



Norfolk County Council

A140 LONG STRATTON BYPASS

Scheme History Technical Note

TECHNICAL NOTE - CONFIDENTIAL

PROJECT NO. 70039894

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1. INTRODUCTION

- 1.1.1. This technical note forms a summary of the previous options appraisal work which has been undertaken to date for the development of a bypass for the A140 at Long Stratton, South Norfolk.
- 1.1.2. The concept for the development of a bypass for the A140 at Long Stratton, South Norfolk, was first raised as far back as the 1930s. In 2005 Norfolk County Council (NCC) secured planning consent for a dual carriageway bypass for the village, however the scheme did not progress as it was not awarded funding through the Regional Funding Allocation process. Securing a bypass for Long Stratton remains a priority to deliver the growth allocated in the Joint Core Strategy (JCS) (2014) and Long Stratton Area Action Plan (AAP) (2016).
- 1.1.3. Following previous option appraisal work as part of the development of the 2005 Major Scheme Business Case, it was agreed with the Department for Transport (DfT) that a full Options Assessment Report (OAR), was not necessary for the scheme in its current form.
- 1.1.4. The note provides an alternative to an OAR and sets out the history of the scheme to date, including how this has led to the current bypass design. The note has been prepared to support the Long Stratton Bypass Strategic Outline Business Case (SOBC).
- 1.1.5. The study area for this review is based upon the Long Stratton Area Action Plan's development boundaries and is illustrated in **Figure 1**.

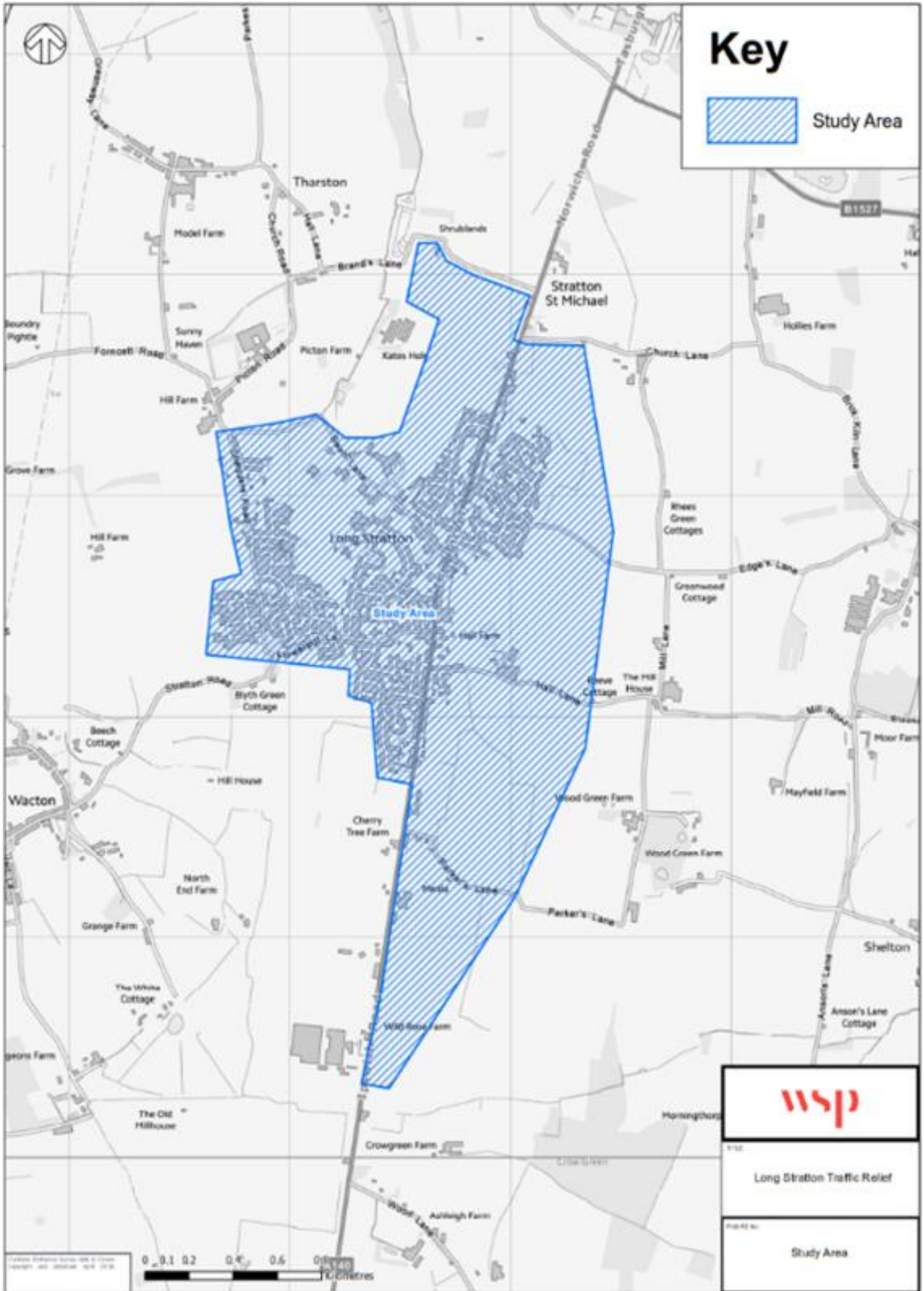


Figure 1 - Study Area

- 1.1.6. The progression of the of the scheme development to date is shown on the right in Error! Reference source not found..
- 1.1.7. The report is structured as follows:

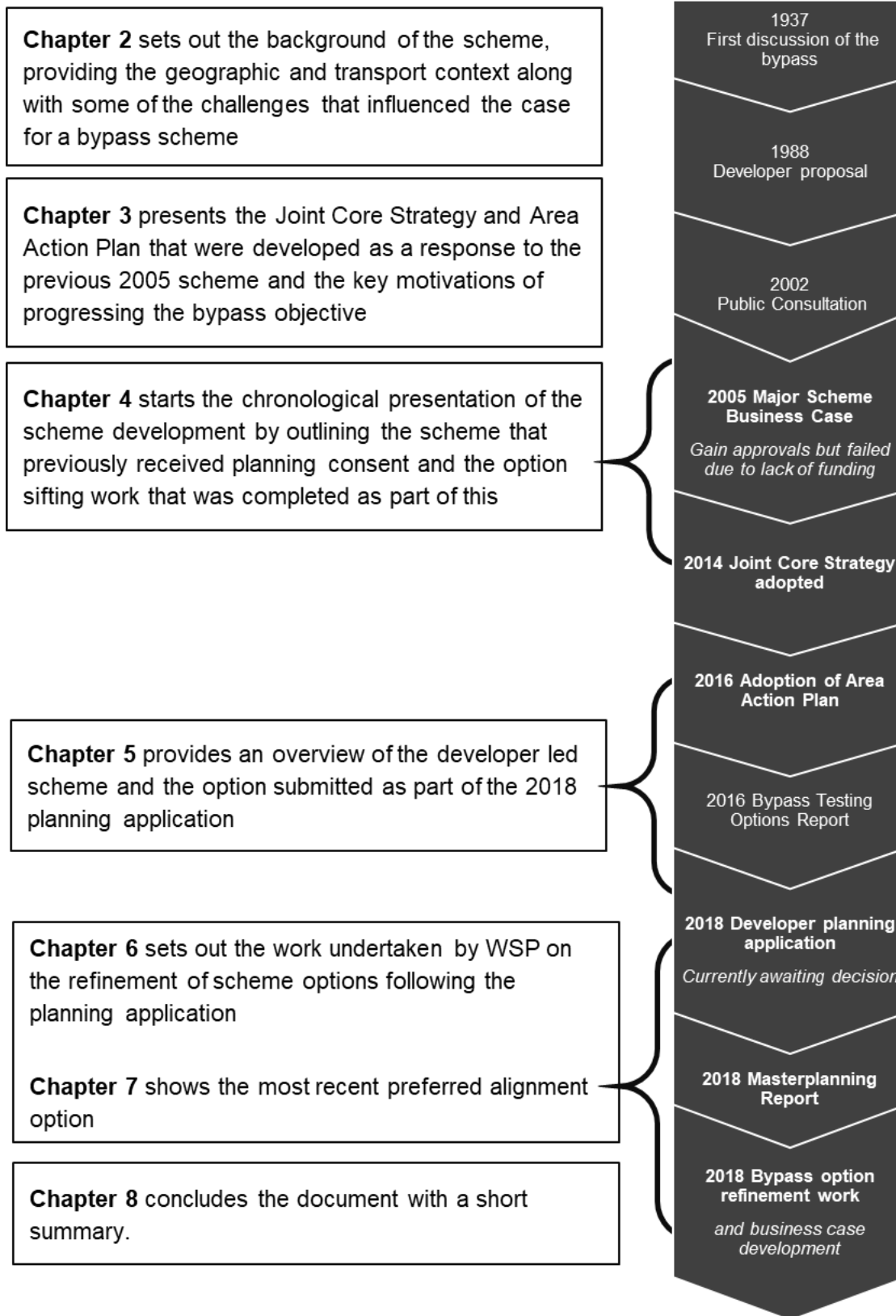


Figure 2 – Scheme Timeline

2. BACKGROUND

2.1. GEOGRAPHIC CONTEXT

- 2.1.1. Long Stratton is a large village within the district of South Norfolk, in the county of Norfolk. The location of the Village is shown in **Figure 3**. The county and the area around the study area is predominantly rural in nature, with the primary urban and employment centre being Norwich, which accounts for 60% of all the county's employment.
- 2.1.2. The primary shopping facilities in Long Stratton are located along the A140, with the residential areas sitting astride the road, primarily to the west at present. The village centre is designated within the Long Stratton AAP as a conservation area.
- 2.1.3. The village schools, leisure centre and council offices are also located to the western side of the village, as is the Tharston Industrial Estate, which is one of the primary employment sites in South Norfolk. The district is otherwise sparsely populated outside of Diss; located on the border with Suffolk.
- 2.1.4. The Joint Core Strategy (JCS) for Broadland, Norwich And South Norfolk (adopted January 2014) identifies the village as having *“by far the best range of local shops, services and employment opportunities in the area.”*

