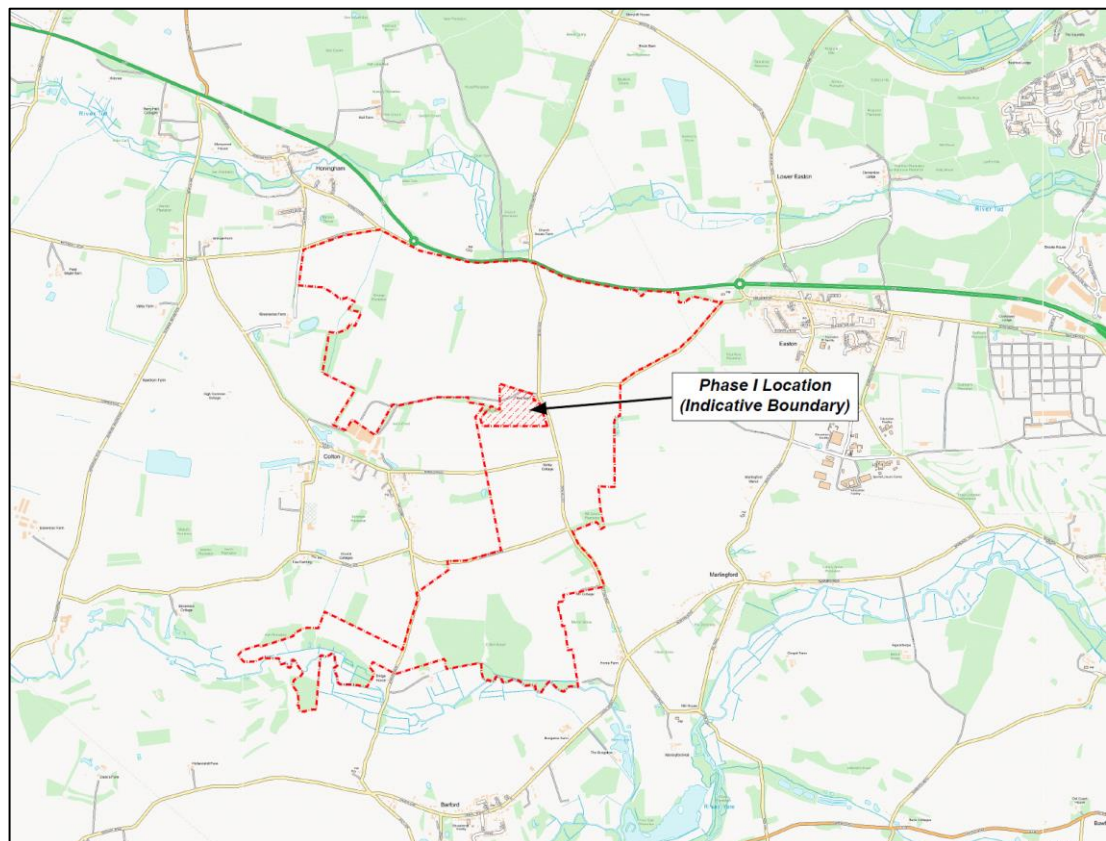


- 1.5 The greatest part of the Site lies to the west of Blind Lane, with some additional plots provided east of Blind Lane. The site comprises a number of parcels of open land which are currently in use as open agricultural fields.
- 1.6 The Site is adjacent to the committed Food Enterprise Park (FEP) which benefits from a recently approved Local Development Order. The Site is also in close proximity to the urban extension to the south of Easton, comprising around 900 residential units.

### Report Scope and Structure

- 1.7 This Transport Assessment (TA) is prepared to evaluate the feasibility of an early phase of the Site being delivered, before major (committed) infrastructure improvements, namely the dualling of the A47 and the creation of the Norwich Western Link (both extensively discussed in this report) are open for traffic.
- 1.8 For the purpose of this TA, unless specified, we will refer to “the Site” as the whole Honingham Thorpe proposal, while concentrating on the early delivery of a first phase. The location of this early settlement, which is adjacent to the above mentioned FEP, is shown at **Figure 1.2**.

**Figure 1.2 Phase I – Indicative Site Location**



Background mapping: © Openstreetmap contributors

- 1.9 This TA is not intended to be submitted as part of a planning application but is more prepared to inform the Client, the Strategic and Local Highway Authorities (Highways England and Norfolk County Council, respectively), the Greater Norwich Growth Board and all the other

decision makers and stakeholders of the potential transport issues that might arise from the proposals and their mitigation.

1.10 This TA is structured as follows:

- Chapter 2 describes the emerging masterplan and phasing;
- Chapter 3 summarises the main presentations and meetings held with some key stakeholders;
- Chapter 4 offers a review of national, regional and local policies the development will be designed in accordance with;
- Chapter 5 reviews the baseline transport conditions of the Site and the traffic surveys;
- Chapter 6 presents the committed improvements to the highway network in the vicinity of the Site;
- Chapter 7 presents the proposed strategy to offer sustainable access to the Site;
- Chapter 8 presents the vehicular access;
- Chapter 9 sets out the methodology to estimate the forecast travel demand associated with the first Phase of the development;
- Chapter 10 sets out the impact on the Road network and presents the results of junction modelling;
- Chapter 11 presents the strategy for future modelling work needed for the wider Site;
- Chapter 12 summarises the findings of this report.

## 2 THE EMERGING PROPOSALS

### Form and mix

- 2.1 The emerging proposals for the Site comprise up to 7,500 units, to be built over the next 35 years (corresponding to the next two plan periods), together with employment, schools, community centres and a country park.
- 2.2 As illustrated in a recent brochure prepared by Clarion Housing Group, the Site would comprise:
- a mix of social rent, shared ownership, private sale, built to- rent and the potential for self-build plots;
  - 72ha of employment space;
  - a commitment to policy-compliant affordable housing that is tenure-blind and pepperpotted throughout the site 81ha of Country Park;
  - an effective transport strategy that is not reliant on the planned A47 enhancements;
  - 81ha of Country Park;
  - 3.5ha of nature reserve;
  - a development based on garden community principles.
- 2.3 The current emerging masterplan, being developed by Brown and Co. Architects, is reproduced here for illustrative purposes only at **Appendix A**.

### Access

- 2.4 Access to the Site will be from a junction on the A47, which will benefit from major (committed) improvements over the next few years. The access strategy will be studied and assessed in liaison with Highways England and Norfolk County Council, who are developing strategic transport models for the wider network.
- 2.5 An early delivery for the Site (Phase I) would be possible via Easton, and the (unnamed) road linking Dereham Road with the committed Food Enterprise Park.
- 2.6 Sustainable access would be provided from the first phase of the development and improvements to the existing pedestrian, cycle and public transport infrastructure would be proposed.
- 2.7 The overall access strategy will be described in greater detail over two chapters in this TA.

## **Parking**

- 2.8 As noted later on in the Policy Review section, parking provision is considered to be one of the key elements to influence mode choice and particularly encourage sustainable modes of travel, where possible.
- 2.9 Parking provision within the Site will consist of both car and cycle parking and will be compliant with regional and local policy and best practice, unless otherwise agreed with NCC.

## **Emergency vehicles, Servicing, Refuse Collection**

- 2.10 The servicing arrangements within the Site will be compliant with policy and best practice. Further details in regard to servicing and delivery for the development proposals will be provided at reserved matters following resolution to grant consent for the outline planning application.
- 2.11 An emergency access would be provided via an upgraded Broom Lane.

## **Phase I**

- 2.12 While the full phasing strategy for the delivery of the proposed 7,500 units is yet to be developed, for the purpose of this report it is assumed that a "Phase I" development would comprise:
- 600 residential units; and
  - Education provision;
  - Library;
  - Community Hall;
  - Sports centre;
  - Medical facilities;
  - Police station;
  - Place of worship;
  - Commercial uses including supermarket, local shops/services.

### 3 STAKEHOLDER ENGAGEMENT

3.1 Whilst the project is still in its early stages, a number of meetings and presentations were held so far to present the project to some key stakeholders. The main ones are briefly summarised in this chapter.

#### **Greater Norwich Growth Board**

3.2 The project was presented by Clarion Housing Group to the Greater Norwich Growth Board on 26 September 2018. Some of the key aspects of the project that were highlighted during the presentation are:

- the provision of a minimum of 3,900 homes over the next 20 years, with potential for a further 3,600 over the following 15 years;
- a commitment to policy-compliant affordable housing that is tenure-blind and pepperpotted throughout the site;
- a mix of social rent, shared ownership, private sale, built-to-rent and the potential for self-build plots;
- the delivery of policy-compliant affordable housing;
- the development is not reliant on the A47 enhancements and the initial phases of Honingham can be delivered even if the A47 is delayed;
- a comprehensive network of walking and cycling routes will be delivered, and will be protected from traffic.

3.3 It is understood that the presentation was successful and that the project was well received by the Board.

#### **Highways England (HE)**

3.4 A meeting was held on 5 November 2018 with HE at Woodlands, Bedford. During the meeting it was stated that the A47 improvements are funded through the Road Investment Strategy (RIS1) and are committed; the alignment of the route is fixed but the detail of the junctions can still be altered. Works are programmed to start in 2021 after consultation during 2019 and Delivery Consent Order will be sought in 2020.

3.5 HE welcomed any involvement and look forward to working collaboratively going forward. The model used in their option testing can be utilised for further testing of the proposals in the future. HE were confident that an early delivery of the Site prior to the A47 improvement scheme is in place should be possible without any improvements being needed, subject to a safety review.

**Norfolk County Council**

- 3.6 The main purpose of the meeting was to better understand the emerging Western Link proposals to the west of Norwich. The development of a Norwich Western Link, to connect the Broadland Northway, formerly known as the Northern Distributor Road (NDR), from the A1067 to the A47 west of Norwich, is understood to be one of NCC's top infrastructure priorities. Since construction began on the Broadland Northway there have been sustained calls to fill in the 'missing link'.
- 3.7 The preliminary option testing of the western link indicate a preferred route, however a public consultation on all four options will be held between 26 November 2018 and 18 January 2019. NCC has published the four shortlisted road options, designed to improve travel between the A47 and the western end of Broadland Northway and tackle transport problems in this area.
- 3.8 It was agreed that an early phase of the Site will need to consider the A47/Easton Road junction. For the wider Site the Norwich Area Transport Strategy (NATS) model can be used. WSP has updated the model to undertake the Option Assessments on behalf of NCC for the Western Link and the end state of the proposed Site will need to consider future employment in great detail.
- 3.9 It was agreed that sustainable transport should be provided at an early stage and that the Site will benefit from the Bus Rapid Transit (BRT) schemes in the area, one of which links to Easton and is supported in the current Local Plan.

## 4 NATIONAL, REGIONAL AND LOCAL POLICY

- 4.1 This Chapter offers a review of the transport policy, at national, regional and local level, that this development is planned and designed in compliance with.

### **National Planning Policy Framework (2018)**

- 4.2 The National Planning Policy Framework (NPPF), which has recently been updated<sup>1</sup>, sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced.

- 4.3 A sustainable transport mode is described as:

***“Any efficient, safe and accessible means of transport with overall low impact on the environment, including walking and cycling, low and ultra-low emission vehicles, car sharing and public transport” (annex 2, p. 72).***

- 4.4 With regards to achieving sustainability, the framework states that:

***“The purpose of the planning system is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs” (para 7).***

- 4.5 Transport is recognised as having an important role in promoting sustainable development:

***“All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed.” (para 111).***

- 4.6 With regards to parking standards it states that:

***“Maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network, or for optimising the density of development in city and town centres and other locations that are well served by public transport.... In town centres, local authorities should seek to improve the quality of parking so that it is***

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<sup>1</sup> Issued on 24 July 2018

***convenient, safe and secure, alongside measures to promote accessibility for pedestrians and cyclists.” (para 106)***

4.7 When considering development proposals, it should be ensured that:

- ***“Appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;***
- ***Safe and suitable access to the site can be achieved for all users; and***
- ***Any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.” (para 108)***

4.8 Furthermore, with regards to considering development proposals:

***“Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe” (para 109)***

4.9 Applications for development should:

- a) ***Give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;***
- b) ***address the needs of people with disabilities and reduced mobility in relation to all modes of transport;***
- c) ***create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;***
- d) ***allow for the efficient delivery of goods, and access by service and emergency vehicles; and***
- e) ***be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.” (para 110)***

#### **Norfolk Local Transport Plan**

4.10 Norfolk’s Third Local Transport Plan, *Connecting Norfolk*, sets the longer term strategy for transport delivery up to 2026. It provides the policy framework for improvements to transport as well as being a guide for other agencies, like local planning authorities, when considering future development or delivery.



4.11 The vision of the Third Local Transport Plan is to deliver a:

***“A transport system that allows residents and visitors a range of low carbon options to meet their transport needs and attracts and retains business investment in the county”***

4.12 The Third Local Transport Plan, outlines six aims that it believes will play a key part in it successfully meeting its vision.

***“1 Manage and maintain the transport network to an appropriate standard***

***2 Deliver sustainable growth***

***3 Enhance strategic connections***

***4 Reduce emissions***

***5 Improve road safety***

***6 Improve accessibility.”***

4.13 The Third Local Transport Plan outlines a large number of policies that have been outlined to meet the needs of Norfolk. The key polies will now be introduced.

4.14 Policy 4 of the Third Local Transport Plan focuses on the protecting environment. It states that:

***“Transport decisions should take account of the character of the historic environment, landscape and local biodiversity. In particular:***

- Negative impacts should be mitigated;***
- Reasonable opportunities for creating habitats taken;***
- Due regard should be given to ecological networks and European designated sites; and***
- Impact assessments should be undertaken where necessary.”***

4.15 Policy 5 of the Third Local Transport Plan, focuses on the growth of development. It states that:

***“New development should be well located and connected to existing facilities so as to minimise the need to travel and reduce reliance on the private car or the need for new infrastructure. Local planning authorities should implement policies as part of their Local Development Frameworks to help achieve this.”***

- 4.16 Policy 6 of the Third Local Transport Plan, focuses on providing the correct transport infrastructure, in order to support developmental growth required. It states that:

***“To bring about sustained growth priority should be on enabling public transport, walking and cycling from new development sites. Recognition should also be given to required improvements on the highway network at bottlenecks. These should be matched with sustainable travel packages or measures to encourage regeneration. Contributions should be secured to help mitigate any adverse effects of new development on the transport network.”***

- 4.17 Policy 9 of the Third Local Transport Plan, focuses on travel choices. It states that:

***“Emphasis should be on enhancing travel choice where options offer a viable alternative to single occupancy car travel and potential for modal shift. Improving and promoting active travel options (walking and cycling in particular) for short journeys to schools, services and places of employment in market towns and urban areas should be the priority.”***

- 4.18 Finally policy 13 of the Third Local Transport Plan, focuses on increasing access to town and urban centres. It states that:

***“Efficient movement to town and urban centres should be enabled for all modes. Priority should be on achieving a balance between access for car drivers, including the availability of car parking, and the attractiveness of sustainable travel options like walking, cycling and public transport.”***

- 4.19 The Third Local Transport Plan also underlines the importance of investments in road infrastructure. One of its key aspirations focuses on the A47 trunk road:

***“For the A47 our longer term aspiration is to see dualling of the remaining single carriage way sections, but short to medium term measures that achieve more reliable journeys will be the focus.”***

#### **Greater Norwich Local Plan**

- 4.20 The Greater Norwich Local Plan (GNLP) is being produced by Broadland District Council, Norwich City Council and South Norfolk Council working together with Norfolk County Council through the Greater Norwich Development Partnership (GNDP). A revised timetable for the Greater Norwich Local Plan was agreed by the Greater Norwich Development Partnership Board in June 2018 and it is shown in Table 4.1.