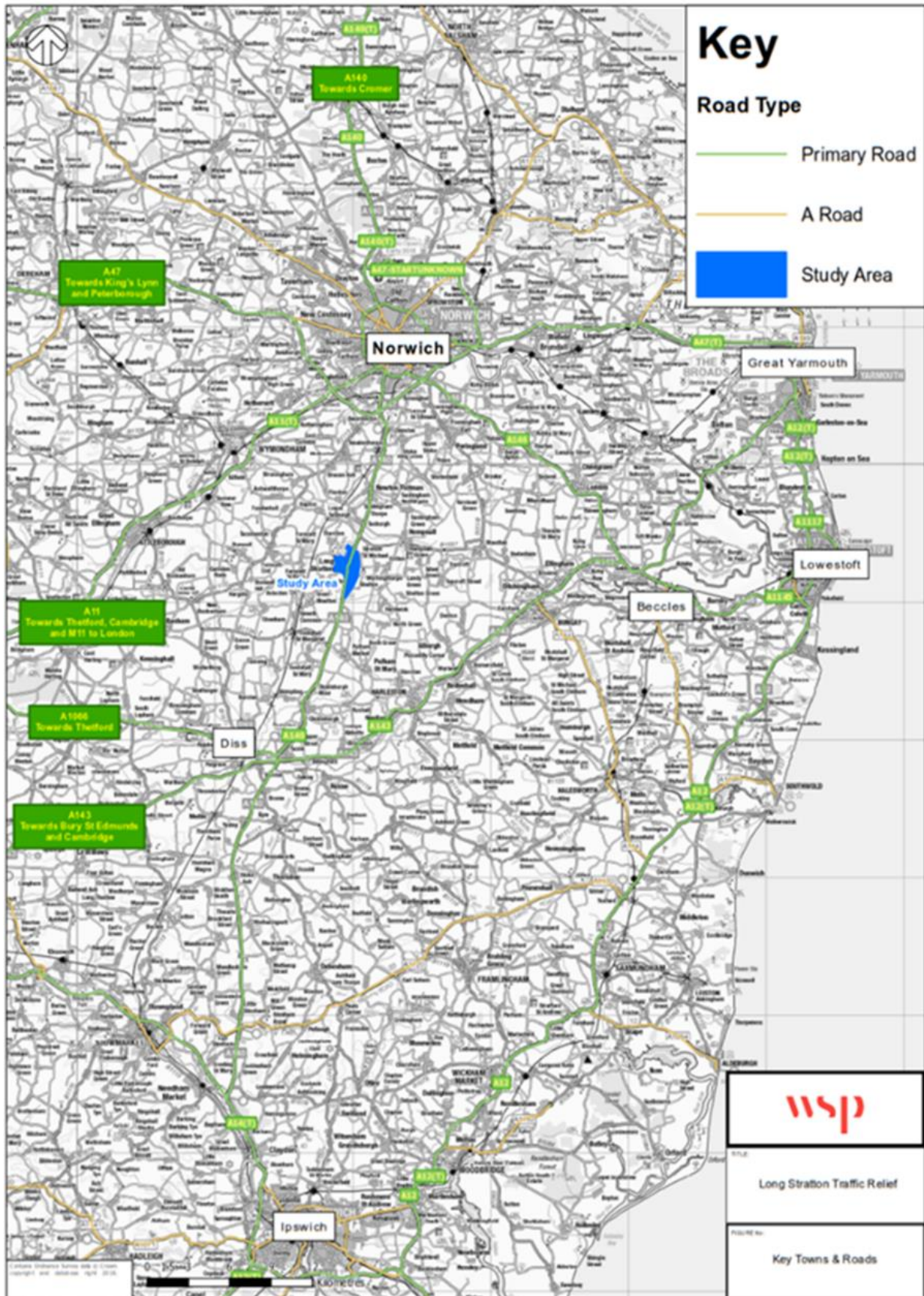


Figure 3 - Surrounding Road Network

2.2. TRANSPORT CONTEXT

ROAD CONNECTIONS

- 2.2.1. The study area is focused on the A140, a former trunk road, where it passes through Long Stratton on a north to south axis. The road's northern end terminates in the resort town of Cromer via Norwich, the county town of Norfolk, whilst the southern end terminates in Ipswich, the county town of Suffolk. These locations are illustrated in **Figure 3 and 4**.
- 2.2.2. In the absence of a direct Strategic Road Network (SRN) link between Norwich and Ipswich, the A140 is the main route connecting the two major centres, as can be seen in **Figure 4**.
- 2.2.3. From Norfolk, the A140 connects to the wider UK road network including the A47 west towards Kings Lynn and Central England, the A47 east towards Great Yarmouth and Lowestoft and the A146 towards Lowestoft.
- 2.2.4. To the south, the A140 connects at Scole with the A1066 (for Thetford and thence Newmarket and Cambridge), the A143 west towards Bury St Edmunds and the A143 east towards Lowestoft. The A140 connects with the nationally important link, the A14, at junction 51. This route provides strategic connections to the port of Felixstow, Cambridge, the A1 and Midlands.
- 2.2.5. Subsequently, the road provides a link between three of the primary towns and cities in the east of England. As such, the road carries a considerable amount of through traffic, which conflicts with the 'place' function of the road in Long Stratton, where it also serves as the village's primary shopping street.
- 2.2.6. The A140 is part of the Department for Transport's proposed Major Road Network (MRN) and as such is a strategically important A-road. A map of the roads included in the indicative MRN and their connections to the Strategic Road Network (SRN) is shown in **Figure 4**.