Table 4.1 Timetable for Preparation of the Greater Norwich Local Plan

Call for Sites	May-July 2016
Regulation 18 Growth Options and Site Proposals Consultation	January-March 2018

<b>Regulation 18 Consultation on New, Revised and Small Sites (current stage)</b>	<b>October-December 2018</b>
Regulation 18 Draft Plan Consultation	September-October 2019
Regulation 19 Publication	February-March 2020
Submission of the GNLP to the Secretary of State for the Environment	June 2020
Public Examination	January 2021
Adoption	September 2021

Source: <http://www.greaternorwichgrowth.org.uk/planning/greater-norwich-local-plan/>

- 4.21 The Joint Core Strategy for Broadland, Norwich and South Norfolk is the key planning policy document for the Greater Norwich area. It forms part of the Local Plans for the districts of Broadland, Norwich and South Norfolk setting out the broad vision for the growth of the area and containing strategic policies for the period 2008 – 2026. It was adopted on 22 March 2011.
- 4.22 The Joint Core Strategy was subject to a successful legal challenge in 2012, and a small part of the plan was remitted back a stage for further work. This related only to growth in the Broadland part of the Norwich Policy Area. Amendments to the Joint Core Strategy were then adopted in January 2014.
- 4.23 The Joint Core Strategy separates the areas of the three councils into two ‘zones’ – the Norwich Policy Area (NPA), which includes all of Norwich City and part of both Broadland and South Norfolk, and the Rural Area.
- 4.24 One of the Joint Core Strategy key focuses is on transport provision. Objective number seven of the Joint Core Strategy was:

***“To enhance transport provision to meet the needs of existing and future populations while reducing travel need and impact”***

- 4.25 This objective was further expanded, with it stating that:

***“The location and design of development will reduce the need to travel especially by private car. Greater use of sustainable modes of transport will be encouraged by better public transport, footways and cycle networks, and by co-location of housing with services, jobs, shops, schools and recreational facilities”***

- 4.26 The Joint Care Strategy outlines the importance of having an effective transport strategy within its policy:

***“Transport strategy will promote sustainable economic development, improve local quality of life, reduce the contribution to climate change, promote healthy travel choices and minimise the need to use the private car.”***

4.27 The Joint Care Strategy has also provided information on travel management measures as it understands that large scale developments have environmental impacts, these measures were introduced as an attempt to reduce these impacts. The Joint Care Strategy states that:

***“Travel planning and smarter choices initiatives will be promoted to ensure that all residents have good access to local jobs, services and facilities, preferably by either walking or cycling will reduce the need to travel and promote healthier lifestyles. For longer trips and in rural areas where there are fewer local services and employment opportunities, public transport will be promoted. To comply with sustainability objectives public transport will be prioritised, particularly in the urban areas. To meet the diversity of travel need, there have to be new and innovative ways of providing public transport including:***

- ***high quality rapid bus services, in and around the city;***
- ***maximising the use of the local rail network to serve existing communities and locations for large-scale growth;***
- ***promotion and wider use of community transport schemes; and***
- ***greater use of non-scheduled services such as flexi-bus and dial-a-ride services.”***

4.28 Policy 9 outlines a number of key transport infrastructure proposals that are:

***“required to implement NATS, deliver growth and support the local economy will include:***

- ***construction of the NDR to provide strategic access, significantly improve quality of life and environmental conditions in the northern suburbs and nearby villages, and provide capacity for comprehensive improvements for buses, cycling and walking as well as facilitating economic development;***
- ***significant improvement to the bus, cycling and walking network, including Bus Rapid Transit on key routes in the Norwich area linking major growth locations, strategic employment areas and the city centre***
- ***enhancing the Norwich Park & Ride system;***
- ***new rail halts at Broadland Business Park and Rackheath (innovative new services;***

- ***will be investigated on the Wymondham – Norwich – Wroxham axis); and***
- ***junction improvements on the A47 Norwich Southern Bypass;***
- ***a Long Stratton Bypass; and***
- ***parking restraint in areas with good standards of public transport accessibility especially in and around the city centre”***

### Parking Standards

- 4.29 Parking standards for developments in Broadland are set out in the *Parking Standards Supplementary Planning Documents (SPD)*, adopted in 2007. The document specifies that the levels of car parking set out in the standards for residential developments has to be regarded as an indicative level, rather as a maximum provision.
- 4.30 The Parking Standards for the residential element of the development are summarised in below.

Table 4.2 Broadland residential parking standards

Cycle Parking	Car Parking
None for individual houses with garages or rear gardens for a garden shed For flats and developments with communal parking: Residents: 1 space / unit Visitors: 1 space / 4 units	Average of 1.5 spaces / 1 bedroom unit 2 spaces / unit for a 2 or 3 bedroom unit Min 3, max 4 spaces / unit for a 4 or more bedroom unit, depending if double garage design For housing in areas of good accessibility <sup>2</sup> an average of 2 spaces / unit or less will be over the development site

*Parking Standards Supplementary Planning Documents (SPD), www.broadland.gov.uk*

### Highways England

- 4.31 Highways England (HE) is the government owned company charged with operating, maintaining and improving England's motorways and major A roads. Formerly the Highways Agency, HE became a government owned company in 2015.
- 4.32 The Road Investment Strategy (RIS) sets out HE's long-term programme for our motorways and major roads with the stable funding needed to plan ahead effectively Road investment strategy. Two Road investment strategies have been produced, the first focus on road investment until 2020 and the second road investment post 2020 to 2025.

<sup>2</sup> Within 200m walking distance of a bus stop served by buses of a frequency of 15 minutes or less to town, district or local service centre

*Road Investment Strategy: 1*

- 4.33 The first 'Road Investment Strategy' (RIS 1) outlines a long-term programme for motorways and major roads with a stable funding needed to plan ahead. The RIS 1 comprises:
- a long-term vision for England's motorways and major roads, outlining how smooth, smart and sustainable roads will be created;
  - a multi-year investment plan that will be used to improve the network and create better roads for users;
  - high-level objectives for the first roads period 2015 to 2020.
- 4.34 One of the key policies on the RIS 1 focus on the A47 in Norfolk, adjacent to the proposed site.
- 4.35 The A47 trunk road forms part of the strategic road network and provides for a variety of local, medium and long distance trips between the A1 and the east coast. The corridor connects the cities of Norwich and Peterborough, the towns of Wisbech, Kings Lynn, Dereham, Great Yarmouth and Lowestoft and a succession of villages in what is largely a rural area.
- 4.36 The A47 has a number of congestion hotspots around Norwich, Peterborough and Great Yarmouth. There is also significant growth predicted in the area which the proposed improvements will help to support.
- 4.37 The North Tuddenham to Easton section of the A47 is located 10 to 20 kilometres to the west of Norwich City centre. The 7.9km single carriageway section of the A47 forms a part of the main arterial highway route connecting Norwich to the west. This section of road is therefore an important highway link for both local commuter traffic to and from the west of Norwich as well as providing the main route in the area for longer distance trips across the country travelling east and west.
- 4.38 One of the key part of the proposals is to dual this section of the A47 with the aims of relieving congestion, reducing journey times and encouraging economic growth.
- 4.39 At the time of writing, it is understood that work is underway to develop the second RIS — known as RIS 2 —. The second RIS (RIS2) will apply to the second Road Period (RP2) covering a five-year period from 1 April 2020 to 31 March 2025.

**Policy compliance**

- 4.40 The Site will be designed and assessed in accordance with national, regional and local policies and best practice.
- 4.41 As stressed by the NPPF, ***“the purpose of the planning system is to contribute to the achievement of sustainable development”***. That is the principle that is guiding the masterplan development process, to help achieving sustainable access regardless of the rural

- location. The Site comprises undeveloped land, between small villages but it lies within close proximity to Norwich. As will be extensively set out in this report, sustainable access will be achieved since the first phases of the development.
- 4.42 The reduction in the reliance on the use of the private vehicle will be promoted and enforced by a travel plan, for the future residents, employees, students and users of the Site.
- 4.43 The emerging masterplan will be designed in compliance with the six principles outlined in the Norfolk Third Transport Plan, especially **“Deliver sustainable growth”, “Enhance strategic connections”** and **“Improve accessibility”**. The need for **“New development [to] be well located and connected to existing facilities so as to minimise the need to travel and reduce reliance on the private car or the need for new infrastructure”** is acknowledged as the key for the success of the transport strategy for this Site; the provision of sustainable modes of travel or the enhancement of existing walking, cycling and public transport facilities will be one of the key principles behind the design.
- 4.44 In compliance with Norfolk’s policy according to which **“Priority should be on achieving a balance between access for car drivers, including the availability of car parking, and the attractiveness of sustainable travel options like walking, cycling and public transport”**, particular attention will be drawn onto car and cycle parking provision on site, ensuring it is policy compliant for each land use and it would serve as an encouragement to use sustainable modes of travel (cycle and public transport), as an alternative to the use of the private car, as much as feasible. Education provision, leisure, local shops and services will be available since the first phase of the development, within ready walking distance from the residential units, to reduce the need to use the private car to reach the facilities.
- 4.45 The Site will serve as the new centre of a regeneration of the whole surrounding area, which has, at present, limited connections with the surrounding towns and Norwich. It will enhance connections with Easton, the new village to the south of it and the Food Enterprise Park.
- 4.46 The developer acknowledges the central importance of the widely discussed centrality of the sustainability of the Site and will endeavour to work collaboratively with the local communities and Highway authorities and key stakeholders to make the Site an example of best practice for the whole county.
- 4.47 Stakeholder engagement has already been undertaken and there is a commitment to continue to work closely with Highways England and Norfolk County Council to find and agree on the best transport solutions for the Site. The provision will include the key infrastructure projects in the area, namely the dualling of the A47, the Western Link and the emerging proposals of the BRT within Dereham Road and Easton.
- 4.48 Not only is it considered that the Site would not result in a severe impact on the highway network, it is on the contrary believed that it would strongly contribute to the regeneration of an area within Norfolk which currently has limited connections to Norwich and the surrounding areas, despite its close proximity to the city.

## 5 BASELINE TRANSPORT CONDITIONS

- 5.1 As noted within the Introduction, the Site comprises some currently undeveloped land, located to the south of the A47, between the villages of Honingham (to the north-west), Easton (to the north-east), Colton (to the west) and Barford (to the south). These are all small villages comprising a total population of 2,800 residents, approximately<sup>3</sup>, with Honingham and Colton being the smallest villages and Easton the largest one.
- 5.2 Reflecting its rural location, Honingham contains a few local services. There is one public house, the Honingham Buck, and the local village hall. There is also a small industrial site, the Quarry Works, providing limited services and employment.
- 5.3 Easton is the largest of the settlements surrounding the Site. Easton has a limited selection of local amenities, with a restaurant, a primary school, a village hall and a number of churches. There is also a guest house and to the south lies the Easton and Otley Collage.
- 5.4 Around 2km east of Easton is Longwater. This is a key shopping area, with a large Sainsbury's supermarket, nine other large shopping outlets, a number of restaurants and a gym.
- 5.5 Colton is a small village, with a couple of local services. The Norfolk Lurcher is a pub located in the village; the village is also home to Honingham Business Park.
- 5.6 The village of Barford, to the south of the Site, and to the north of the B1180, Watton Road, has a number of local amenities. Barford Primary School is located in the village. As well as this, Barford also has a pub the Cock Inn, a hair salon, industrial units and a brewery. Barford Lakes leisure resort is also located just outside the village.
- 5.7 Pedestrian, cycle and public transport infrastructure is located within the vicinity of the Site, as described in the following paragraphs.

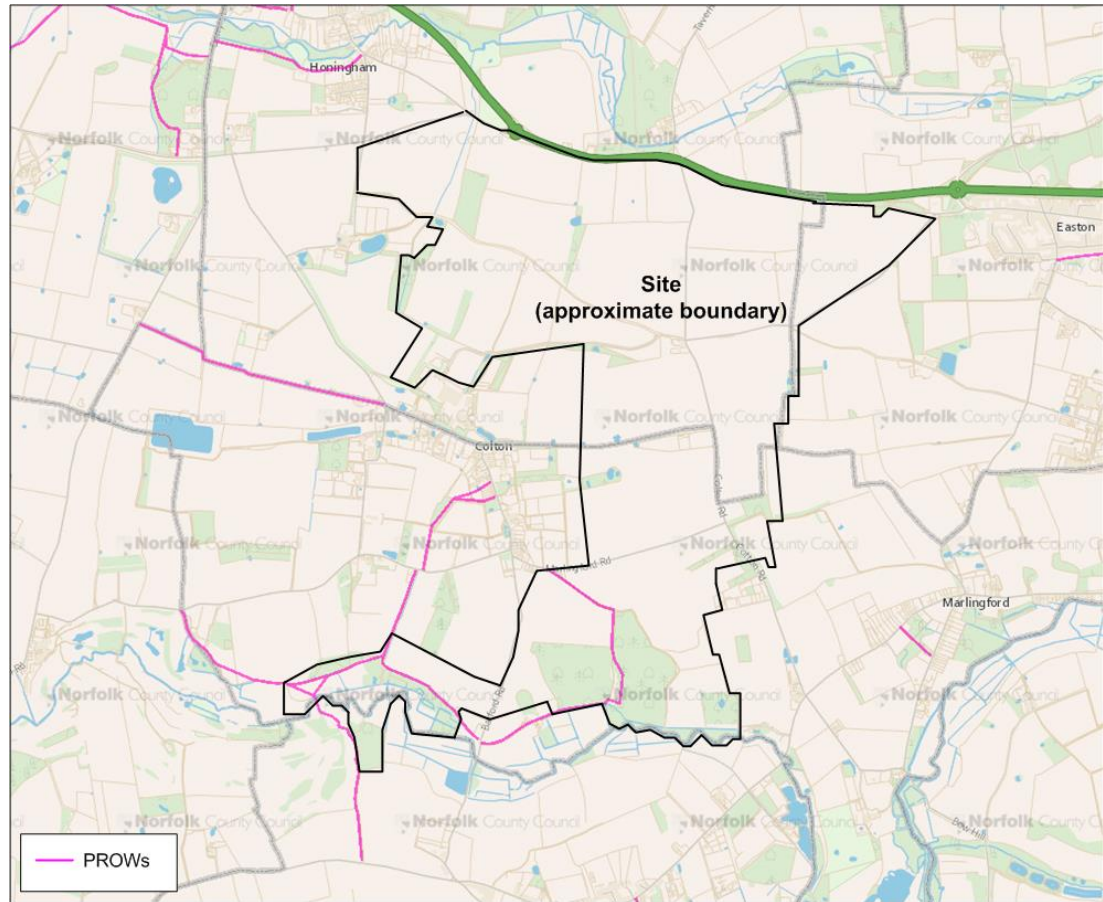
### **Pedestrian Infrastructure**

- 5.8 Reflecting the rural setting of the location, pedestrian infrastructure in the vicinity of the Site is limited, with no dedicated footways in the majority of the rural roads surrounding the Site. Footways are located within the villages, near the residential properties and local facilities. There are also a number Public Rights Of Way (PROW) within the area, as illustrated in **Figure 5.1** below. There are a number of PROWs that run along the southern boundary of the Site and some also run through.

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<sup>3</sup> 2011 Census data



**Figure 5.1 Existing PROWs**

Source: <https://maps.norfolk.gov.uk/highways/>

- 5.9 At Easton, footways are located on at least one side of Dereham Road, even though no formal crossing points have been noted.

### Local amenities

#### *Education*

- 5.10 There are two primary schools outside the site boundary, one in Easton, St Peters C of E Primary School and one in Barford, Barford Primary School. Within a further 4km of the Site there are 5 more primary schools.
- 5.11 The closest Secondary schools are located in the outskirts of Norwich, with the closest being Costessey High School and the Ormiston Victory Academy. Furthermore, Easton and Otley Collage is located close to the Site boundary; this provides a number of practical courses.

#### *Healthcare*

- 5.12 There are no healthcare facilities located close to the Site boundary. The closest services are located in Norwich or Mattishall.

- 5.13 There are two hospitals, the Norfolk and Norwich University Hospital and The Norfolk Community Health and Care Hospital, located in the city of Norwich about 5km from Easton.