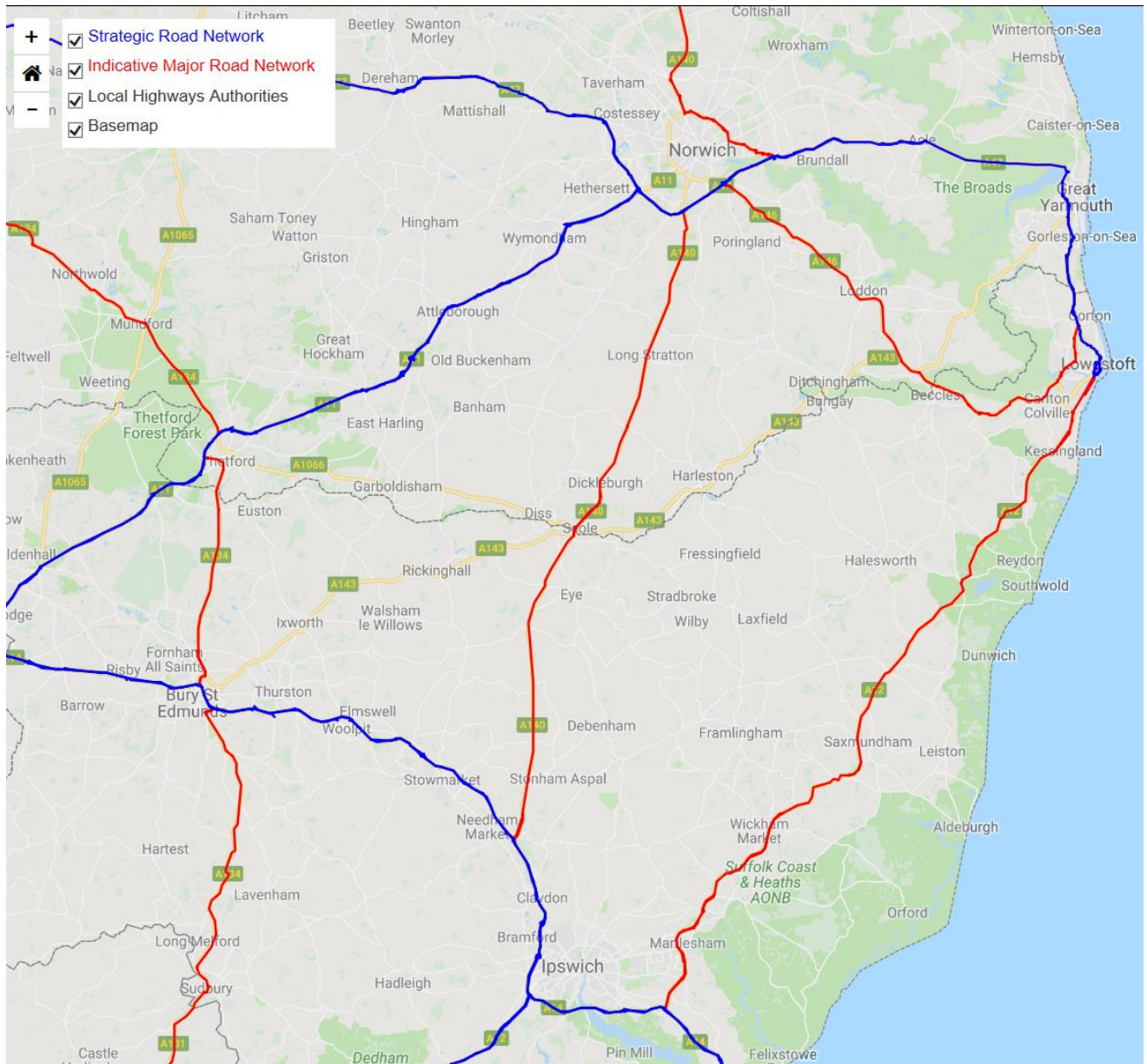


Figure 4 - DfT's Indicative MRN

PUBLIC TRANSPORT CONNECTIONS

- 2.2.7. Long Stratton is well served by bus routes along the A140.
- 2.2.8. **Figure 5**, shows the network of buses which serve the village and provide the primary alternative to the private car in the village, due to the lack of a nearby railway station. This is supported by **Table 1**, which sets out the frequency of the bus services to / from Long Stratton.

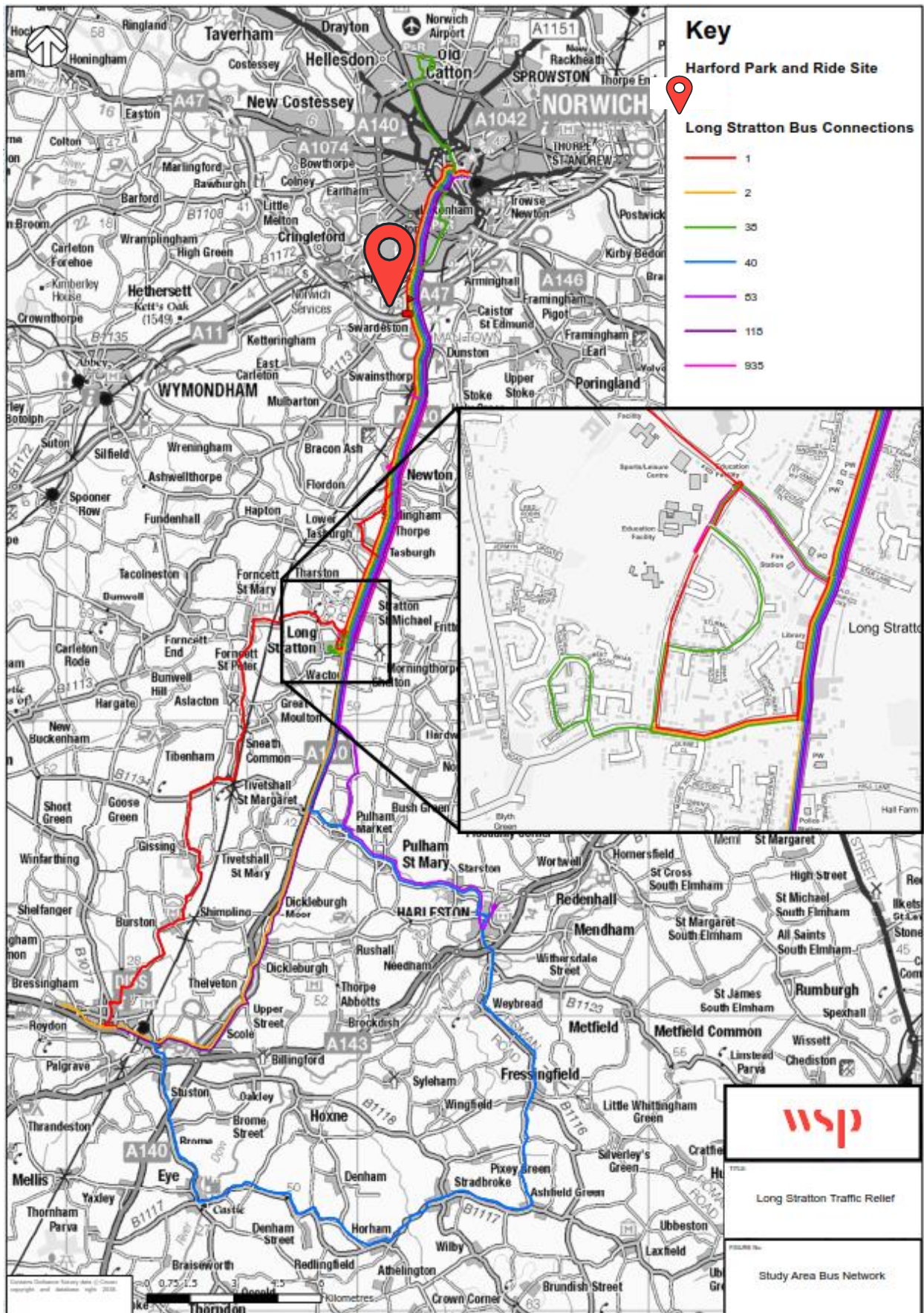


Figure 5 - Existing Bus Connections to / from Long Stratton

Table 1 - Bus Frequencies to / from Long Stratton

Route	From	Time Est to Destination	To	Buses Per Hour	Buses Per Hour	Buses Per Hour
				AM	IP	PM
1	Norwich	35	Diss	1 (Starts in Long Stratton)	1	1
	Diss	50	Norwich	1	1	0
2	Norwich	20	Diss	0	1	1
	Diss	46	Norwich	1	1 (every second bus starts in Long Stratton)	1 (every second bus starts in Long Stratton)
38	Long Stratton	39	Norwich	2	2	2
	Norwich	32	Long Stratton	2	2	2
40	Norwich	82	Diss	1 bus on Saturday		
	Diss	35	Norwich			
83	Long Stratton	32	Harleston	0	1	1
	Harleston	26	Long Stratton	1	1	1
118	Long Stratton	28	Norwich	Sundays Only		
	Norwich	21	Long Stratton			
935	Swainsthorpe	30	Long Stratton	1 bus only		
	Long Stratton	20	Swainsthorpe		1 bus only	

2.2.9. The bus services provide frequent links to the regional centre of Norwich and large town of Diss. However, in some cases journey times are significant longer than by private vehicles. For example, the journey time to Diss by bus is circa 50 minutes, compared to the equivalent car journey time of approximately 25-30 minutes.

2.2.10. It is also worth noting that trips into Norwich from the village by road can be intercepted by the Harford Park and Ride site at the A140 / A47 junction, approximately 5km south of the centre of Norwich, as shown in **Figure 5**.

ACTIVE MODES

2.2.11. Walking and cycling facilities in the study area are not well developed. There is no locally recognised walking or cycling route to or from Long Stratton. The nearest is the Boadicea Way walking and cycling trail between Norwich and Diss, which runs parallel to the A140 and passes Long Stratton just over a mile to the east at Morningthorpe. This route is largely indirect and, as such, does not provide any notable transport connections. Furthermore, the distances involved are generally too long for commuting by active modes.

- 2.2.12. There are several existing Public Rights of Way (PROWs), as shown in **Figure 11** (page 33), providing routes to / from Long Stratton. The size of the village means that facilities are largely within one mile and, thus, reasonably accessible by walking. There are several signalised pedestrian crossings within the village centre and three island crossings.

RAIL CONNECTIONS

- 2.2.13. The A140 runs parallel to the Great Eastern Mainline between London Liverpool Street and Norwich via Stowmarket, Ipswich and Colchester. Services operate at a 30-minute frequency. The nearest stations on the line are Diss (12 miles south) and Norwich (12 miles north). From Norwich, connections can be made to Great Yarmouth, Lowestoft and Cambridge. From Diss, connections can be made to Ely and Cambridge.
- 2.2.14. Historically, there was a station on this line approximately 2 miles west of Long Stratton, at “Forncett” which closed in 1966.
- 2.2.15. The nearest station to the village is Spooner Row on the Cambridge to Norwich Line. However, this station is only served by three trains a day, two towards Norwich and one towards Cambridge, with the latter being at an inconvenient time for commuting purposes, leaving Norwich at 16:38.
- 2.2.16. A map of the Rail network is shown in **Figure 6**.