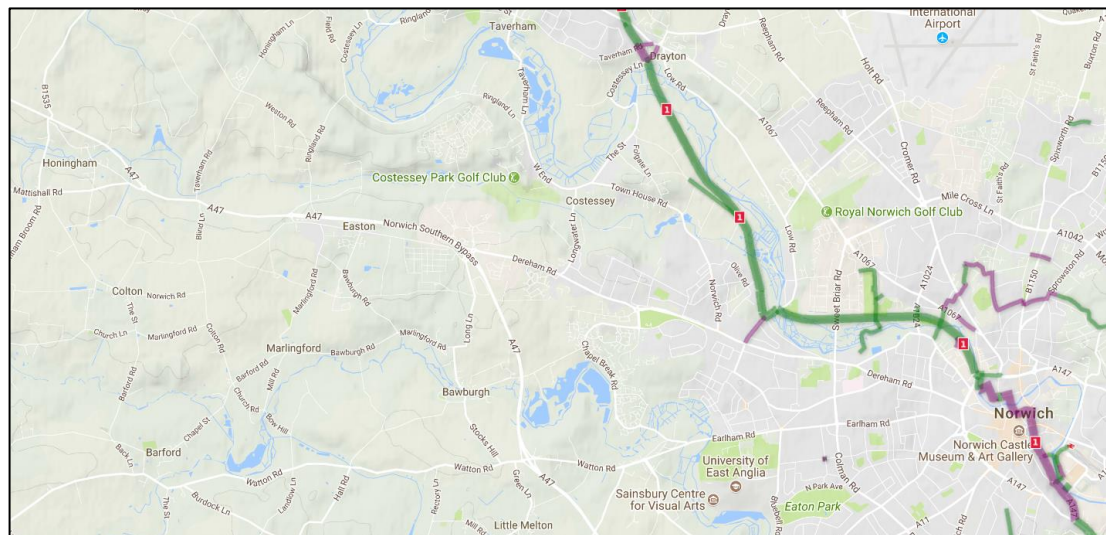
#### *Retail and Food*

- 5.14 The closest retail facilities are located in Longwater to the east of the Site, consisting of a retail park with a supermarket and some foot outlets.

#### **Cycle Infrastructure**

- 5.15 Within the immediate vicinity of the Site, in line with the rural setting, no access to local cycling routes is prevalent. Approximately 9km east of the Site the National Cycle Route (NCR) 1. NCR 1 connects through to Norwich from the south east in a north westerly direction. This route is illustrated in **Figure 5.2** below.

**Figure 5.2 National Cycle Network**



Source: © Sustrans

#### **Bus Services**

- 5.16 The nearest bus stops to the Site are located on the western boundary along Mattishall Road. Bus service 4 serves these stops. Two further bus services run along Norwich Road through the village of Colton. Services 60A and 15 call at the stops located on Norwich Road. In the village of Easton there are 4 bus stops served by service 4 and Excel service. Finally, Barford also has two bus stops serviced by services 3 and 806. Table 5.1 summarises the bus services near the Site.

Table 5.1 Local Bus Services

Route	Provider	Route	Monday - Friday	Saturday	Sunday
<b>Honingham</b>					
4	Konectbus	Swanton Morley – Norwich	12 services per day		5 services
13C	Konectbus	Easton College - Swaffham	1 per day	No service	
<b>Easton</b>					
4	Konectbus	Swanton Morley – Norwich	Every hour	5 services	
Excel	First Norfolk and Suffolk	Norwich – Kings Lynn - Peterborough	Every 30 Mins	Every 30 Mins	Every Hour
<b>Colton</b>					
15	H Semmence & Co	Shipdham – Norwich	1 per day	No service	
60A	West Norfolk Community Transport	Norfolk & Norwich University Hospital - Colton	1 per day	No service	
<b>Barford</b>					
806	H Semmence & Co	Bawburgh - Wymondham	1 per day	No service	
3	KonnectBus	Watton - Hingham - N&NU Hospital	13 per day (Every 40-60 mins)		4 per day

Source: <http://www.travelinesoutheast.org.uk>

- 5.17 Service 13C (Easton College – Swaffham), which serves Honingham, is a once a day bus service which serves Easton College, a college facility that serves higher education and apprenticeship needs.

### Park and Ride

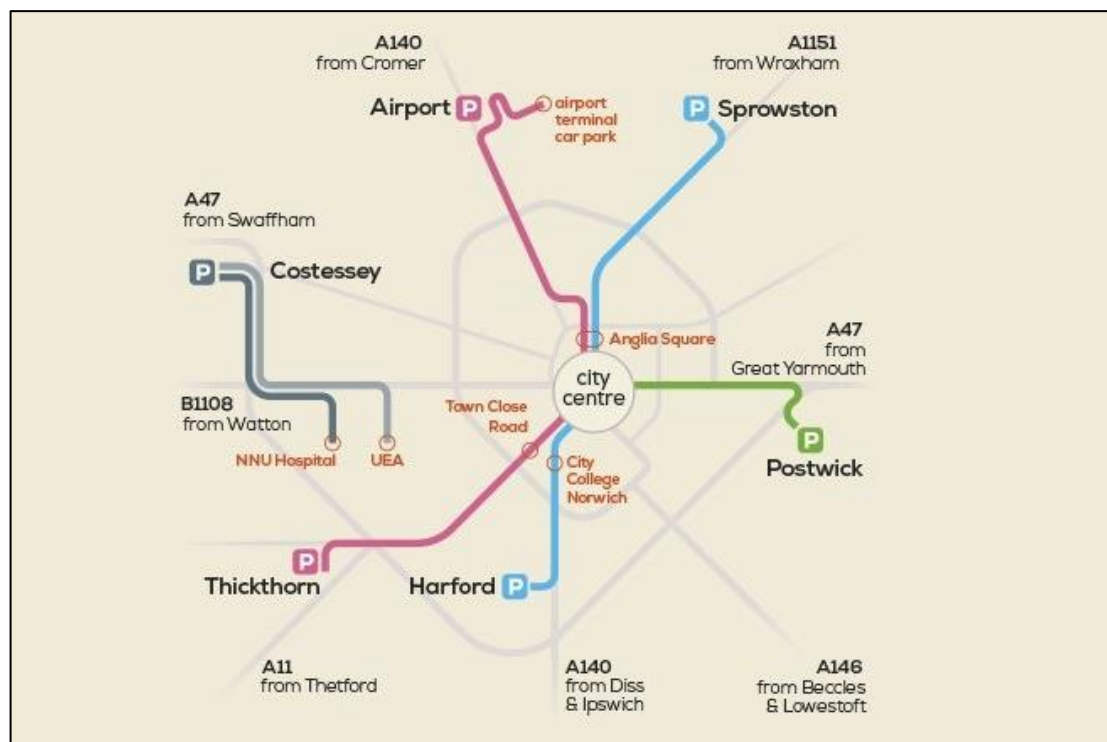
- 5.18 Two Park and Ride (P&R) sites are located within the vicinity of the Site.
- 5.19 Costessey P&R, totalling 1,100 car parking spaces, is located within 4.3km or a 6 minute drive from the Site, is the closest one. It is served by 2 bus services, namely the 510 to Norfolk & Norwich University Hospital and the 511 to the University of East Anglia. The 510 runs every 15 minutes and the 511 every 30 minutes (Monday to Friday only).
- 5.20 Thickthorn P&R, totalling 726 car spaces, is located to the west of the Thickthorn Interchange, at the junction of the A11 with the A47 and lies within 10.5km or a 9-13 minute drive from the Site. It is served by bus service 501, towards Norwich city centre running every 15 minutes (Monday to Friday) with services also on Saturday and Sunday. Within the vicinity of Thickthorn P&R, several other bus services to a number of destinations within Norwich are available.

5.21 A summary of Park and Ride services is provided at Table 5.2 and their routes, including other Park and Ride sites located in the outskirts of Norwich, further afield from the Site, are illustrated at **Figure 5.3**.

Table 5.2 Park and Ride Services

P&R	Distance from the Site	Bus services to
Costessey	4.3km / 6 minute drive	Norfolk & Norwich University Hospital University of East Anglia
Thickthorn	10.5km / 9-13 minute drive	Norwich city centre

Figure 5.3 Park and Ride services and routes



Source: <https://www.norwichparkandride.co.uk/maps/>

### National Rail Services

5.22 The closest railway stations to the Site are Kimberley Park and Norwich, with the former operating only heritage services and the latter offering numerous services to several destinations within the UK. Kimberley Park is located approximately 9km south west from the Site, and lies on the railway line running between East Dereham and Wymondham Abbey stations. Services at the station are operated by Mid-Norfolk Railway but only for special events, as noted before.

- 5.23 Norwich railway station is located approximately 24km from the Site. The station, situated within a 10 minute walk to the south-east of Norwich city centre, is located between the A147, Riverside, and the A1242, Thorpe Road.
- 5.24 Norwich station is served by Greater Anglia and East Midland Trains. It offers regional and national services to London, Liverpool and Manchester and several other destinations within the Midlands and the East of England, including Thetford, Peterborough, Ipswich and the east coast.
- 5.25 The rail network operated by Greater Anglia and East Midlands Trains is reproduced at **Figure 5.4** and **Figure 5.5**. Table 5.3 summarises the main train services available at Norwich Railway Station, while Table 5.4 summarises the approximate journey times to the main destinations.

Table 5.3 Rail Services at Norwich Railway Station

Destination	Service Frequency (per day / hour)		
	Mon – Fri	Saturday	Sunday
<i>Greater Anglia services (Figure 5.4)</i>			
London Liverpool Street	35 services a day / 2 per hour	14 services / 1 per hour	12 services / 1 per hour
Cromer	17 services a day / 1 per hour	17 services / 1 per hour	13 services / 1 per hour
Sheringham	18 services a day / 1 per hour	17 services / 1 per hour	13 services / 1 per hourly
Great Yarmouth	22 services a day / 1 per hour	22 services / 1 per hour	17 services / 1 per hour
Lowestoft	19 services / 1 per hour	18 services / 1 per hour	9 services
Ipswich	36 services a day / 2 per hour	33 services / 2 per hour	18 services / 1 per hour
<i>East Midland Trains services (Figure 5.5)</i>			
Liverpool Lime Street	11 services a day / 1 per hour	11 services / 1 per hour	3 services
Nottingham	14 services a day / 1 per hour	14 services / 1 per hour	8 services
Manchester Piccadilly	12 services a day / 1 per hour	12 services / 1 per hour	5 services

Source: <https://www.greateranglia.co.uk>, <https://www.eastmidlandstrains.co.uk/>

Note: Approximate services per day / hourly

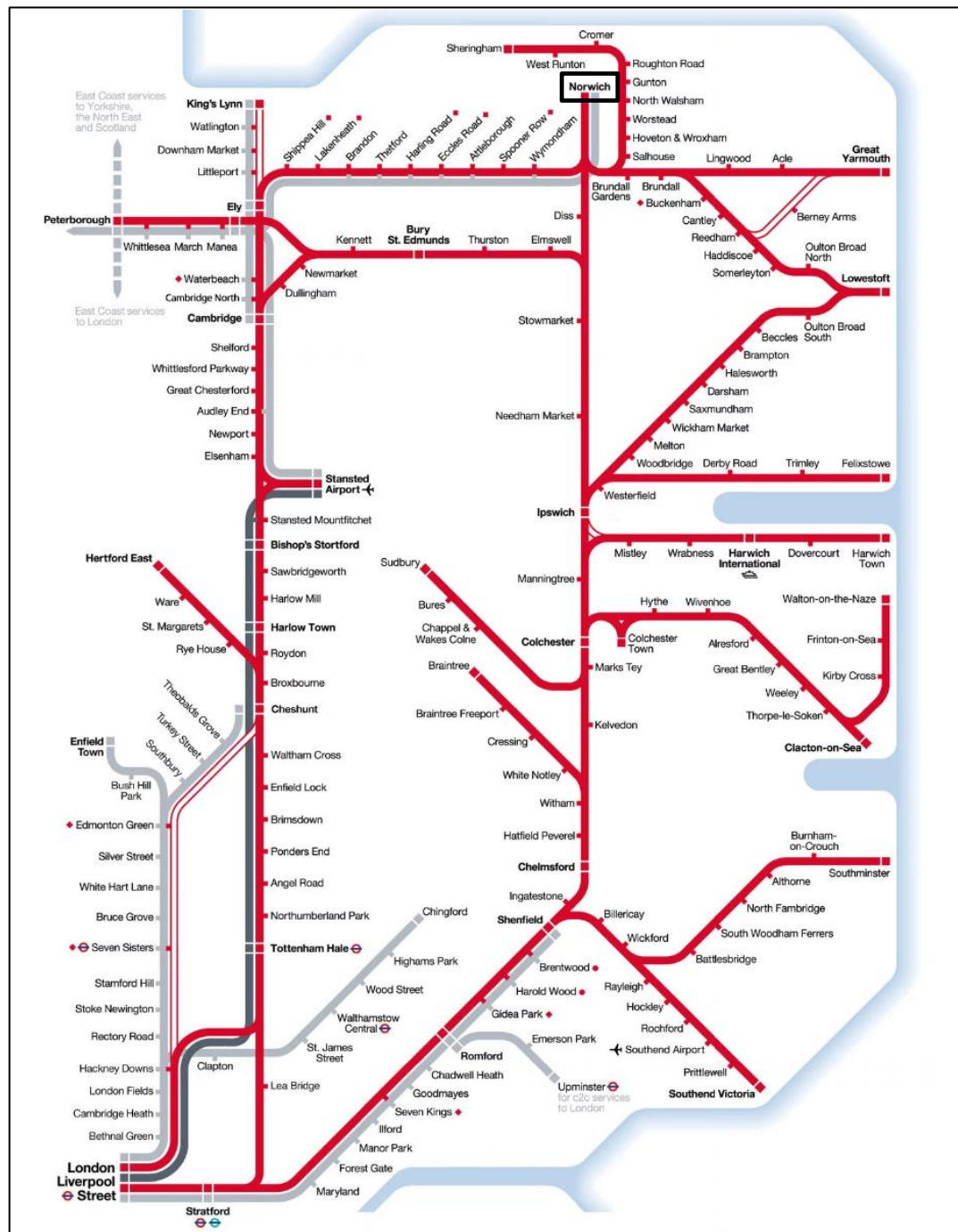
Table 5.4 Approximate Journey Times

Destination	Approximate Journey Time
London Liverpool Street	1hr 50min / 2hr
Great Yarmouth	33 min

Ipswich	40 min
Peterborough	1hr 30min
Thetford	30 min
Nottingham	2hr 40 min
Manchester	4hr 25min / 4hr 45min
Liverpool	5h 20min

Source: [www.nationalrail.co.uk](http://www.nationalrail.co.uk)

Figure 5.4 Greater Anglia network



Source: <https://www.greateranglia.co.uk/travel-information/journey-planning/network-map>

**Figure 5.5 East Midlands Trains network**



Source: <https://www.eastmidlandstrains.co.uk/>

- 5.26 Norwich railway station is provided with several services and facilities and is well served by all modes of buses and taxis; it also benefits from a Bike & Go station which allows the public to hire a bicycle to facilitate part of their journey. The station has three car parks, located within short walking distance, catering for 1,200 spaces, approximately.
- 5.27 First Bus UK operate a network of daily, frequent bus routes around the city and also to nearby towns and villages. Cycle stands are also available at the station.

**Highway Network**

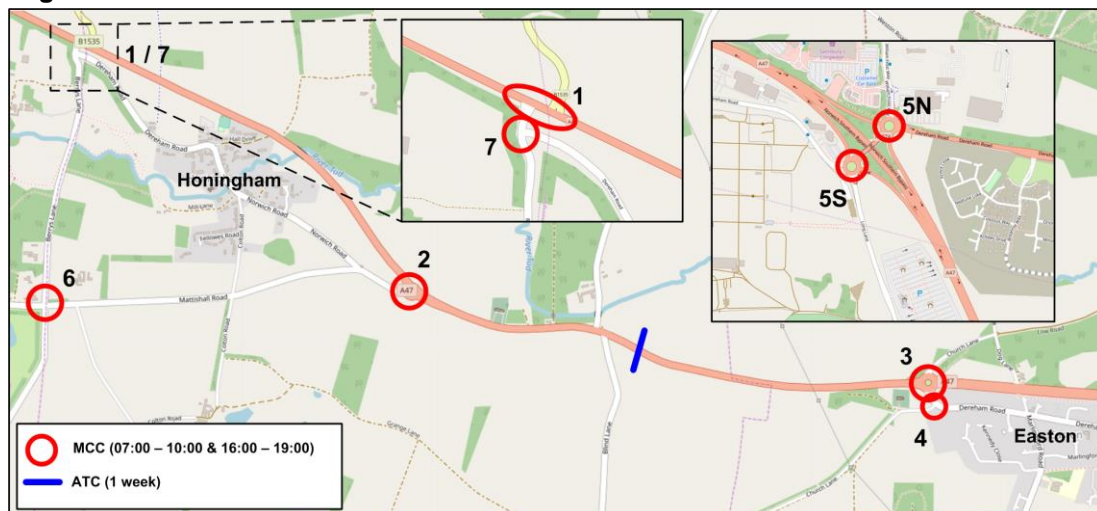
- 5.28 The Site is located to the south of the A47, part of the strategic highway network and under Highway England jurisdiction. The site is located between two roundabouts that serve the A47 east and westbound.
- 5.29 Within the Site boundary, the highway network mainly consists of local roads the local villages and wider highway network. The local roads are subject to a national speed of 60mph however when passing through local villages, a reduced speed of 30mph is enforced.