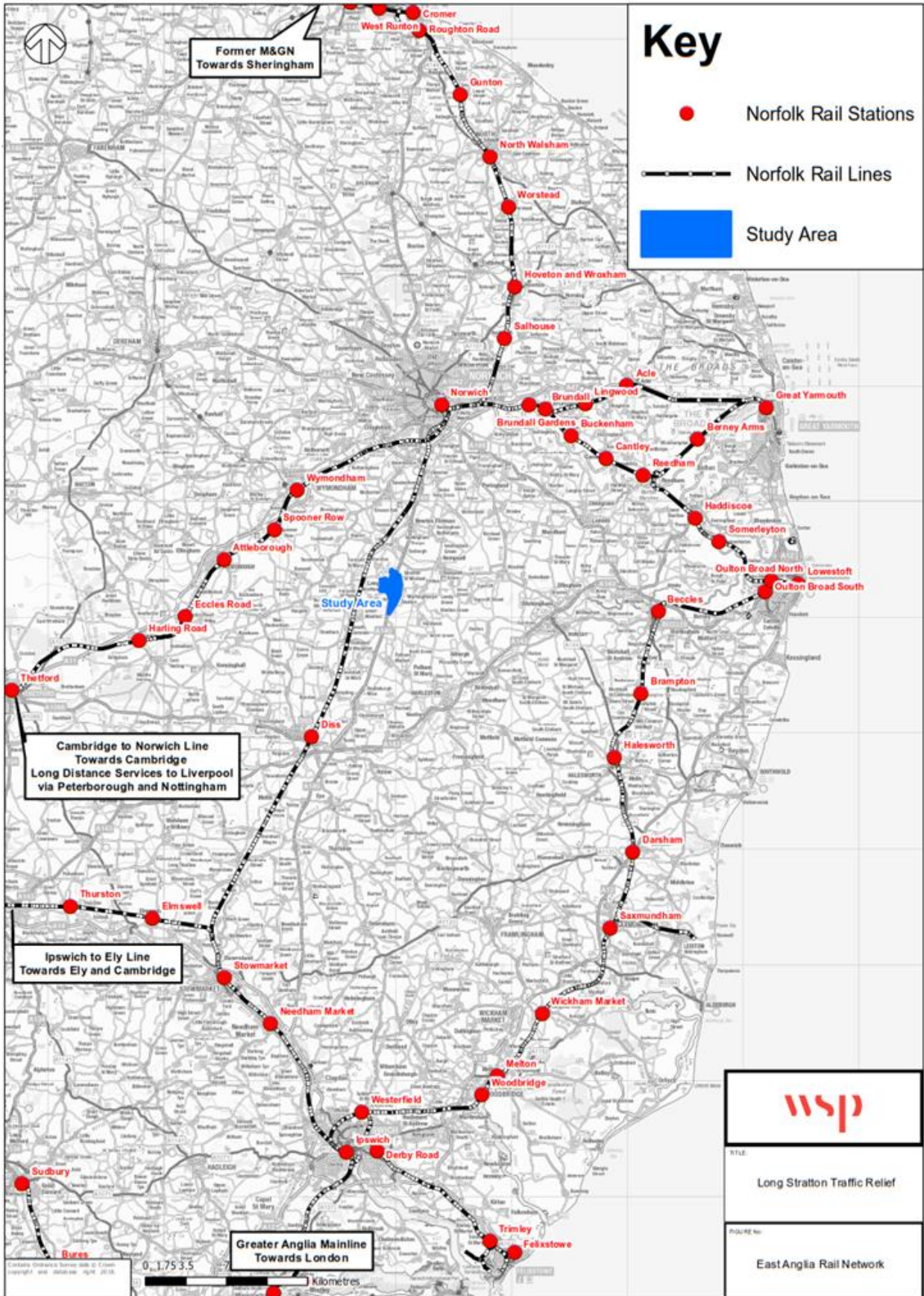


Figure 6 - Rail Connections

2.3. TRANSPORT CHALLENGES

- 2.3.1. The A140 carries some 18,000 vehicles per day through Long Stratton with approximately 9% of this number being heavy goods vehicles (Major Scheme Business Case, 2005). The road constitutes the village spine and reduces to 5.7 metres wide with narrow 1.2-metre-wide footways in places. Narrow footways put pedestrians dangerously close to vehicle traffic, and pedestrian pinch points occur where the footways recede to accommodate bus lay-bys.
- 2.3.2. A 30-mph speed restriction on the A140 through the centre of the village exists between Lime Tree Avenue and St. Michael's Road. 50mph zones extend either side of the 30mph restriction for approximately 700m to the north and 900m to the south. Gateway signing, 'dragon teeth' markings and carriageway roundel markings have been introduced to reinforce the speed restrictions on the approach to the built-up area.
- 2.3.3. Within the built-up area there are nine road junctions, one of these is signal controlled, and one signal controlled pedestrian crossing. Most of the junctions do not meet current standards for layout and visibility. In Stratton St. Michael there are two road junctions which also do not meet current standards. Poorly designed junctions contribute to the real problem of pedestrian safety and accessibility.
- 2.3.4. The horizontal and vertical alignment within Long Stratton is not compatible with current design standards for this type of road. Any attempt to improve the standard would require significant demolition and land-take from properties fronting the A140.
- 2.3.5. The current speed restrictions, signal-controlled junction and pedestrian crossing act to slow down through traffic within the built-up area, creating a pinch point on the route, in particular for through traffic.
- 2.3.6. Currently high traffic flows on the A140 act as a barrier to east - west pedestrian movements in the village. This conflicts with the main shopping street function and impacts the quality of the public realm and economic activity.
- 2.3.7. Public transport access to / from the village is generally poor, with slow the journey times between Norwich and Diss and limited rail access options.

2.4. VILLAGE CENTRE GROWTH AND REGENERATION

- 2.4.1. There are several sites and properties in the centre of Long Stratton that are currently vacant or not in village centre uses.
- 2.4.2. These offer the opportunity for a more comprehensive redevelopment of the area, to free up sites for uses that would enhance the commercial centre of Long Stratton.
- 2.4.3. Expanding the centre of Long Stratton needs to take account of the village's historic core which includes a concentration of listed buildings and other heritage assets that are important to the character of the conservation area.
- 2.4.4. One of the key justifications for the bypass is that it will remove the 'danger, noise, vibration and dirt caused by the continuous heavy traffic', which the 2013 Conservation Area Statement highlights as one of the main impacts on the character of the conservation area, as well as creating a barrier to the greater use and enjoyment of the centre of Long Stratton.

- 2.4.5. The removal of through traffic will make the centre of Long Stratton a more attractive location for outdoor activities, which could include the creation of a market place within the defined centre. The traditional location for this would have been at The Plain, where The Street widens significantly at its junction with Star Lane. However, alternatives could include sites where there are opportunities for redevelopment, such as Stratton Motor Company on Ipswich Road or the telephone exchange / fire station on Swan Lane.
- 2.4.6. It is envisaged that post bypass, reduced traffic on the (current) A140 should enhance the attractiveness of units on the east side of The Street / Ipswich Road and at the northern and southern extremities of the defined village centre, where there is a greater concentration of vacant units and residential properties. As such, it is hoped that with an improved environment, the level of vacancies in Long Stratton will fall and that some businesses can make greater use of outside space to enhance the atmosphere, including broadening the evening economy.

3. STRATEGY DEVELOPMENT

3.1. STRATEGIC FIT

- 3.1.1. The county of Norfolk has three major infrastructure priorities, of which the Long Stratton bypass is one, alongside the Great Yarmouth Third River Crossing and the Norwich Western Link. The bypass is high on the regional and local agenda.
- 3.1.2. The Joint Core Strategy, adopted in 2014, identifies Long Stratton as a key growth location with allocated land neighbouring the proposed scheme as an area for residential development.
- 3.1.3. The bypass is considered a crucial piece of infrastructure to enable the delivery of this housing, with the Long Stratton Area Action Plan(AAP) setting out the needs for the bypass to be completed prior to the occupation of the 250th dwelling as a result of any highway implications of the planned growth.
- 3.1.4. The Local Plan builds on this; setting out the vision for the future of the village.
- 3.1.5. This chapter looks at the strategic fit of the bypass proposal with local and regional policies. The documents that have been considered are:
- Joint Core Strategy (JCS) for Broadland, Norwich and South Norfolk; and
 - Long Stratton Area Action Plan (AAP), adopted in 2016.
- 3.1.6. It also highlights the housing and employment need for Long Stratton identified as part of these documents.

3.2. JOINT CORE STRATEGY FOR BROADLAND, NORWICH AND SOUTH NORFOLK, 2014

- 3.2.1. The JCS sets out the long-term vision and objectives for the area, identifying locations for housing and employment growth, as well as potential improvements to transport infrastructure and community facilities to support the growth, on the basis that existing infrastructure is at or near capacity in many locations. Growth in population is expected to be driven by an ageing population, the increasing attractiveness of the area for economic reasons and a deficit in the housing stock constructed recently.
- 3.2.2. Within this strategy, **Long Stratton is identified as a key location for growth**, including the development of **1,800 houses** (with supporting school facilities and green infrastructure) and **9.5ha of employment land**. It is desired that this development provides funding for the delivery of a bypass around the village, which has been a long-term aspiration of residents and the local councils. There is also an intention for the development to be supported by traffic management measures and the delivery of bus priority at the A140 / A47 junction south of Norwich, to improve bus access from the village into the city. This aligns with an aim in the document that the key growth locations should be supported by enhanced transport links to Norwich and the main towns, the nearest of which after Norwich are Thetford and Great Yarmouth.
- 3.2.3. Furthermore, the JCS continues:
- 3.2.4. *“Long Stratton is not as (sic) well related to employment or high quality public transport, this is outweighed by the availability of a good range of local jobs, services and other community facilities and the significant local benefits of a development led bypass. To ameliorate the impact of more limited opportunities for non-car trips to strategic employment locations and other facilities in Norwich, it will be particularly important to take a ‘whole settlement’ approach to the development of Long Stratton to maximise the number of local trips on foot or by cycle.”*

3.2.5. To summarise, the JCS provides a useful appraisal of the current transport situation in Long Stratton, which any proposed development will need to improve upon, as well as South Norfolk Council's ambitions for the area. Of note are the quantum of development proposed for Long Stratton and methods proposed for mitigating them, which will be considered further within this document.

3.3. LONG STRATTON AREA ACTION PLAN (AAP), 2016

3.3.1. Adopted in 2016, the Long Stratton AAP sets out in more detail where the developments proposed for the village in the JCS and seeks to ensure that the housing and employment growth planned for Long Stratton will be supported by improvements to transport infrastructure and other amenities, such as leisure and education facilities. This document also identifies an additional 181 dwellings which will be delivered prior to the Joint Core Strategy.

3.3.2. The two goals that the AAP seeks to achieve are:

- *“Improve our quality of life and the environment in which we live in”*; and
- *“Promote a thriving local economy”*.

3.3.3. This is part of an overall vision for the village of delivering *“Long Stratton - a revitalised large village based around its historic linear street pattern and Conservation Area (the boundary of which is shown in **Figure 7**) growing and building on its existing broad range of jobs and services into a thriving small town.”*

3.3.4. To support the development of Long Stratton's centre and to enable it to support the increased footfall generated by additional residents, the AAP states that the delivery of a bypass is essential to reduce the amount of through traffic. This would subsequently support greater pedestrian ambience and public transport facility improvements, as well as enhancing the conservation area status that the historic village enjoys.

3.3.5. The AAP underlines the importance of the bypass, as it states that **only 250 of the 1,800 proposed additional dwellings in the village can be delivered prior to the bypass being delivered.**

3.3.6. The locations of the key developments and interventions identified are illustrated in **Figure 7**.

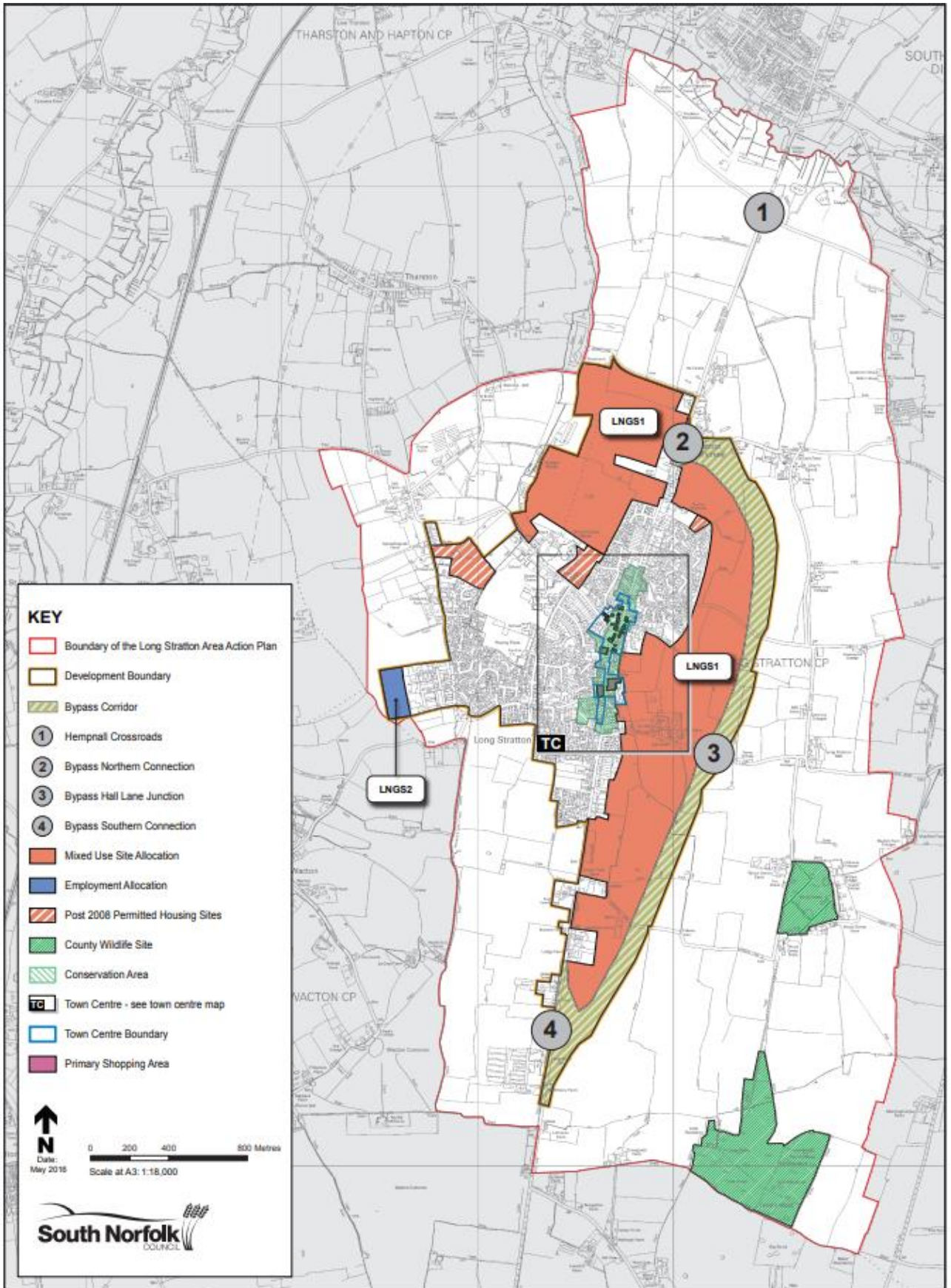
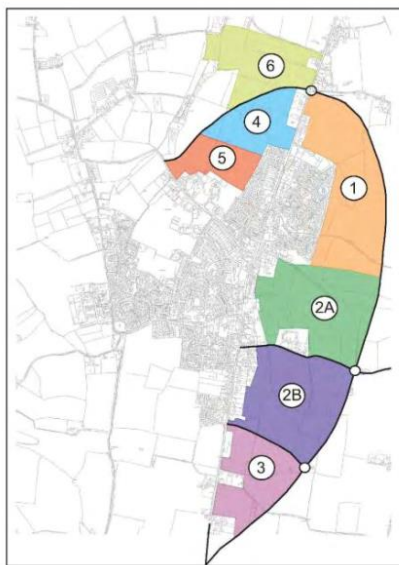


Figure 7 - AAP Policies Map

3.3.7. The mixed-use sites are formed of 9.5 hectares of employment land and 130 hectares of land for the housing and supporting infrastructure. This is to be broken down between 1,200 dwellings and 8 hectares of employment on the eastern side of the village and 600 dwellings and 1.5 hectares to the north-west side of the village. The employment development is dependent upon the provision of a link road from Swan Lane to the A140 prior to the completion of the 200th dwelling. Further detail of the mixed-use development packages can be found below in **Error! Reference source not found..**

Table 2 - Long Stratton Developments



Parcel No:	Land Use
1	600 – Class C3 Residential Units
2a	350 – Class C3 Residential Units
2b	250 – Class C3 Residential Units
3	3,000 sqm – Class B1 Office
	3,000 sqm – Class B2 Light Industrial
	3,000 sqm – Class B8 Warehouse
4	3,000 sqm – Class B8 Warehouse
	1,500 sqm – Class A1 Retail (food)
4	200 – Class C3 Residential Units
5	200 – Class C3 Residential Units
6	200 – Class C3 Residential Units

3.3.8. The employment allocation to the west of the village is intended to be an extension to the existing Tharston Industrial Estate, with a mix of light industry developments including B1, B2 and B8 land uses. This is to be accessed by road from the existing internal road network and is to be supported by walking and cycling facilities aimed at reducing car traffic within the village.

3.3.9. The bypass area identified is illustrated to the east of the village. This was chosen, as the land is not constrained by the railway line and there is less current residential population there. It is intended that the bypass will be of single carriageway standard.