- 5.30 Along the western boundary of the site, Mattishall Road consists of an unlit single carriageway road, and is approximately 6m wide, with no footways. Mattishall Road is located to the west of the A47 / Norwich Road roundabout and provides a link to the A47 from Honingham.
- 5.31 Blind Lane runs through the centre of the site and provides a connection onto the A47 in the form of a T-junction. The A47 can also be accessed east of Colton Road / Blind Lane via the A47 roundabout located at Easton.
- 5.32 A more detailed description of the highway network in the vicinity of the Site is provided throughout the TA.

### Traffic Survey Data

- 5.33 Traffic surveys were undertaken in November 2018 to allow for an accurate understanding of the movement of vehicles in the vicinity of the Site, particularly along the A47. The surveys were carried out by PCC Traffic Information Consultancy.
- 5.34 Manual Classified Counts (MCCs) were carried out at 8 junctions, recorded in 5-minute intervals between 7:00 and 10:00 and 16:00 and 19:00 on Thursday 1 November 2018.
- 5.35 The location of the surveys have for ease of reference numbered from 1 to 7, with the Longwater interchange further broken down in 5S and 5N, and is reproduced at **Figure 5.8**. The survey data is included within **Appendix B**.

**Figure 5.8 Traffic Count Locations**



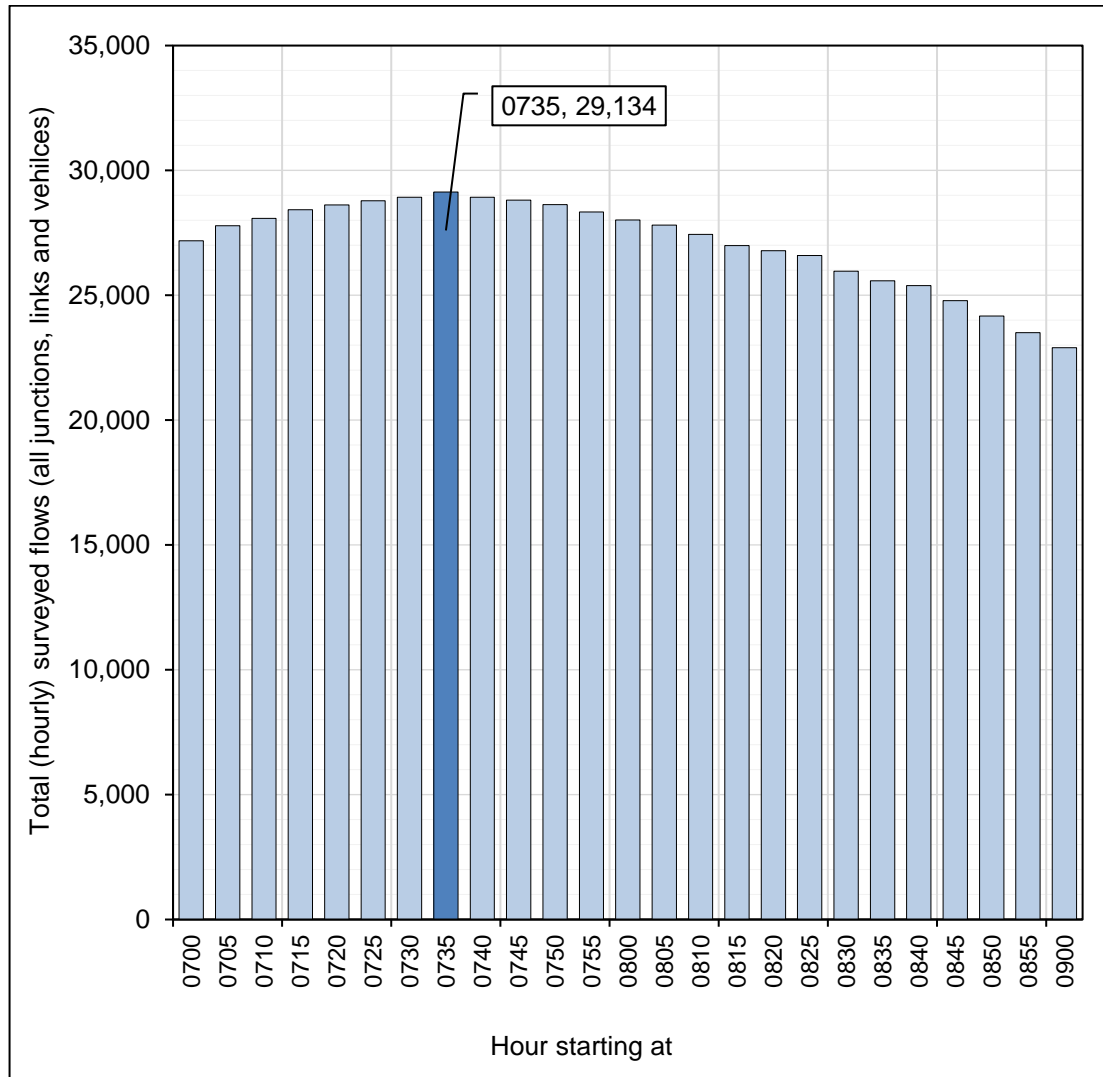
- 5.36 An Automatic Traffic Count (ATC) survey was undertaken between Thursday 01/11/2018 and Wednesday 07/11/2018, therefore including the day in which the MCCs were undertaken. The survey was carried out on the A47, between Honingham and Easton, to the east of the junction with Blind Lane. The location of the ATC is shown on **Figure 5.8** above.



MCC data

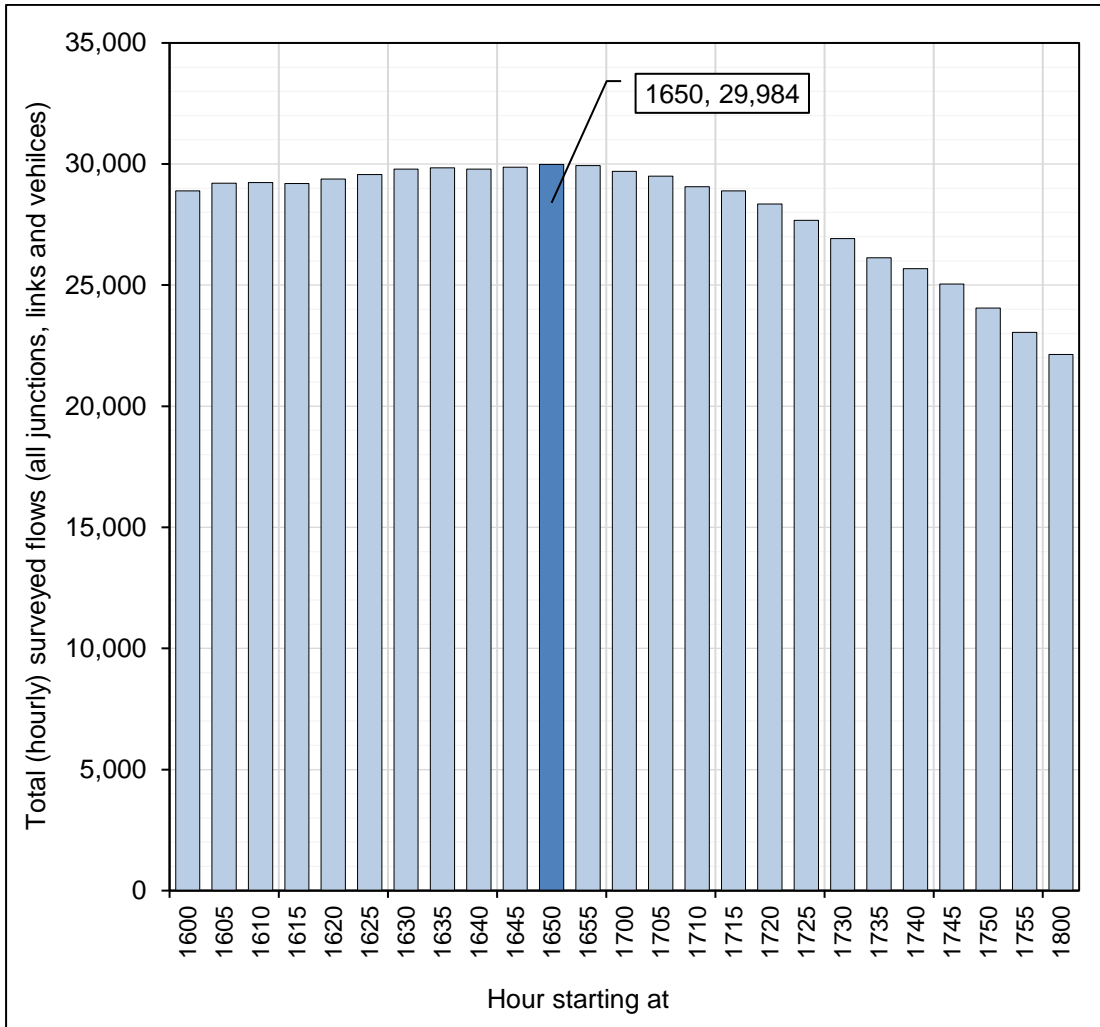
5.37 The network peak hours were calculated summing all the flows of all the junctions; peak hours were identified as 07:35 to 08:35 (**Figure 5.9**) and 16:50 to 17:50 (**Figure 5.10**).

**Figure 5.9 AM Network Peak Hour**



Source: MCC data

**Figure 5.10 PM Network Peak Hour**



Source: MCC data

*Traffic Speeds*

5.38 The average and 85<sup>th</sup> percentile speeds recorded on the A47 are shown in Table 5.5.

Table 5.5 Observed Average and 85<sup>th</sup> Percentile Speeds

Location	Direction	Average (mph)	85th Percentile (mph)	Speed Limit (mph)
A47	Eastbound	46.6	54.8	60
	Westbound	48.2	54.7	60

Source: ATC data

5.39 The results in **Table 4.4** illustrate that there are no apparent speeding issues on the A47 at this location. The average speeds at this location are well below the speed limit, in an eastbound direction the average speed was 46.6mph and in a westbound direction the average speed was 48.2 mph. Furthermore, the calculated 85<sup>th</sup> percentile speeds were also below the speed limit.

Traffic Volumes

5.40 With regards to traffic volumes, the average flows for weekdays, weekends and the week as a whole have been calculated. These values have also been split between different periods on the day. The traffic volumes can be seen in **Table 4.5**.

Table 5.6 Traffic Volumes

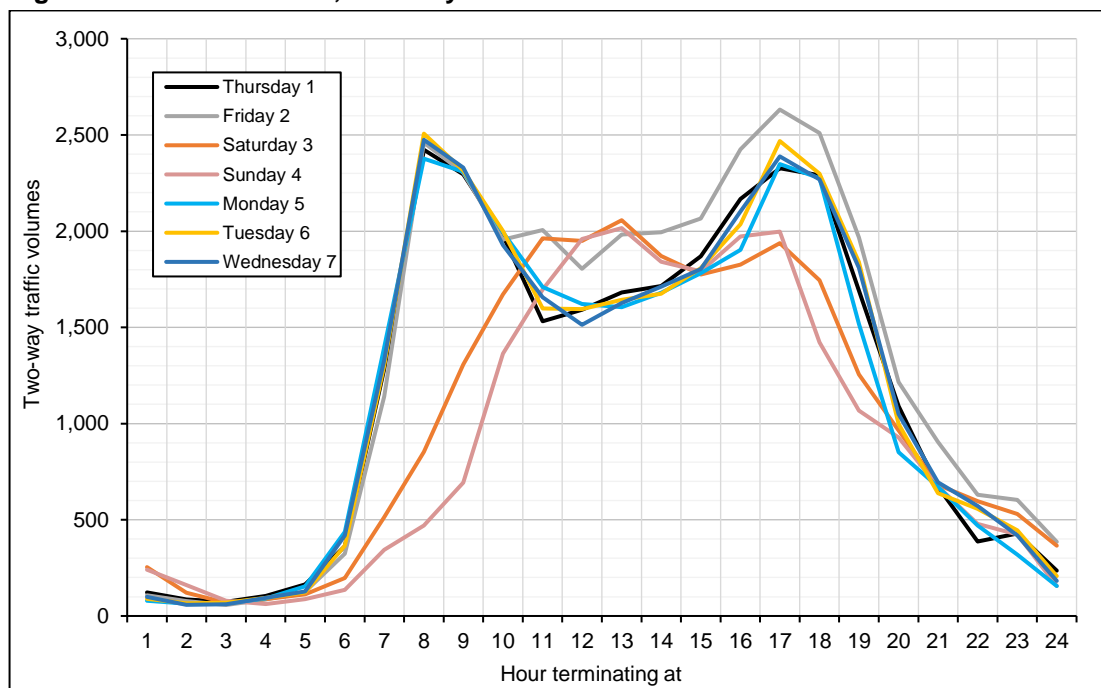
Hour	Weekday Average		Weekend Average		7 Day Average	
	EB	WB	EB	WB	EB	WB
0700 - 1900	12,128	11,909	9,450	9,002	11,363	11,307
0600 - 2200	13,821	13,787	10,767	11,075	12,948	13,012
0600 - 2400	14,111	14,172	11,117	11,461	13,255	13,398
0000 - 2400	14,561	14,571	11,510	11,872	13,869	13,800

Source: ATC data

5.41 The ATC data shows that on the average day between 00:00 and 24:00hr, 13,869 vehicles use the A47 in an eastbound direction and 13,800 vehicles use the A47 in a westbound direction, meaning that a combined total two-way flow of 27,669 vehicles use this stretch of the A47.

5.42 The daily trend of traffic over the seven observed days is illustrated at **Figure 5.11**, which shows two pronounced peaks between 07:00 and 08:00 and between 16:00 and 17:00 during the weekdays, with less pronounced peaks during the central hours of the weekend.

Figure 5.11 ATC results, weekday and weekend traffic volumes



Source: ATC data, November 2018

- 5.43 A large percentage of the traffic that use this stretch of the A47 use the road between 07:00 and 19:00. On the average weekday 14,561 vehicles use this stretch of the A47 in an eastbound and 14,571 use it in a westbound direction, generating a total daily two-way flow of 29,132 vehicles.
- 5.44 As illustrated in **Figure 5.11**, there is a significant volume decrease over the weekend, when compared to the five weekdays. On the average weekday, the ATC data show that an average of 14,561 vehicles travel long the A47 in an eastern direction and 14,571 in an eastbound direction. On the weekend this reduced to an average of 11,510 in an eastbound direction and 11,827 in a westbound direction, meaning there is a reduction of 3,051 vehicles in an eastbound direction and a reduction of 2,699 vehicles in a westbound direction, generating a net two-way flow reduction of 5,720 vehicles.

### Traffic Flow diagrams

- 5.45 Baseline traffic flow diagrams, for all vehicles, heavy goods vehicles and PCUs for both peaks, are reproduced at **Appendix C**, together with those for committed and proposed traffic flows, which will be discussed later on within this report.