3.3.10. Aside from the bypass, supporting infrastructure is proposed in the form of mixed tenure housing and a 2-hectare site for the development of a new two-form entry primary school and a 60-place pre-school. There is also intention for a new link between the village centre and the proposed developments to the east of the village, though the details of this are not yet confirmed.

3.3.11. There are developments planned in the village centre, which would be enabled by the proposed bypass reducing the level of traffic passing through Long Stratton. These developments are primarily focused around additional shopping, food and drink facilities, revitalising buildings which are currently unused. There are wider proposals to enhance the streetscape of the conservation area and traffic calming interventions through village which are specifically dependent upon the bypass.

3.3.12. Outside the village, access to existing and new development is to be supported by two further local transport priorities:

- Bus priority at the A140 / A47 junction approaching Norwich from the south; and
- Improved capacity at Hempnall Crossroads (marked as point '1' within Figure 7).

- 3.3.13. The Hempnall Crossroad junction improvement scheme, as a requirement for the early delivery of the allocated development in the AAP, has secured funding through the National Productivity Investment Fund (NPIF).

3.4. HOUSING NEED

- 3.4.1. Both the JCS and the Local AAP set out the need for more major housing growth and enhanced services in Long Stratton in comparison to other villages in the JCS Broadland, Norwich and South Norfolk area. An area of land has been allocated and a minimum of 1,800 new dwellings expected has been set.
- 3.4.2. The bypass is considered a key piece of infrastructure to enable the delivery of the allocated housing and employment growth and is therefore necessary to support the aspirations of the local and regional plans.

3.5. EMPLOYMENT

- 3.5.1. The Joint Core Strategy (discussed in **Section 3.1**) recognises that new employment opportunities in Long Stratton are required for the village to become a sustainable and self-contained settlement and develop opportunities into that befitting a small market town.
- 3.5.2. Local evidence notes the need for a greater variety of units to be made available in Long Stratton. This should help retain existing employers and free up space for new businesses. Consequently, whilst relatively few vacant units exist at Tharston Industrial Estate and any vacancies are usually filled quickly, many employers using the purpose-built units at Tharston have moved out of Long Stratton to find suitable accommodation for expansion.
- 3.5.3. Limited employment sites exist in the surrounding rural communities; therefore, the current limited opportunities combined with scale of the new housing proposed, means the South Norfolk District Council is allocating approximately 12 hectares of new employment land.

3.6. CONSERVATION AREA STATEMENT, 2013

- 3.6.1. One of the key justifications for the bypass is that it will **remove the ‘danger, noise, vibration and dirt caused by the continuous heavy traffic’**, which the 2013 Conservation Area Statement highlights as one of the main impacts on the character of the conservation area and a barrier to greater use and enjoyment of the centre of Long Stratton.
- 3.6.2. Specific enhancements identified within the Conservation Area Statement (2013) for Long Stratton are as follows:
- Post bypass, gateways to the centre of Long Stratton could be introduced to emphasise the greater priority for pedestrians;
 - Traffic calming measures including footway widening, carriageway narrowing in the village centre, also recognised in the Norfolk County Council’s previous Major Scheme Business Case for the bypass (NCC 2005);
 - Provision for cyclists and measures to encourage appropriate speeds through the centre; and
 - Surface and boundary treatments and planting, that consider the Conservation Area Statement.

3.7. MASTERPLANNING REPORT, 2018

3.7.1. The 2018 Masterplanning Report prepared for Long Stratton Parish Council to inform the development of a neighbourhood plan states that “*The existing design of the A140 is oriented towards moving traffic over enabling pedestrian and cycle access.*”. It sets out some of the existing features and constraints in the village and the map is shown in Error! Reference source not found..

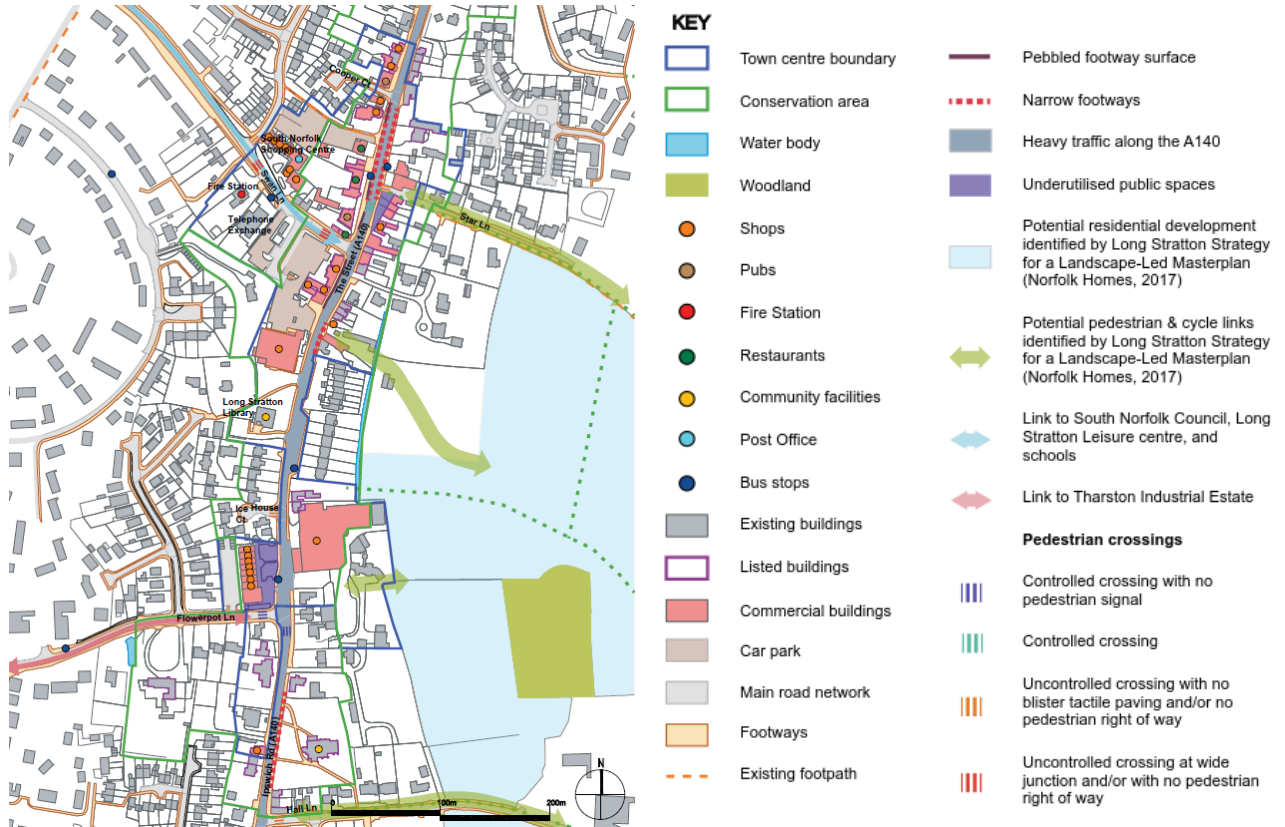


Figure 8 - Village Centre Constraints

3.7.2. The report also outlines several improvements that should be considered, including:

- Improvements for pedestrians and wheelchair users by:
 - Making footways (pavements) wider and designing out pinch points, where practical;
 - Improving pedestrian connectivity across Swan Lane and Flowerpot Lane;
 - Replacing paving and pebbled areas;
 - Changing signalised crossings to zebra crossings; and,
 - Reducing clutter.
- Improvements for cyclists by:
 - Slowing traffic; and,
 - Providing cycle parking and exploring options for cycle routes.
- Improving road safety and reducing the dominance of motor vehicles by:
 - Introducing a 20mph speed limit;
 - Narrowing the carriageway, possibly reducing to single carriageway in places; and,
 - Other vertical traffic calming features (example: speed humps, raised pedestrian crossings, and entry tables).

- Re-establishing the Street at the heart of the village by:
 - Creating or remodelling public spaces;
 - Introducing a small market square;
 - Encouraging businesses, like cafés, to introduce outdoor seating;
 - Planting trees; and,
 - Providing benches.

4. OPTION SIFTING - THE 2005 PREVIOUS SCHEME

- 4.1.1. An A140 Long Stratton bypass has been considered for a significant length of time, dating back to 1937. The next significant proposal was in 1988 when a bypass was proposed by a developer in exchange of building 700 additional homes. However, this was not met with much support.¹
- 4.1.2. The previous 2005 scheme formed the basis for the developer led proposal. The work on this version of the scheme looked at a range of alignments (east / west) and carriageway options.
- 4.1.3. This chapter goes on to present the objectives developed as part of the 2005 Major Scheme Business Case and the outcome the scheme's development at that time.

4.2. OPTIONS

DO-NOTHING OPTION

- 4.2.1. In view of the various transport challenges set out in **Section 2.3**, it was considered in the 2005 Major Scheme Business Case that the do-nothing scenario is not likely to be acceptable. This is due to the cumulative environmental effect of the current and predicted traffic volumes on the village.

NON- ROAD OPTIONS

- 4.2.2. A key part of the proposal for an A140 Long Stratton Bypass is intended to the negative impacts of the substantial movements of non-local traffic through Long Stratton. Norfolk is a large rural county and the potential for managing travel demand on the A140 is limited with a lack of suitable alternative routes in the current situation. The future predicted growth in line with housing and employment developments means is likely to place unacceptable constraints on accessibility to Norwich and wider connectivity via the current A140 through Long Stratton.
- 4.2.3. It is understood that traffic could not be sufficiently reduced to achieve the environmental and wider improvements that are required in Long Stratton. In the same way, it is unlikely that a modal shift to rail or long-distance buses could bring about sufficient reductions in traffic.
- 4.2.4. For these reasons it is unlikely that any non-road building option could mitigate the identified environmental issues.

4.3. ON-LINE IMPROVEMENT OPTION

- 4.3.1. Given the number of junction and accesses in the village it is possible that an online improvement option may resolve the issue of slow moving traffic and long traffic queues through the village. However, during the late 1990's before the A140 was detrunked, a former Highways Agency scheme provided a number of comprehensive traffic management and safety measures to the route. This comprised of modifications to speed restrictions and traffic management works including gateway signing, 'dragon teeth' markings and carriageway roundel markings. Following this, there is little scope for any further improvements.
- 4.3.2. Any attempt to improve design standards along the existing road through the urban core of Long Stratton would require significant demolition and land-take from properties fronting the A140. The impact of this on the conservation area is unlikely to be acceptable.

¹ <https://strattoncommunitygrowthforum.co.uk/bypass-history/>

CONSULTATION OPTIONS

- 4.3.3. A Stage 2 assessment was undertaken on five route strategies, two to the west and three to the east of the existing A140. Each potential route was considered to both dual and single carriageway standard and presented at public consultation in 2002.
- 4.3.4. The consultation indicated a very strong level of support for the principle of a bypass with the balance in favour of an eastern route. There was very limited support for Options 2, 3 and 4.
- 4.3.5. Options 1 and 5 offer the greatest relief to the A140. They would allow construction of a roundabout at the B1527 junction to be an integral part of the bypass and provide a natural northern terminal for the scheme. However, there were concerns expressed about the proximity of eastern routes to existing structures and the severance effects of this.
- 4.3.6. To address some of the concerns in relation to an eastern route, a variation to the northern part of Option 5 was suggested during the public consultation with the route crossing Church Lane to the east of Stratton St Michael.
- 4.3.7. A supplementary consultation was undertaken to consider four variants to the original public consultation Option 5. The four variants included:
- 5A - The original public consultation option with no overbridge at Church Lane;
 - 5B - The original public consultation option with an overbridge at Church Lane;
 - 5C - The variant alignment to the east of Stratton St Michael with no overbridge at Church Lane;
 - 5D - The variant alignment to the east of Stratton St Michael with an overbridge at Church Lane.
- 4.3.8. Options 5A and 5B were further modified to adopt a curved alignment to move the route slightly further away from Churchfields housing estate. The variant route was longer / more expensive and would provide a reduced cost / benefit ratio.
- 4.3.9. In choosing the standard of the road, the public consultation indicated a clear preference for a dual carriageway. The point had been made in favour of a single carriageway as it would cost less and therefore be more likely to achieve earlier funding. A dual carriageway layout gives a better rate of return, and would provide safer overtaking opportunities along its length and fit better with any long-term proposals that might emerge for further dualling of the A140.
- 4.3.10. The Cabinet of Norfolk County Council adopted the original Option 5 with the curved alignment to dual carriageway standard with an overbridge at Church Lane as the preferred route in April 2003. The final decision was made after consideration of the subjective nature of the combined effects of all the issues.

4.4. SCHEME OBJECTIVES

- 4.4.1. The main objectives from the 2005 Major Scheme Business Case were:

Economy

- To improve strategic road links and bypass the village of Long Stratton;
- Promote more reliable journey times especially for commercial traffic.

Integration

- To support the vitality and enhance the settlement of Long Stratton;

Environment

- To reduce traffic congestion through the village of Long Stratton;
- To improve local air quality and noise pollution;
- Deliver a scheme that enhances the built environment;
- Deliver an environmentally acceptable scheme that protects and enhances the natural environment.

Safety

- To improve safety for all road users.

Accessibility

- To improve access to local facilities.

4.4.2. To what extent the scheme mitigated against the challenges presented was considered, along with potential alternative options against each of the nine objectives listed above. The results of this high-level review, as presented in the 2005 report, are shown in **Table 3**.

4.4.3. Since the creation of these objectives, the scheme has developed, and objectives have further aligned towards those of the DfT's Major Road Network. These are fully presented and discussed within the Strategic Case of the Business Case, also produced by WSP in 2018.

Table 3 – Previous Scheme Objectives

Problem	How Scheme Mitigates Problem	Effects of Alternatives	Extent of Mitigation
Objective 1 To improve strategic road links and bypass the village of Long Stratton	Targeted improvement to address specific problems on the A140 at Long Stratton	Lower cost WS2 would also mitigate problem	Fully mitigated
Objective 2 Promote more reliable journey times especially for commercial traffic	A140 traffic will bypass village centre and associated delays	Lower cost WS2 would also mitigate problem	Fully mitigated
Objective 3 To support the vitality and enhance the settlement of Long Stratton	A140 traffic removed from the village centre Improved environment for travel within the village especially for non-motorised travel	Lower cost WS2 would also mitigate problem	Fully mitigated
Objective 4 To reduce traffic congestion through the village of Long Stratton	A140 traffic removed from the village centre	Lower cost WS2 would also mitigate problem	Fully mitigated
Objective 5 To improve local air quality and noise pollution	A140 traffic removed from the village centre	Lower cost WS2 would also mitigate problem but would have an adverse effect on slightly less properties than the proposed scheme	Although there will be significant benefits along the existing A140 through the village a few properties will experience a decrease in air quality and an increase in noise pollution

Problem	How Scheme Mitigates Problem	Effects of Alternatives	Extent of Mitigation
Objective 6 Deliver a scheme that enhances the built environment	A140 traffic removed from the village centre	Lower cost WS2 would also mitigate problem	Although there will be significant benefits to listed building and the conservation area long the A140 there will be a major negative effect on the cluster of properties known as Stratton St Michael
Objective 7 Deliver an environmentally acceptable scheme that protects and enhances the natural environment	Mitigation measure should enhance the water diversity	Mitigation measure should enhance the water diversity	Fully mitigated
Objective 8 To improve safety for all road users	Modern dual carriageway bypass will reduce accidents on A140	Lower cost WS2 would not be as safe as proposed scheme	Fully mitigated
Objective 9 To improve access to local facilities	Perceived and actual danger from traffic on pedestrians and cyclists removed	Lower cost WS2 would also mitigate problem	Fully mitigated

4.5. OUTCOMES

- 4.5.1. Following the work outlined above, the 2005 scheme progressed to a point where orders were capable of confirmation, but a lack of funding resulted in lapsed planning permission and orders were not confirmed.

5. ROUTE OPTIONS – 2018 PLANNING APPLICATION

- 5.1.1. This chapter outlines the two main planning applications and sets out the options developed to shape the developers planning application, presenting the scheme submitted as part of the 2018 application.

5.2. PLANNING APPLICATION

- 5.2.1. The major forthcoming opportunity for growth in the Long Stratton area consists of significant residential and mixed-use development totally approximately 1,800 homes and 9 hectares of employment land with associated community facilities along with a bypass. The planning applications for the key housing and mixed-use sites is currently awaiting decision.
- 5.2.2. The development has been split into two parcels for the planning application process, one to the west and one to the east. These are summarised in this chapter followed by an outline of the bypass option submitted as part of the application.

LAND WEST OF THE A140 LONG STRATTON

- 5.2.3. The smaller of the two applications “*Land West of the A140 Long Stratton*” (2018/0112 or PP-06602334) “comprises 45.2 hectares of land to the west of the A140 seeking outline planning permission for **387 dwellings** and **1.5 hectares of Class B1 employment land**, associated infrastructure and public open space. Together with application for **full planning permission for a western relief road** (including a roundabout access at the north to the A140 and a priority junction access to Swan Lane at the south) and with **phase 1 housing consisting of 213 dwellings**, associated infrastructure and public open space.”
- 5.2.4. The area included in this application is shown in **Figure 9**.