### Road Safety

- 5.46 The Road Safety Foundation's 'British Eurorap Results 2018: getting back on track' Report, rates the risk levels of every major road in the UK. For this stretch of the A47 the report starts that this is a medium-low risk road. Report is attached in **Appendix D**.
- 5.47 Personal Injury Accident (PIA) data was obtained from Norfolk County Council for the five most recent years available (from October 2013 – September 2018). The data was requested for the A47 between the A47 Longwater Junction and the A47 junction with Berry Lane and B1535. Other key locations include:
- Dereham Road (Easton);
  - A47 and Norwich Road roundabout; and
  - A47 and Dereham Road roundabout.
- 5.48 The plots with the accidents and the detailed reports, received from Norfolk County Council, are reproduced at **Appendix E**.
- 5.49 The data indicates that a total of 77 accidents occurred in the 5-year period in the study area. A breakdown per area and per severity of the accidents is provided at Table 5.7.

Table 5.7 Summary of Accidents and their severity in the study area

Location	Slight	Severe	Fatal	Total	Accidents per year per km
<b>Junctions</b>					
A47 Longwater Junction	11	0	0	11	-
Longwater Junction Approaches (A1074 & William Frost Way)	9	0	0	9	-
A47 Dereham Road Roundabout	8	1	0	9	-
Blind Lane and Taverham Road Priority Junctions	6	1	0	7	-
A47 Norwich Road Roundabout	4	0	0	4	-
A47 Berry Lane/ B1535 Junction	10	3	0	13	-
<b>Links</b>					
A47 – Longwater Junction to Dereham Road Roundabout	4	1	0	5	0.69
Dereham Road (Easton)	5	2	0	7	0.47
A47 Dereham Road Roundabout to Blind Lane/ Taverham Road Junctions	3	0	0	3	0.54
A47 Blind Lane/ Taverham Road Junctions to A47 Norwich Road Roundabout	1	0	0	1	0.36
A47 Norwich Road Roundabout to A47 Berry Lane/ B1535 Junctions	6	2	0	8	1.11
<b>TOTAL</b>	<b>67</b>	<b>10</b>	<b>0</b>	<b>77</b>	

Source: PIA data (Norfolk Country Council)

- 5.50 As shown in Table 5.7, there were no fatal accidents within the vicinity of the Site over the most recent five years.
- 5.51 A total of 10 serious accidents and 67 slight accidents occurred within the 5-year period. The majority of these accidents happened at or near road junctions including the roundabouts in the vicinity of the Site.
- 5.52 Approximately half (51%) of the accidents recorded along the A47 took place at four specific points: 1: A47 Longwater Junction; 2. A47 Dereham Road Roundabout; 3. Blind Lane and Taverham Road Priority Junctions; and 4. A47 Berry Lane/ B1535 Junction. These four points will now be reviewed to understand why accidents might be prevalent at these sites.
- **A47 Longwater Junction:** A total of 11 accidents took place at this junction, in the five year period assessed, all slight in nature. Eight of these accidents occurred in daytime with normal road conditions. Of the others, one took place in daytime with wet road conditions, one took place at night with wet road conditions, and one took place with normal road conditions at night, but on a lit section of road.

- **A47 Dereham Road Roundabout:** A total of nine accidents took place at this junction, eight of these were slight in nature with one being serious. At this junction eight of the accidents happened with normal road conditions, with three at night and five in the day. The final accident took place in wet road conditions.
  - **Blind Lane and Taverham Road Priority Junctions:** A total of seven accidents took place at this junction in the five year period assessed. Six of these accidents took place with normal road conditions in daylight. The final accident took place with rainy conditions with a wet road.
  - **A47 Berry Lane/ B1535 Junction:** A total of 13 accidents took place at this junction. Six of these accidents took place with normal road conditions in daylight. The other seven took place in varied conditions. Six of these accidents occurred when there were wet road conditions (three at night (one in lit area) and three in the day). The final accident took place at night, with normal road conditions.
- 5.53 With regards to the accidents' contributing factors, the vast majority of the accidents' detailed reports attribute the cause of the accidents to the driver, and in particular to the following reasons:
- Failed to see slowing or stopping traffic in front, causing rear end collision;
  - Loss of control;
  - Misjudged other vehicle manoeuvres; or
  - Failing to give way.
- 5.54 Other factors have played a part in some of the recorded incidents, for example wet road conditions (20 incidents) and dark conditions (13 incidents).
- 5.55 In total, only one of the accidents involved a pedestrian, who was walking in the opposite direction of the road (at Dereham Road, Easton) and four accidents involved cyclists.
- 5.56 Three recorded incidents were attributed to animals, mainly deer, crossing the carriageway.
- 5.57 One attributed incident was attributed to drunk driving, with the driver failing a roadside Breathalyzer test.
- 5.58 None of the incidents were directly attributed to issues relating to road layout or design.
- 5.59 In summary, no common causal factors other than human error and a general lack of care was apparent and none of the recorded accidents were solely attributable to the layout of the local highway network.
- Summary**
- 5.60 The baseline transport conditions for the Site are typical for its location and rural setting. Pedestrian and cycle infrastructure are very limited, as is the presence of local services and facilities within walking distance.

- 5.61 Public transport is available in all the villages in the form of local bus services and a fast service between Norwich and Peterborough stopping at Easton. Bus services enable connections to the city centre and to Norwich railway station, which offers numerous and frequent connections to some key destinations within the whole country.
- 5.62 Two Park and Ride sites are available within short driving distance from the Site.
- 5.63 Initial phases of the development will need to ensure that sustainable travel alternatives are made available as early as feasibly possible together with local facilities such as shops and schools to reduce the need to travel.
- 5.64 The Site is in close proximity to the A47, which carries a strategic role within the region. Traffic surveys were undertaken on some key junctions in the vicinity of the Site in early November 2018; a detailed analysis of the highway network will be presented in the remainder of this report.
- 5.65 The stretch of the A47 in the vicinity of the Site is classified as a “medium-low risk road” by the Road Safety Foundation’s ‘British Eurorap Results 2018: getting back on track’ Report. While a number of accidents have been identified by the review of Personal Injury Accidents occurred within the vicinity of the Site over the last five-year period, no common cause has been identified, with the great majority of them being attributed to driver’s error. None of the accidents was solely attributed to the layout of the local highway network.

## 6 COMMITTED IMPROVEMENTS TO THE HIGHWAY NETWORK

### The A47 corridor improvement programme

6.1 In 2014 the UK Government established the Road Investment Strategy (RIS). As part of this the East of England was identified as an area in need of investment. 17 major road schemes were identified as requiring investment including 6 schemes along the A47.

6.2 It is recognised that the A47 has a number of congestion hotspots around Norwich, Peterborough and Great Yarmouth. These result in delays and concerns regarding safety for all road users. There are also developments resulting in significant growth predicted along the A47 through Norfolk and these are the areas which our proposed improvements will help to support for the local communities affected.

#### *A47 North Tuddenham to Easton improvement scheme*

6.3 Plans for the A47 North Tuddenham to Easton dualling scheme are progressing following the Preferred Route Announcement after consultation with the public in August 2017.

6.4 An amended version of Option 2, with the route amended to address some of the key concerns raised, was chosen for the new dual carriageway between North Tuddenham and Easton. In regard to Option 2 Highways England stated it “**solved the traffic and safety problems**”. It also had the least impact on the environment. As a result, this means it can be built with less impact during construction and the existing road can remain for local traffic movements, pedestrians, cyclists and equestrians.

6.5 The timeline for the improvement scheme is as follows:

- 2019 Statutory consultation;
- 2020 Submission of Development Consent Order;
- April 2021 Start of works; and
- May 2023 Open for traffic.

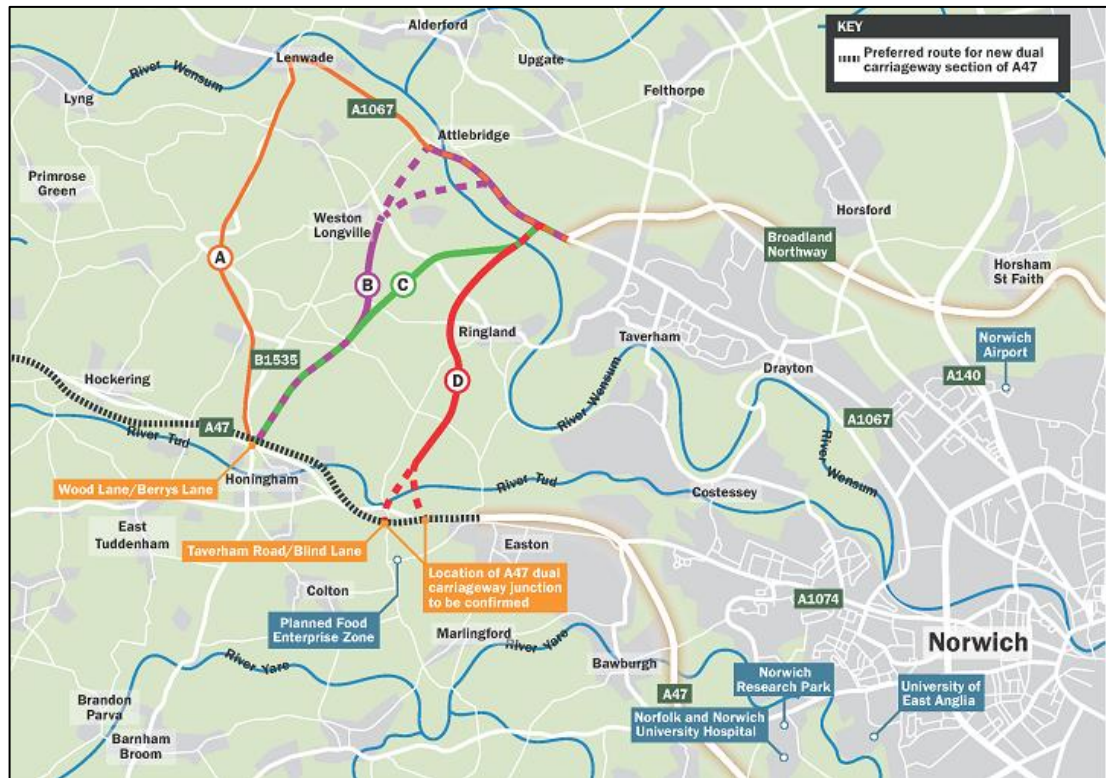
6.6 The changes in alignment and the new junction, which may take a different form as the design evolves, can be seen at **Appendix F**.

### The Western Link

6.7 Four potential road options for a Norwich Western Link, designed to improve travel between the A47 and the western end of Broadland Northway (formerly Northern Distributor Road), have now been published.



**Figure 6.1 Western Link Shortlisted Route Options**



Source: [www.norfolk.gov.uk](http://www.norfolk.gov.uk)

6.8 Three new dual carriageway roads and a single carriageway upgrade to the B1535 make up the shortlisted options. While the majority of the new or improved roads would be built at or near ground level, viaduct-style bridges over river flood plains are included in some of the options. All of the routes also include improvements to the A1067 Fakenham Road.

6.9 The shortlisted options, from west to east, are named from A to D and listed as follows.

*Option A*

6.10 A 7.2 mile single carriageway upgrade to the B1535 and A1067, linking to the A47 at the Wood Lane junction north of Honingham. This option would significantly realign the current B road, smoothing it out to make it a higher standard route. The route would join the A1067 via a new junction at Lenwade and make use of the existing bridge across the River Wensum at Attlebridge.

6.11 It is predicted this route would carry around 10,000 vehicles a day by 2040. The estimated cost is £60m.

*Option B*

6.12 A new dual carriageway route and dual carriageway upgrade of the A1067, with the new route to the east of Weston Longville and linking to the A47 at Wood Lane. At the northern end of

this route, two alternatives are given for how it could join the A1067. One would be via a new junction near Attlebridge which would include widening the existing River Wensum bridge at Attlebridge – this route would total 5.1 miles in length. The other would see a new 660 metre viaduct crossing of the Wensum created, joining the A1067 further to the east and would total 4.7 miles in length.

- 6.13 It is predicted this route would carry around 30,000 vehicles a day by 2040. The cost of the route using the existing bridge is estimated at £129m while the viaduct alternative is estimated to cost £155m.

*Option C*

- 6.14 A new dual carriageway route and dual carriageway upgrade of the A1067, linking to the A47 at Wood Lane and totalling 3.9 miles. A short section of the A1067 would be dualled before a new junction would take the route between Weston Longville and Ringland, crossing the River Wensum on a 720 metre-long viaduct.

- 6.15 It is predicted this route would carry around 32,000 vehicles a day by 2040. The estimated cost is £153m.

*Option D*

- 6.16 A new dual carriageway route and dual carriageway upgrade of the A1067. The route is similar to Option C at its northern end, however it then runs to the west of Ringland and links to the A47 further east. A short section of the A1067 would be dualled before a new junction would take the route between Weston Longville and Ringland, crossing the River Wensum on a 660 metre-long viaduct, then turning more to the south and crossing the River Tud on a second viaduct, this one 120 metres long, before it meets the A47.

- 6.17 Two alternatives for how option D could join the A47 are shown. This is due to Highways England's plans to dual the section of the A47 between North Tuddenham and Easton. NCC states that ***“There is currently limited detail available on the new junction location near Easton and, until more detail is known, the Council has accounted for the possibility of the junction being located near Blind Lane and Taverham Road or closer to the current Easton roundabout junction.”*** As confirmed at consultation with HE the junction form and location could change, however it seems unlikely due to the LDO<sup>4</sup> recently approved for the Food Enterprise Zone. The location of the junction makes a small difference to the overall length of the route – 3.8 miles if the route connects near Blind Lane and Taverham Road and 3.7 miles if it connects near the current Easton roundabout.

- 6.18 It is predicted this route would carry around 31,000 vehicles a day by 2040. The estimated cost is £161m (this remains the same for both alternatives for how the route could join the A47).

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<sup>4</sup> South Norfolk planning ref: 2014/1792; Broadland planning ref: 20170052

### Longwater

- 6.19 The Longwater Interchange represents a strategic node within the highway network, connecting the A47 with Dereham Road, Easton, Costessey and north Norwich.
- 6.20 Improvement works have been undertaken over the past few years to enable development along or in the vicinity of Dereham Road.
- 6.21 It is understood that further works are committed and they have therefore been treated as such following liaison with NCC. A plan showing the future vision for this junction is reproduced at **Appendix G**.

### Summary

- 6.22 A first phase of the development will not be reliant on any of major committed infrastructure improvements. The full scale development proposals will of course require the A47 dualling and further benefit from the Western Link should option B, C or D be chosen. Route A seems to provide the least benefit for the Site and the area as a whole, which has been confirmed by the Option Assessment Report undertaken by WSP on behalf of NCC indicating a low<sup>5</sup> Value for Money category resulting from a Benefit Cost Ratio of between 1 and 1.5.

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<sup>5</sup> Page 121, Norwich Western Link – Option Assessment Report, Ref 70041922-WSP-OAR, October 2018, Norfolk County Council

## 7 SUSTAINABLE ACCESS

- 7.1 As extensively set out in Chapter 4 of this report, national, regional and local policies stress the centrality of the sustainability of the proposals for new developments. These include the NPPF, Norfolk Third Local Plan and the emerging Greater Norwich Local Plan.
- 7.2 The centrality of the sustainability of the Site has been acknowledged and makes it one of the key principles that inform the emerging masterplan. The provision of education, leisure, retail facilities and services from the first phase of the development stresses the importance that is being given to the sustainability of the Site, with the aim to reduce the reliance on the private vehicle.
- 7.3 The proposals and the key principles that will guide the design of a sustainable development are set out in this Chapter. Some drawings illustrating the access strategy for the Site, including existing bus services and local amenities, are reproduced within **Appendix H**.

### Walking and Cycling

- 7.4 The masterplan will ensure that the Site is permeable, easily accessible and inclusive and meets the best practice guidance set out in documents like Manual for Streets, Manual for Streets 2, Providing for Journeys on Foot and CIHT guidance (Planning on Walking, Planning on cycling). The provision of good quality pedestrian infrastructure (footways, crossing facilities, lighting) will contribute creating a better streetscape and urban environment and, ultimately, help influencing the mode choice, where possible.
- 7.5 Streets within the Site and connecting to the existing network will be designed so that they could become places where pedestrians would walk through (movement function) but also linger, socialise, enhancing the whole community and make it attractive and safe (place function).
- 7.6 Any existing PROW will be incorporated into the future masterplans and accommodated accordingly.
- 7.7 Walking routes within and to the large proposed Country Park will be created, contributing to create an attractive and sustainable new settlement.
- 7.8 It is acknowledged that the Site will have to be well connected to the existing network from the first phase. Improvements will be made to the existing network where limited infrastructure is provided at present. Within Phase I these would comprise the creation of a 3m wide, shared footway / cycleway on the (unnamed) road running along the Food Enterprise Park and connecting to Easton, to the east. All improvements can be made within land controlled by our Client and/or highway boundary.

- 7.9 At Easton, the creation of a similar shared facility is committed to be implemented as part of the proposals for the Eaton Village Growth. These will significantly improve the existing provision and connect to the Longwater interchange, to the east. The proposals also include the provision of Toucan crossings at both dumbbell roundabouts within the interchange. The drawings showing the proposed facilities, produced by Aecom, are reproduced at **Appendix I**.
- 7.10 Should the Eaton Village Growth not be delivered and should therefore the proposals for these footway / cycleways not come forward, the Client will commit to provide such improvements, which were welcomed and agreed with NCC.
- 7.11 Another key aspect of the enhancements to the pedestrian environment is the centrality of walking to school routes. A primary school will be created from Phase 1 and ensure that the pupils of the proposed residential properties would be able to access the new facility within recommended distances and safety standards.
- 7.12 Cycling provision will be made within the Site, in the form of dedicated cycle routes, crossings and parking, to encourage cycling not only to fast commuters and skilled cyclists but also to inexperienced and/or leisure cyclists. Best endeavours will be made to provide Convenient, Accessible, Safe, Comfortable and Attractive routes<sup>6</sup> to encourage cycling.
- 7.13 To improve connectivity, it is also proposed to enhance the route between the Food Enterprise Park and Easton and Otley College. The road, maintained by NCC, is partially unsurfaced and does not appear to be to a standard that would encourage walking. The client will work collaboratively with NCC so that improvements of this route can be made, with the suggestion that it is made a pedestrian / cycle link only, potentially used as a secondary vehicular access point to be used by emergency vehicles only.
- 7.14 Improvements will be made within public highway but it is understood that discussions are being held at time of writing between the Client and the landowner of either side of this link (i.e. the College), to find the best solutions for the whole community.
- 7.15 Together with the significant improvements to the south of Easton, it is considered that the proposals for the Site will regenerate the whole area and result in a beneficial impact for the local community.

### **Public Transport**

- 7.16 Public Transport provision would be another key component of the proposals to enable a sustainable development. New provision will ensure it is connected to the existing network and integrated with the other modes and facilities.

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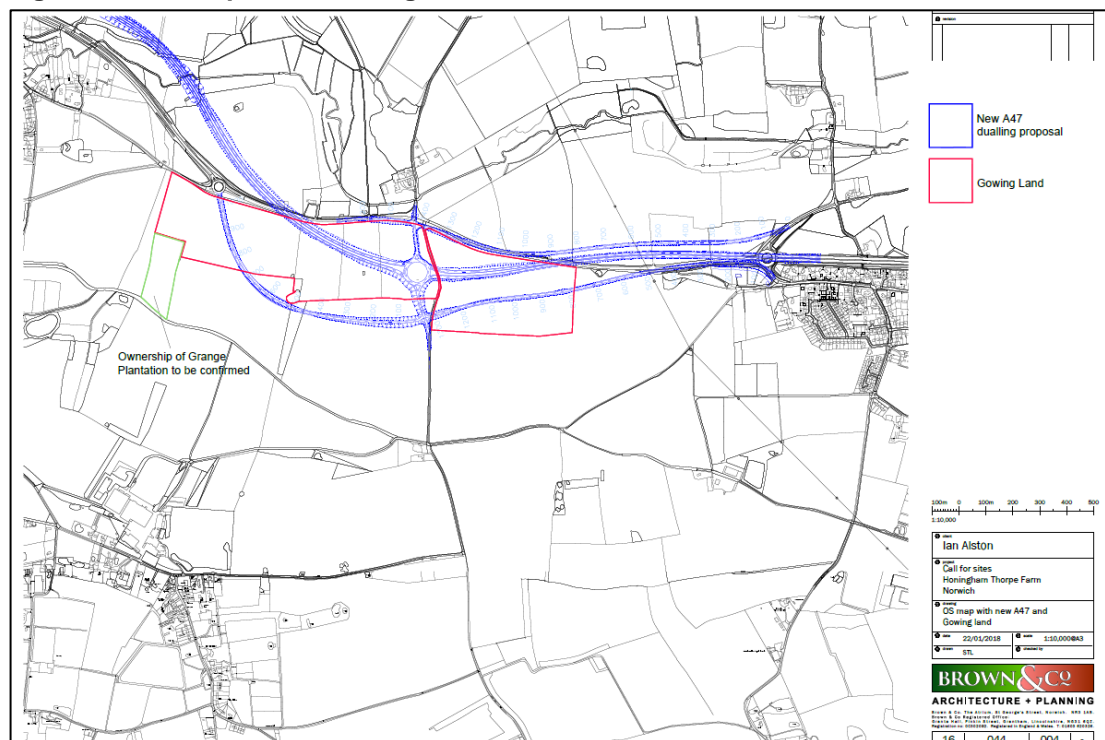
<sup>6</sup> LTN 2/08

- 7.17 Limited public transport facilities currently exist without ready access to rail infrastructure, however bus services are available at all the villages and include a fast bus service, Excel, connecting to Norwich and Peterborough, via King`s Lynn, and stopping at Easton.
- 7.18 The Site will additionally benefit from a new BRT being proposed along Dereham Road (New Costessey) and that will be extended to Easton. Further stakeholder engagement will take place with NCC to find the best solutions to connect the Site with the BRT route. It is proposed that the existing route is extended to our Site to enhance connections with the new community.
- 7.19 Another option is the diversion of bus route 4 onto the Site. This service currently connects Easton and Honingham, via the A47. Stakeholder engagement will be undertaken with the service provider regarding possible diversions of the route.
- 7.20 For the wider Site, the provision of an ad-hoc route to Norwich city centre and railway station, with a potential stop near the Longwater shopping district will be considered.
- 7.21 Design of bus routes within the Site will follow design standards and best practice. Bus stops will be provided in key locations within the development to enable a 400m catchment, in order to minimise walking distances. Bus shelters will be provided and crossing facilities and will enhance walking to and from the stops.

## 8 VEHICULAR ACCESS

- 8.1 The vehicular access strategy for the Site is subject to further review in liaison with HE and NCC, after undertaking strategic transport modelling which will include the A47 North Tuddenham to Easton improvement scheme and Norwich Western Link. At present the alignment for the A47 is fixed and the details for the junctions will now be further developed. The last iterations of the plans illustrate a Vehicular access to the Site via a large new roundabout on the A47, following the dualling to be completed by 2023.

**Figure 8.1 Proposed A47 Alignment**



Source: *Brown & Co*

### Phase I

- 8.2 Vehicular access to a first Phase of the development will be achieved from Easton, particularly from the (unnamed) road linking Dereham Road, to the south of the roundabout with the A47 and the Food Enterprise Park. The road will be improved to have a cross section of 6.0m, plus the afore mentioned 3.0m wide shared footway/cycleway.
- 8.3 This will represent an improvement compared to the current proposals for this stretch road which, based on the information included in the application for a LDO for the FEP, would include one lane with passing places.
- 8.4 It is noted that the Easton Village Growth would comprise the change in priority at the junction with St Peter`s Church. Discussions will be held with NCC to ascertain whether this arrangement a) is likely to be implemented b) would be kept if the development at the Site would occur.

## 9 PHASE I – FORECAST TRAVEL DEMAND MODEL

9.1 This chapter outlines the methodology employed to estimate the travel demand associated with the first phase of the Site. It consists of four stages, discussed in greater detail in this chapter, with additional supporting figures and tables included within **Appendix J**:

- Trip Generation;
- Trip Distribution;
- Mode Choice; and
- Route Assignment.

9.2 It should be clarified that the approach followed refers to a first phase of the Site, both in terms of vehicular trip generation and trip distribution. The first phase of the Site is expected to include 600 units, together with education facilities and local services and facilities, while the overall Site would eventually include a wider range of land uses, including employment, leisure and retail. A certain degree of internalisation of trips during later stages of the Site will be expected, reducing the overall impact on the external network.

9.3 The Phase I assessment does not allow for the major highway improvements of the dualling of the A47 or the construction of the “Western Link”. Conservative assumptions have been made throughout the whole assessment, to add robustness and provide confidence of the deliverability of Phase I.

### Trip Generation

9.4 Given the scale and the location of the Site and the lack of directly comparable sites within the TRICS database, a combination of TRICS and first principles approaches has been used, enabling the estimation of the likely travel behaviour of the new residents based on the actual location of the site.

9.5 The most recent version of the TRICS database (v. 7.5.3) was used to ascertain suitable trip rates for the proposed development. As already noted, no directly comparable sites were identified to reflect the rural location of the Site; it was therefore chosen to make a wider selection of “Houses – Privately Owned” sites within *Edge of Town Centre, Suburban Area* and *Edge of Town* sites, within the regions of England, with the exclusion of Greater London. Sites with multi-modal trip rates only were selected.

9.6 The choice of multimodal trip rates enabled the selection of person trip rates, i.e. how many people would leave the dwelling in each hour, regardless of the mode, which is less influenced by the location of the site. The full TRICS report is shown within **Appendix K**, while Table 9.1 sets out the person trip rates per dwelling in the peak hours.



Table 9.1 Person Trip Rates (generation by any mode of travel, per dwelling)

Hour	Arr	Dep	Tot
07:00 - 08:00	0.135	0.513	0.648
<b>Peak 08:00 - 09:00</b>	<b>0.214</b>	<b>0.830</b>	<b>1.044</b>
09:00 - 10:00	0.231	0.3	0.531
16:00 - 17:00	0.554	0.315	0.869
<b>Peak 17:00 - 18:00</b>	<b>0.627</b>	<b>0.286</b>	0.913
18:00 - 19:00	0.526	0.335	<b>0.861</b>

Source: TRICS 7.5.3

9.7 To calculate the vehicular trip rates, the latest Journey to Work statistics included in the most recent Census were consulted for the two MSOAs<sup>7</sup> across which the Site is located, namely "South Norfolk 002" and "Broadland 002"; they are both large areas on either side of the A47 in the vicinity of the Site and include prevalently rural areas, with the former MSOA including villages of Easton, Colton, Marlingford, Barford, extending to the south as far as Cringleford and Keswick and the latter MSOA including Honingham, Ringland, Lenwade, Reepham, Cawston and several other smaller villages and rural areas. A plan (drawing **SK01**) showing the Site in the context of two MSOAs is included within **Appendix J**.

9.8 Mode share for Journey to Work was identified for the residents of the study area formed by the two above described MSOAs, with work destination chosen within the UK. It is noted that the vast majority of the study area comprises rural villages with limited transport infrastructure, particularly with no rail infrastructure, which will result in a higher usage of private cars compared to more sustainable transport modes. The full mode split can be seen at Table 9.2.

Table 9.2 Journey to work mode share

Underground, metro, light rail or tram	0.2%
Train	0.9%
Bus, minibus or coach	5.0%
Taxi	0.1%
Motorcycle, scooter or moped	1.4%
<b>Driving a car or van</b>	<b>77.3%</b>
Passenger in a car or van	4.8%
Bicycle	3.8%
On foot	6.2%
Other method of travel to work	0.3%

Source: Census (2011)

<sup>7</sup> Middle layer Super Output Areas

- 9.9 The application of the 77.3% car usage to the person trip rates shown in Table 9.1, produced the vehicular trip rates shown in Table 9.3.

Table 9.3 Vehicle Trip Rates per Dwelling

Hour	Arr	Dep	Tot
07:00 - 08:00	0.104	0.396	0.501
<b>Peak 08:00 - 09:00</b>	<b>0.165</b>	<b>0.641</b>	<b>0.807</b>
09:00 - 10:00	0.178	0.232	0.410
16:00 - 17:00	0.428	0.243	0.671
<b>Peak 17:00 - 18:00</b>	<b>0.484</b>	<b>0.221</b>	<b>0.705</b>
18:00 - 19:00	0.406	0.259	0.665

Source: TRICS 7.5.3

- 9.10 It must be noted that the above trip rates are considerably higher (as shown in Table 9.4) than those adopted in Transport Assessments for recent planning applications, particularly the one for the Easton Village Growth or the urban extension to the south of Attleborough<sup>8</sup>. This approach was chosen to add significant robustness to the assessment, while in reality trip generation from the Site would be expected to be lower.

Table 9.4 Vehicular trip rates comparison

	Site	Arr	Dep	Tot
<b>AM</b>	Easton Village Growth	0.107	0.327	0.434
	Attleborough SUE	0.134	0.336	0.470
	<b>Honingham Thorpe (Phase I)</b>	<b>0.165 (+37%)</b>	<b>0.641 (+93%)</b>	<b>0.807 (+79%)</b>
<b>PM</b>	Easton Village Growth	0.332	0.212	0.544
	Attleborough SUE	0.246	0.161	0.407
	<b>Honingham Thorpe (Phase I)</b>	<b>0.484 (+67%)</b>	<b>0.221 (+18%)</b>	<b>0.705 (+48%)</b>

Source: Easton Village Growth: Table 5.5 of the supporting TA, divided by the 907 units

Attleborough SUE: Table 6.3 of supporting TA

Note: percentages calculated against average trip rates of the other two sites

- 9.11 When the trip rates shown in Table 9.3 are applied to a 600 house development, the trip generation illustrated at Table 9.5 are obtained.

<sup>8</sup> Breckland planning ref: 3PL/2017/0996

Table 9.5 Vehicle Trip Generation (600 Houses)

Hour	Arr	Dep	Tot
07:00 - 08:00	63	238	300
<b>Peak 08:00 - 09:00</b>	<b>99</b>	<b>385</b>	<b>484</b>
09:00 - 10:00	107	139	246
16:00 - 17:00	257	146	403
<b>Peak 17:00 - 18:00</b>	<b>291</b>	<b>133</b>	<b>423</b>
18:00 - 19:00	244	155	399

Source: TRICS 7.5.3 – any arithmetical errors due to rounding

#### Other land uses and Linked Trip Making

- 9.12 Given that the proposals include education provision, together with local shops and services and the fact that the Site lies adjacent to the committed Food Enterprise Park, it would be expected that a certain degree of internalisation of trips would occur. However, internalisation of trips has not been assumed for the first phase of the Site, but will be assumed in later phases.

#### Trip Distribution

- 9.13 In the second stage of the Forecast Travel Demand Model, the trips associated with the proposed development were distributed onto the highway network based on the latest Census Journey to work statistics, as described in detail in the following paragraphs.
- 9.14 The methodology followed to establish the likely destinations of the trips originating from the residential element site was based on the *Journey to Work* statistics data, which was applied to both arrivals and departures to/from the development. The 2011 Census provided information on the existing journey to work travel patterns of the residents in the study area<sup>9</sup> from their area of residence to their workplace. This is considered suitable for the purpose of this report considering the timescales of Phase I compared to the overall Site, which would need to consider future areas of employment.
- 9.15 Out of the regions within the UK, the East region totalled 97.9% of all the car trips from the study area; in the light of this very high number and the fact that the second highest, London, was only 0.6% (with all the others even lower), all the remaining regions were excluded from the analysis. Therefore, all the trips were assumed to originate and terminate within the East of England.

<sup>9</sup> MSOAs Broadland 002 and South Norfolk 002

- 9.16 To establish the likely destinations of the trips within the region, the districts with less than 1% of trips were excluded from the analysis, and then the percentages of the remaining 7 were recalculated (Table 9.6).

Table 9.6 Work Destinations (car trips)

Breckland	7.8%
Broadland	26.1%
Great Yarmouth	2.3%
King's Lynn and West Norfolk	1.5%
North Norfolk	7.5%
Norwich	33.0%
South Norfolk	21.7%
<b>Total</b>	<b>100.0%</b>

Source: Census 2011

- 9.17 In order to achieve a high level of detail, especially in terms of potential impact within the local districts, the districts in the immediate vicinity of the Site were further broken down in sub-zones (MSOAs); and in particular Breckland was broken down in 15 MSOAs and Broadland, Norwich and south Norfolk in 14 MSOAs, each. Similarly to what was done before, the MSOAs with less than 1% compared to the whole district were discarded.
- 9.18 The above break down produced a total of 60 zones.

### Modal Share

- 9.19 As already discussed, the latest *Journey to Work* data within the 2011 Census was used to establish the method of travel used for the longest part, by distance, of the usual journey to work of the residents in the study area. The mode split was already shown at Table 9.2. For ease of reference, the mode split above was grouped in fewer categories, with the resulting split illustrated at Table 9.7.

Table 9.7 Mode Split

Car driver	77.3%
Car Passenger	4.8%
Public Transport	6.1%
Cycle	3.8%
Walk	6.2%
Other	1.9%

Source: Census (2011)

**Route Assignment**

- 9.20 Route assignment of the vehicular trips was undertaken across 10 routes (labelled from “A” to “J”, as shown in drawing **SK02, Appendix J**), based on journey times information extracted from Google Maps and local knowledge on the likely routes to reach each of the destinations from the Site.
- 9.21 Details of the assumptions behind the assignment are included in **Appendix J**.

Table 9.8 Destinations of vehicular trips originating from Phase I of the development (600 units)

			AM		PM	
			Arr	Dep	Arr	Dep
<b>A</b>	A47 West	7.8%	8	30	23	10
<b>B</b>	B1535 Wood Lane	6.7%	7	26	19	9
<b>C</b>	Taverham Road	2.6%	3	10	7	3
<b>D</b>	Ringland Road	4.2%	4	16	12	6
<b>E</b>	A1074 Dereham Road	38.8%	38	149	113	51
<b>F</b>	A47 East	34.0%	34	131	99	45
<b>G</b>	Marlingford Rd / Long Ln to Watton Rd	2.3%	2	9	7	3
<b>H</b>	Barnham Broom Road	1.0%	1	4	3	1
<b>I</b>	Mattishall Road	0.2%	0	1	1	0
<b>J</b>	Barford	2.5%	2	9	7	3
<b>Tot</b>		100.0%	99	385	291	133

*Figures based on latest Census data*

- 9.22 The analysis shows, as would be expected, that a great part of the trips would be directed towards Norwich, either via Dereham Road (38.8%) or the A47 (34.0%).

**Development flow diagrams**

- 9.23 The resulting traffic flow diagrams, with the development traffic distributed across the study network are reproduced within **Appendix C**.

## 10 IMPACTS – ROAD NETWORK

- 10.1 This Chapter illustrates the potential impact of Phase I of the Site on the highway network, after the provision of a short summary of committed highway works and future developments that were granted planning permission.

### Committed Infrastructure

- 10.2 It is understood that, in addition to the major highway works in the vicinity of the Site, namely the A47 dualling and the construction of the Western Link, the signalisation of the Longwater interchange are expected to have been completed by 2023. A sketch of the proposed layout, produced by NCC, is reproduced at **Appendix G**.

### Committed Developments

- 10.3 Committed developments to be included in the Transport Assessment for any future planning application are generally advised by the Highway Authority, i.e. NCC. In consideration of the tight timescales, no advice has been received on this matter at the time of writing and, in its absence, two committed developments were identified and allowed for in the assessment.

#### *Food Enterprise Park*

- 10.4 The “Greater Norwich Food Enterprise Zone” (‘Food Enterprise Park’) benefits from a Local Development Order (LDO) for the growth in agri-food, agri-tech as well food and drink processing sectors, received in 2017. It is understood that work on this site are expected to commence shortly.
- 10.5 The trip generation and distribution associated with this site were extracted from the “Trip Generation” and “Transport Statement” documents included in Broadland planning portal<sup>10</sup>. The vehicular trip generation for the development was estimated as 303 arrivals and 158 departures in the morning peak period, with 75 arrivals and 254 departures in the evening peak period.
- 10.6 It is noted that limited infrastructure improvement schemes were proposed as part of this LDO; as far as we have been able to ascertain, they only included the provision of passing bays on the (unnamed) road linking this site with Easton, without any works proposed at any other location, such as the A47 roundabout at Easton.
- 10.7 It is further noted that the junction modelling predicting the operation of Easton roundabout with traffic growth and the additional traffic associated with this development reached an RFC

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<sup>10</sup> Broadland Ref 20170052

of 0.98 during the PM peak, with a maximum predicted queue of 25 PCUs, which was deemed acceptable.

#### *Easton Village Growth*

10.8 The Easton Village Growth<sup>11</sup> includes ***“The erection of 890 dwellings; the creation of a village heart to feature an extended primary school, a new village hall, a retail store and areas of public open space; the relocation and increased capacity of the allotments; and associated infrastructure including public open space and highway works”***.

10.9 The trip generation and distribution associated with the Easton Village was gathered from the Transport Assessment prepared by Aecom. Amongst the mitigation package offered by the developer to offset the proposals, the following proposals have been identified:

- the (minor) reconfiguration of the priority junction to the south of the Easton roundabout (junction with an unnamed road), in this Transport Assessment referenced to as “junction 4”;
- provision of a 3m wide foot/ cycle way along the entire length of Dereham Road within Easton, with associated narrowing of the carriageway and crossing points;
- footways and Toucan crossings at Longwater interchange, linking to the existing provision.

10.10 No highway improvement schemes along the A47 were noted.

#### *Flow diagrams*

10.11 Traffic flow diagrams have been prepared for both committed developments and included within **Appendix C**.

#### **Growth**

10.12 TEMPro Growth Factors have been extracted allowing a forecast traffic growth from 2018 (year of Baseline surveys) to 2023 (when major infrastructure improvements on the A47 are due to be completed) as shown in Table 10.1 below. Norfolk and South Norfolk factors were then adjusted within TEMPro to take into account of the 900 houses at Easton – separately accounted for as committed – to avoid double counting. No discount has been made for the Food Enterprise Park, as its inclusion within TEMPro is uncertain.

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<sup>11</sup> South Norfolk ref. 2014/1792

Table 10.1 TEMPro Growth Factors, from 2018 to 2023

		Rural Trunk		Rural Minor	
		AM	PM	AM	PM
County	Norfolk	1.1044	1.1043	1.086	1.086
District	Broadland	<b>1.1188</b>	<b>1.1212</b>	1.100	1.102
	Norwich	1.1053	1.1034	1.086	1.085
	South Norfolk	1.1098	1.1112	1.091	1.092

TEMPro 7.2

- 10.13 The highest growth factors (**1.1188** and **1.1212**, over the two peaks) were considered in the assessment, to all approaches, regardless of the type of the road. It must be noted that the factors used are those for Broadland, for which no adjustments were made.

### Junction Modelling

- 10.14 Junction modelling was undertaken at a number of junctions over the study area network. Junctions 6 and 7 have not been modelled in consideration of the absence of queues during the day of the surveys and the negligible (or nil) trip generation expected at the junctions (**Appendix C**). Junction 1 was initially modelled, but it became apparent that conventional junction modelling tools were not appropriate to apply, as the models failed to replicate existing conditions. This is due to the unconventional arrangement of give way markings within the priority configuration at the junction. Professional judgement was instead used to conclude that the limited amount of trips predicted to result from Phase I would not result in a severe impact at this location.
- 10.15 Modelling was undertaken for the following scenarios listed at Table 10.2.

Table 10.2 Modelling Scenarios

Scenario Name	Traffic Flows	Infrastructure Works
2018 Base	As observed (November 2018)	-
2023 Future Base	2018 + Growth + Committed	J4 – Easton Village mitigation J5 - Longwater Interchange
2023 Forecast with Development	Future Base + 600 Development	As described in the text

- 10.16 The results of the modelling have been summarised as follows, with the full modelling results and the modelling parameter drawings included within **Appendix L**.



**Junction 2 – A47 / Honingham Roundabout**

- 10.17 The junction was modelled using Junctions 9 and the results have been summarised at Table 10.3.

Table 10.3 Junction Modelling Results - Junction 2 (A47 / Honingham Roundabout)

	AM Peak			PM Peak		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
<b>2018 Base</b>						
E - A47 East	32	90	1.04	20	61	1.01
SW – Norwich Road	1	9	0.42	0	6	0.21
NW - A47 West	64	211	1.14	25	86	1.03
<b>2023 Future Base</b>						
E - A47 East	131	361	1.2	106	292	1.17
SW – Norwich Road	1	10	0.48	0	7	0.24
NW - A47 West	200	686	1.36	100	334	1.2
<b>2023 Forecast with Development (600 units)</b>						
E - A47 East	170	459	1.25	116	324	1.19
SW – Norwich Road	1	10	0.48	0	7	0.24
NW - A47 West	211	721	1.37	128	420	1.24

Source: Junctions 9 v. 9.5.0.6896; rounded figures

- 10.18 The results of the model have revealed that the junction currently operates slightly over capacity with the observed traffic volumes.
- 10.19 A calibration of the model, obtained adjusting the capacity of all approaches to 120%, was applied to the roundabout, as shown in the appended results. This calibration tool was used to take into account of the fact that while the model predicts queues on both A47 approaches, however, these in reality appear to be slowly moving vehicles approaching the roundabout.
- 10.20 This three-arm roundabout, is characterised by few opposing movements, and the traffic from Phase I would not result in any additional such movements.
- 10.21 With or without the capacity adjustment, the development proposals are predicted to result in a negligible increase in RFC, when compared to the Future Base scenario.

10.22 Bearing in mind that the A47 is due to be dualled between 2022 and 2023, it is considered that the additional delays during the peak hour periods would be acceptable, especially in the light of:

- unmitigated future base, i.e. committed developments and future growth (approximately +11, +12%) have not mitigated their own impact);
- high trip rates of the proposed development and highest growth assumed on all approaches.

10.23 Should the HE deem it necessary, the impact at the roundabout could be fully mitigated with the creation of two lane approaches on both A47 arms of the roundabout, mostly using the existing hatched areas. The results of the updated modelling shown at Table 10.4. However, as the impact predicted is not envisaged to result to impact on safety as any delay can be accommodated along the corridor at this location, it would be deemed unnecessary to implement the scheme.

Table 10.4 Junction Modelling Results - Junction 2 (A47 / Honingham Roundabout) with Mitigation

	AM Peak			PM Peak		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
<b>2023 Forecast with Development (600 units) and Mitigation</b>						
E - A47 East	7	17	0.89	5	13	0.85
SW – Norwich Road	2	17	0.61	0	8	0.29
NW - A47 West	8	24	0.91	5	13	0.83

Source: Junctions 9 v. 9.5.0.6896; rounded figures

### Junction 3 – A47 / Easton Roundabout

10.24 The junction was modelled using Junctions 9 and the results have been summarised at Table 10.5.

Table 10.5 Junction Modelling Results - Junction 3 (A47 / Easton Roundabout)

	AM Peak			PM Peak		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
<b>2018 Base</b>						
N – Church Lane	1	7	0.44	0	4	0.13
E - A47 East	3	7	0.72	2	6	0.68
S – Dereham Road (Easton)	0	4	0.12	0	4	0.22

	AM Peak			PM Peak		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
W - A47 West	2	4	0.59	1	4	0.54
<b>2023 Future Base</b>						
N – Church Lane	2	17	0.68	0	6	0.2
E - A47 East	11	22	0.93	5	12	0.85
S – Dereham Road (Easton)	1	6	0.38	1	7	0.53
W - A47 West	3	6	0.72	2	5	0.67
<b>2023 Forecast with Development (600 units)</b>						
N – Church Lane	5	45	0.89	0	7	0.24
E - A47 East	17	32	0.98	16	30	0.97
S – Dereham Road (Easton)	2	12	0.71	2	9	0.64
W - A47 West	4	9	0.8	3	6	0.72

Source: Junctions 9 v. 9.5.0.6896; rounded figures

- 10.25 The results of the model have revealed that the junction at present operates within desirable capacity, as validated by the observed queues.
- 10.26 In the future base scenario, which is unmitigated despite some substantial developments in the immediate vicinity of the roundabout, namely the Food Enterprise Park and the Easton Village Growth, the roundabout would reach the maximum theoretical capacity but still not exceed the 1.00 RFC threshold.
- 10.27 The additional, proposed 600 units at Honingham Thorpe would result in a negligible increase in RFC, queues and delays. In consideration of the imminent dualling of the A47, the fact that a 0.98 RFC was deemed acceptable in the Easton Village application without any mitigation works, it is considered that the impact at this junction would be similarly acceptable.

#### **Junction 4 – Dereham Road / Unnamed Road Priority Junction (Easton)**

- 10.28 The junction was modelled using Junctions 9 and the results have been summarised at Table 10.6.

Table 10.6 Junction Modelling Results - Junction 4 (Dereham Road / Unnamed Road)

	AM Peak			PM Peak		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
<b>2018 Base</b>						
Unnamed Road (Church Lane)	0	5	0.06	0	5	0.06
Dereham Road	0	5	0.08	0	5	0.02
<b>2023 Future Base</b>						
Unnamed Road (Church Lane)	1	7	0.37	1	7	0.41
Dereham Road	2	11	0.57	1	7	0.29
<b>2023 Forecast with Development (600 units)</b>						
Unnamed Road (Church Lane)	5	27	0.85	1	11	0.58
Dereham Road	3	17	0.72	3	17	0.72

Source: Junctions 9 v. 9.5.0.6896; rounded figures

Table 10.7 Junction Modelling Results - Junction 4 (Dereham Road / Unnamed Road) – with “Easton Village Growth” mitigation

	AM Peak			PM Peak		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
<b>2023 Future Base</b>						
Unnamed Road (Church Lane)	1	7	0.37	1	8	0.41
Dereham Road	1	10	0.47	0	7	0.25
<b>2023 Forecast with Development (600 units)</b>						
Unnamed Road (Church Lane)	4	24	0.82	1	11	0.57
Dereham Road	2	13	0.6	2	13	0.62

Source: Junctions 9 v. 9.5.0.6896; rounded figures

- 10.29 The results of the model have revealed that the junction would operate satisfactorily in all scenarios.

**Junction 5 – Longwater Interchange***North Dumbbell*

- 10.30 The north dumbbell was modelled using Junctions 9 and the results have been summarised at Table 10.8.

Table 10.8 Junction Modelling Results - Junction 5N (Longwater North Dumbbell)

	AM Peak			PM Peak		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
<b>2023 Future Base</b>						
N – William Frost Way	4	13	0.78	2	8	0.60
E – Dereham Road	43	93	1.07	5	13	0.85
S – A47 Overpass	2	5	0.61	20	37	0.99
W - A47 Off-slip	1	7	0.49	6	41	0.91
<b>2023 Forecast with Development (600 units)</b>						
N – William Frost Way	5	19	0.85	2	9	0.61
E – Dereham Road	59	121	1.10	9	20	0.92
S – A47 Overpass	2	5	0.62	20	37	0.99
W - A47 Off-slip	3	14	0.73	11	62	0.99

Source: Junctions 9 v. 9.5.0.6896; rounded figures

- 10.31 The results of the model have revealed that the junction is predicted to operate above maximum theoretical capacity in the Future Base scenario. Delays and queues are predicted on the Dereham Road approach, in the AM and PM peak periods, however, can easily be accommodated within existing road space.
- 10.32 In the Phase I scenario, the addition of the forecast development traffic would result in a negligible impact on the network, compared to the future base, with a negligible increase in RFCs, queues and delays.
- 10.33 It is understood that NCC have been investigating, in the past, possible options to improve capacity at this junction. While more radical solutions might probably be preferable, especially in the long term (widening of the roundabout, the creation of two overbridges, signalisation of one or more approaches, etc), it would be disproportionate to seek such an improvement to offset the impact of Phase I. This is in particular true in the light of the discussed negligible impact that it would have on the roundabout, compared to the unmitigated growth.
- 10.34 Notwithstanding this and to demonstrate that a possible solution to this issue is available, the creation of a Segregated Left Turn Lane from the Dereham Road (East) approach to the roundabout was tested. The results are illustrated below and demonstrate that such a solution would mitigate the impact.

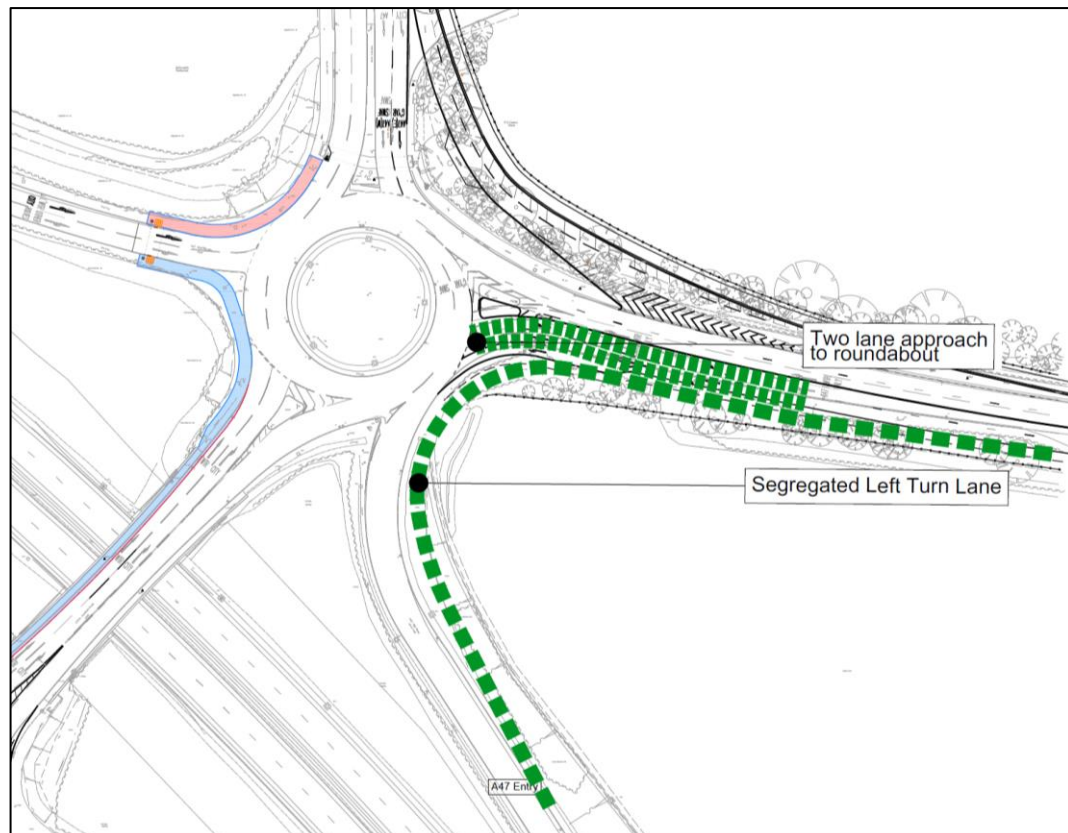
**Table 10.9 Junction Modelling Results - Junction Modelling Results - Junction 5N (Longwater North Dumbbell) – with possible mitigation**

	AM Peak			PM Peak		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
<b>2023 Forecast with Development (600 units) and Mitigation</b>						
N – William Frost Way	5	19	0.85	2	9	0.61
E – Dereham Road	6	21	0.87	7	21	0.89
S – A47 Overpass	2	5	0.62	20	37	0.99
W - A47 Off-slip	3	14	0.73	11	62	0.99

Source: Junctions 9 v. 9.5.0.6896; rounded figures

10.35 It must be noted that the creation of a DMRB<sup>12</sup> compliant SLTL is subject to a topographical survey, the receipt of highway boundary information (at the time of writing yet to be received) and the approval of Highways England, but some preliminary analysis suggests that such an improvement should be feasible (**Figure 10.1**).

**Figure 10.1 Indicative sketch of a Segregated Left Turn Lane at Longwater North Dumbbell**



<sup>12</sup> Design Manual of Road and Bridges

*South Dumbbell*

- 10.36 The south dumbbell roundabout was modelled on LinSIG, in the proposed (committed) layout and the results have been summarised at Table 10.10.

Table 10.10 Junction Modelling Results - Junction 5S (Longwater South Dumbbell)

	AM Peak			PM Peak		
	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Queue (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Mean Max Queue (pcu)
<b>2023 Future Base</b>						
N – A47 Overpass	88.1	5.6	10	89.3	5.2	7
E - A47 Off-slip	83.7	7.6	8	89.7	11.2	10
S – Long Lane	8.9	0.0	0	21.7	0.1	0
W – Dereham Road (Easton)	21.6	0.1	0	25.3	0.2	0
<b>2023 Forecast with Development (600 units)</b>						
N – A47 Overpass	89.1	6.2	12	89.0	7.7	17
E - A47 Off-slip	88.6	9.9	10	88.7	15.1	18
S – Long Lane	9.0	0.0	0	89.6	0.1	0
W – Dereham Road (Easton)	22.1	0.1	0	22.3	0.2	0

Source: LinSIG; rounded figures

- 10.37 Modelling results have revealed that the junction would operate within the maximum theoretical capacity in all scenarios. Results for the internal links (within the circulatory) have not been included in the summary table but are fully appended.

**Possible Mitigation**

- 10.38 In summary, the following conclusions (Table 10.11) can be drawn on the impact at the junctions and the possible mitigation solutions.

Table 10.11 Mitigations at assessed junctions

<b>Junction</b>	<b>Mitigation*</b>
A47 / Easton Roundabout (Junction 3)	No mitigation needed
A47 / Honingham Roundabout (Junction 2)	Mitigation available if requested by HE: widening of the approaches to two lanes on the A47
Church Lane / Dereham Road (Junction 4)	No mitigation needed
Longwater North Dumbbell Roundabout	Junction predicted to operate above capacity in Future Base. Mitigation will be needed with or without Honingham Thorpe
Longwater South Dumbbell Roundabout	No mitigation needed

\* for Phase I



## 11 FUTURE MODELLING

11.1 Future modelling for the wider Site will be undertaken using the recently updated Saturn model that was used for the Western Link option assessment. This model was initially used as part of the assessment of the A47 RIS schemes, when Highways England updated the 2012 NATS model by:

- Refining the zoning detail in the west of the NATS model area;
- Including additional road network where missing links or junctions could potentially distort model access on the A47
- Combine model update information from multiple sources to derive a 2015 base year model

11.2 The model has been rebased using more detailed data including the use of mobile data sets to further develop demand assumptions within the model, while zone disaggregation to better reflect the loading of trips onto the local road network, network auditing around the study area and improved link validation in the study area will further improve the forecasting accuracy of the model. The 2015 Highways England NATS model has been updated by:

- Refining the zoning detail in the west of the NATS model area
- Including additional road network to provide greater accuracy of local roads between the A27 and A1067 to better inform traffic patterns in the Norwich Western Link study area
- Using localised 2015 ATC data the 2015 NATS model has been recalibrated to better reflect 2015 flows on those minor roads linking the A47 and A1067.

11.3 The 2015 NATS model after this refinement is referred to as the Norwich Western Link (NWL) model and has been re-validated and provides a very good representation of the existing network<sup>13</sup>.

11.4 Discussions to use the model for future assessment have been initiated with NCC. The NWL model will allow for a more accurate distribution and assignment of traffic, providing future flows for up to three future year scenarios:

- 2025: Opening year;
- 2040: Design year; and
- 2050: Horizon year.

11.5 This will allow for more detailed modelling to be undertaken at the next stage of assessment.

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<sup>13</sup> Norwich Western Link – Option Assessment Report, Ref 70041922-WSP-OAR, October 2018, Norfolk County Council

## 12 SUMMARY AND CONCLUSIONS

### Summary

- 12.1 Honingham Thorpe is a residential-led, mixed use development proposed by Clarion Housing Group to the south of the A47, between the villages of Honingham, Easton, Colton and Barford, in Norfolk. The Site, currently undeveloped, is adjacent to the committed Food Enterprise Park (FEP), which benefits from a recently approved Local Development Order and it is close to the urban extension to the south of Easton, comprising around 900 residential units.
- 12.2 The emerging masterplan proposals include up to 7,500 residential units, 72ha of employment space, a Country Park and natural reserve. The new settlement will be designed following the garden community principles.
- 12.3 This report has illustrated the transport implications of a first phase of the development and its deliverability without the reliance on the major committed infrastructure improvements such as the A47 North Tuddenham to Easton improvement scheme and the creation of the Norwich Western Link. It was prepared to inform the Client, the Strategic and Local Highway Authorities (Highways England and Norfolk County Council, respectively), the Greater Norwich Growth Board and all the other decision makers and stakeholders of the potential transport issues that might arise from the proposals and their mitigation.

### Baseline

- 12.4 Reflecting the rural setting of the Site and of the surrounding villages, limited services and facilities are available within short distance from the Site. Pedestrian infrastructure is limited, and the closest cycle routes are in Norwich.
- 12.5 Public transport services are available at both Honingham and Easton. They include the fast service Excel, stopping at Easton, linking to both Norwich and King`s Lynn. Two Park and Ride sites are available within short driving distance from the Site.
- 12.6 The Site is in close proximity to the A47, which carries a strategic role within the region and which will benefit from important infrastructure improvements, namely its dualling between North Tuddenham and Easton, between 2021 and 2023, and the creation of the Norwich Western Link.
- 12.7 The stretch of the A47 in the vicinity of the Site is classified as a “medium-low risk road” by the *Road Safety Foundation’s ‘British Eurorap Results 2018: getting back on track’* Report. While a number of accidents have been identified by the review of Personal Injury Accidents occurred within the vicinity of the Site over the last five-year period, no common cause has been identified, with the great majority of them being attributed to driver`s error. None of the accidents were solely attributed to the layout of the local highway network.

*Stakeholder Engagement*

- 12.8 Whilst the project is still in its early stages, a number of meetings and presentations were held so far to present the project to some key stakeholders, including the Greater Norwich Growth Board, Highways England and Norfolk County Council, as the strategic and local Highway Authorities, respectively. The importance of collaborative work between all the parties is recognised and welcomed, with the common aim to find the best transport solutions for the wider area and the Site as it comes forward.

*Access*

- 12.9 The masterplan will ensure that the Site is permeable, easily accessible and inclusive and meets the best practice guidance set out in documents like Manual for Streets, Manual for Streets 2, Providing for Journeys on Foot and CIHT guidance.
- 12.10 Sustainable access will be achieved from the first phase of the development. Improvements will be made to the existing network where limited infrastructure is provided at present, comprising the creation of a 3m wide, shared footway / cycleway on the (unnamed) road running along the Food Enterprise Park and connecting to Easton, to the east. Furthermore, should the committed pedestrian/cycle improvements proposed as part of the Easton Village Growth not be delivered, the Client will commit to provide such improvements, which were welcomed and agreed with NCC.
- 12.11 A primary school will be created from Phase I and ensure that the pupils of the proposed residential properties would be able to access the new facility within recommended distances and safety standards. To improve connectivity, it is also proposed to enhance the route between the Food Enterprise Park and Easton and Otley College.
- 12.12 The reduction in the reliance on the use of the private vehicle will be promoted and enforced by a travel plan, for the future residents, employees, students and users of the Site.
- 12.13 The Site, from Phase I, will additionally benefit from a new BRT being proposed along Dereham Road (New Costessey) and that will be extended to Easton. Further stakeholder engagement will take place with NCC to find the best solutions to connect the Site with the BRT route. It is proposed that the existing route is extended to our Site to enhance connections with the new community. Alternative options to provide public transport within the Site are available.
- 12.14 The vehicular access strategy for the Site is subject to further review in liaison with HE and NCC, after undertaking strategic transport modelling which will include the A47 North Tuddenham to Easton improvement scheme and Norwich Western Link. At present the alignment for the A47 is fixed and the details for the junctions will now be further developed. The last iterations of the plans illustrate a Vehicular access to the Site via a large new roundabout on the A47, following the dualling to be completed by 2023. Access to a first phase of the development would be achieved from Easton.

*Impact on Road Network*

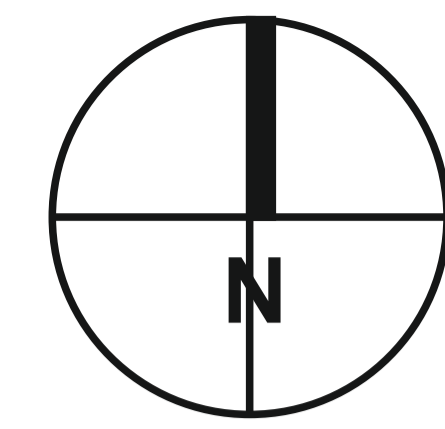
- 12.15 The Forecast Travel Demand associated with the first phase of the development was estimated a first principle approach, based on a combination of TRICS data and Census statistics. It was chosen to make very robust assumptions, such as the adoption of high vehicular trip rates and no internalisation of trips, to convince the key stakeholders on the deliverability of the first phase of the development. Particularly, trip rates used in the assessment were considerably higher than those used in other planning applications, such as the one for the Easton Village.
- 12.16 Traffic growth to 2023 was assumed using the highest TEMPro factors. Junction modelling was undertaken assuming unmitigated growth, i.e. additional development traffic (from other sites) but no highway improvements mitigating their own impact.
- 12.17 Impact at the junctions in the vicinity of the Site would be negligible. The Easton roundabout, due to be removed by the new A47 alignment between 2021 and 2023, is predicted to operate within maximum theoretical capacity with the additional development traffic. The Honingham roundabout, similarly due to be removed, is predicted to exceed its capacity, with or without the addition of the development traffic; a mitigation solution at the junction, deemed disproportionate in relation to the actual impact of the development and therefore unnecessary, is however available, to more than offset the development impact. At the Longwater Interchange, the south dumbbell roundabout is predicted to operate within capacity in its committed layout, while the north roundabout would exceed capacity in a Future Base (2023) scenario, with or without the development traffic. Also in this case, a possible solution, subject to highway boundary data and design, is available, should it be deemed necessary, albeit disproportionate to the actual impact of the development.

**Conclusion**

- 12.18 The Site will be designed and assessed in accordance with national, regional and local policies and best practice. As stressed by the NPPF, ***“the purpose of the planning system is to contribute to the achievement of sustainable development”***. That is the principle that is guiding the masterplan development process, to help achieving sustainable access.
- 12.19 The central importance of the sustainability of the Site is acknowledged; improvements to pedestrian, cycle and public transport infrastructure are proposed as part of a first phase of the development. The Site will serve as the new centre of a regeneration of the whole surrounding area, which has, at present, limited connections with the surrounding towns and Norwich. It will enhance connections with Easton, the new village to the south of it, as well as the Food Enterprise Park.
- 12.20 Impact on the surrounding highway network would be negligible, particularly in consideration of the conservative assumptions made throughout the whole assessment, such as high trip rates, no internalisation of trips and unmitigated traffic growth. In addition, major infrastructure improvements in the area will take place by 2023, including the A47 North Tuddenham to Easton improvement scheme and Norwich Western Link.

- 12.21 Stakeholder engagement has already been undertaken and there is a commitment to continue to work closely with Highways England and Norfolk County Council to find and agree on the best transport solutions for the Site. The provision will include the key infrastructure projects in the area, namely the dualling of the A47, the Western Link and the emerging proposals of the BRT within Dereham Road and Easton.
- 12.22 It is considered that a first phase of the Site as demonstrated in this report would not result in a severe impact on the highway network. It is on the contrary believed that it would contribute to the regeneration of an area within Norfolk which currently has limited connections to Norwich and the surrounding areas, despite its close proximity to the city.

# APPENDIX A



### LEGEND

-  CLARION RESI MEDIUM DENSITY
-  CLARION RESI HIGH DENSITY SETTLEMENT CENTRE
-  CLARION RESI MARKET SQUARE
-  NEW JUNCTION FROM A47
-  EMPLOYMENT AREAS
-  WOODLAND
-  PUBLIC OPEN SPACE
-  SUDS
-  GOWING DEVELOPMENT
-  THIRD PARTY LAND INSIDE DEVELOPMENT ZONES
-  PRIMARY SCHOOL/ LOCAL CENTRE
-  SPORTS PITCHES