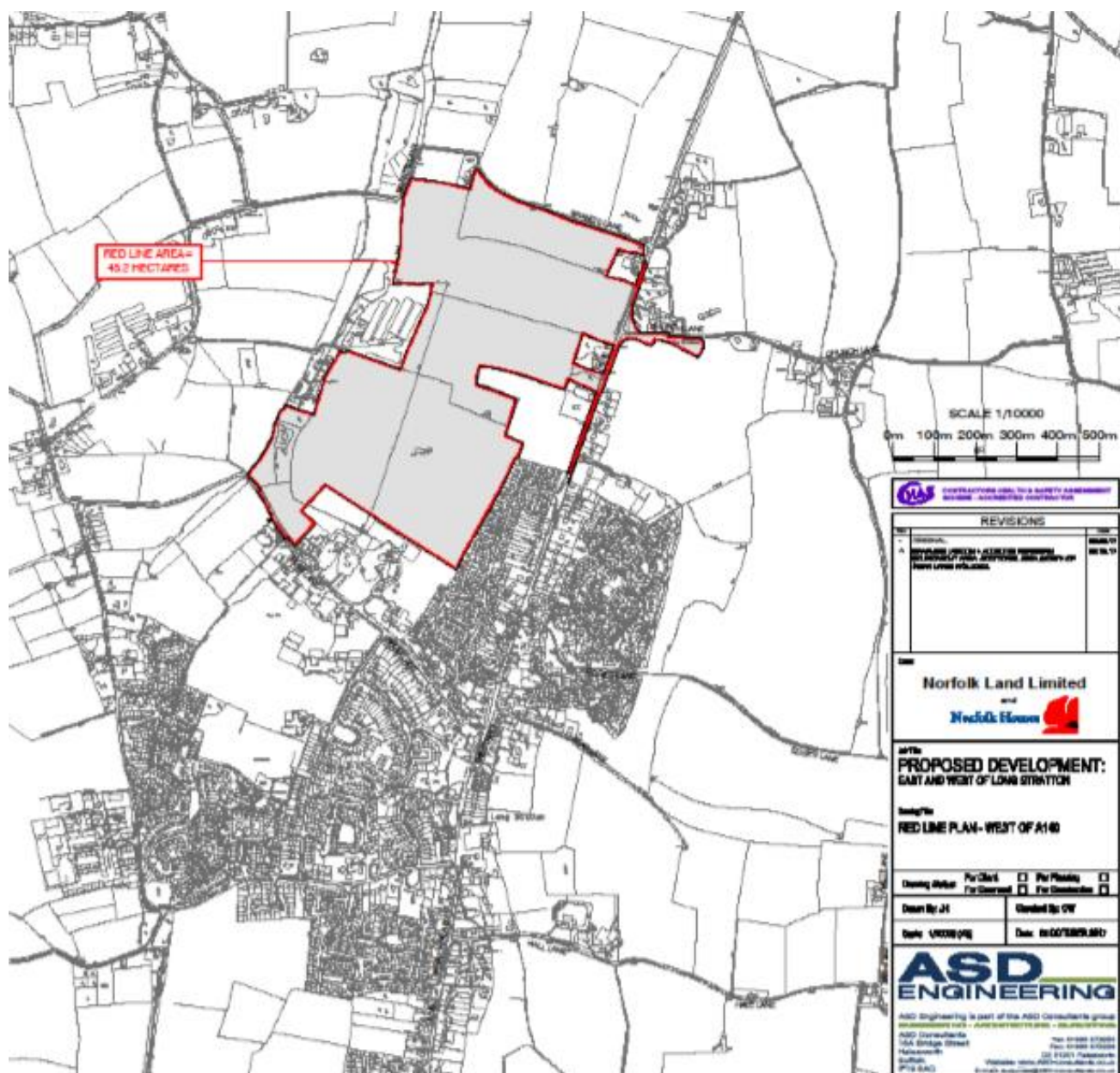


Figure 9 - Land west of the A140

LAND EAST OF THE A140 LONG STRATTON

- 5.2.5. A separate application was submitted at the same time and includes the request for full permission of the bypass.
- 5.2.6. A planning application, ‘**Land East of the A140 Long Stratton Norfolk**’, (2018/0111 or PP-06577801) was submitted in January 2018. This was a hybrid application on “109.7 hectares of land to the east of the A140 seeking outline planning permission for **1275 dwellings, 8 hectares of employment land** for uses within Classes B1, B2 and B8, **2-hectare primary school site**, community facilities site, associated infrastructure and public open space. Together with application for **full permission for a bypass including roundabouts and junctions.**”
- 5.2.7. The area included in this application is shown in **Figure 10**.

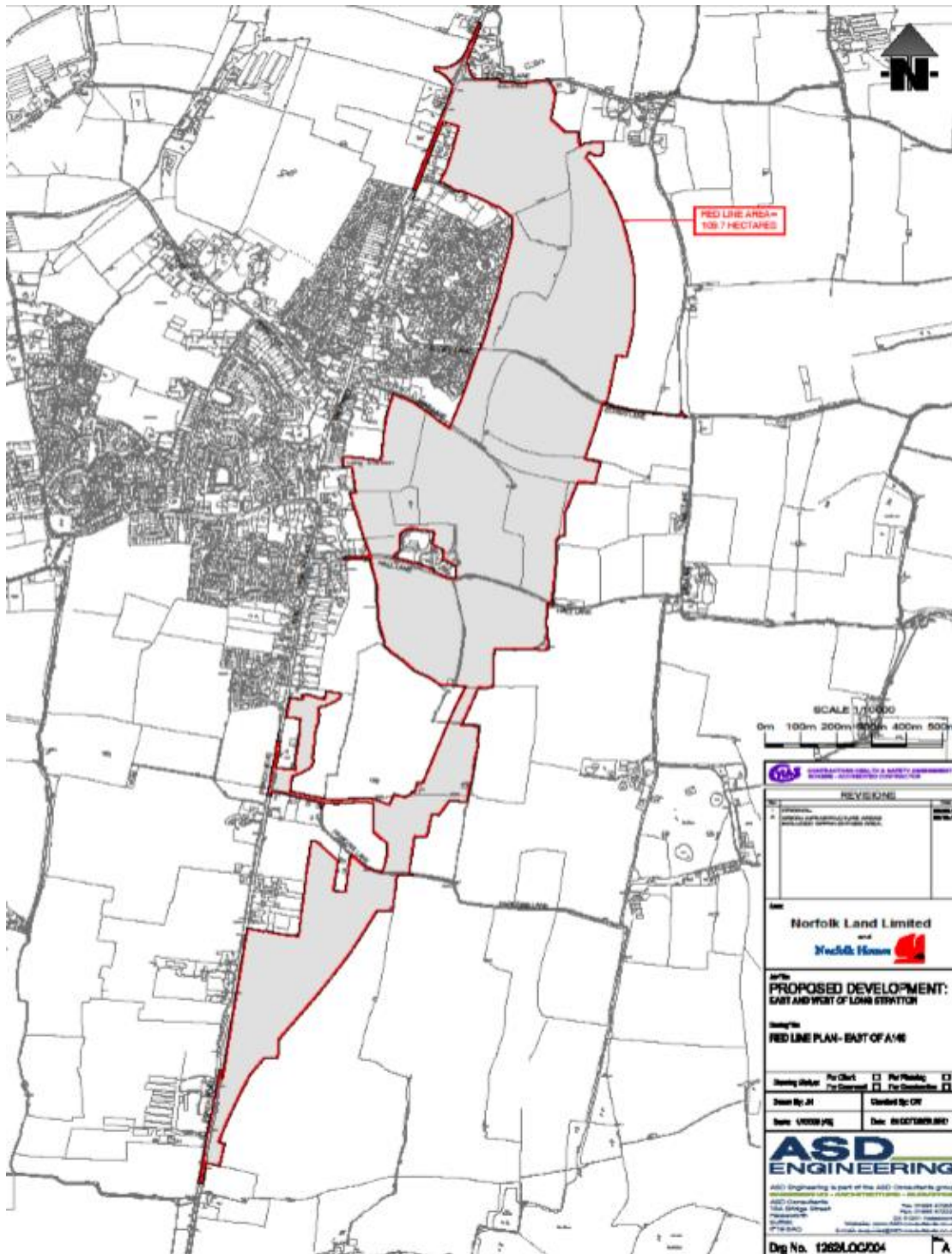
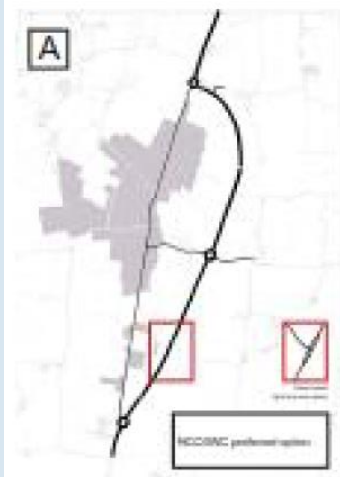
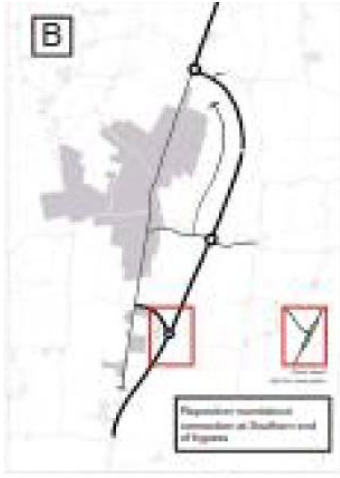


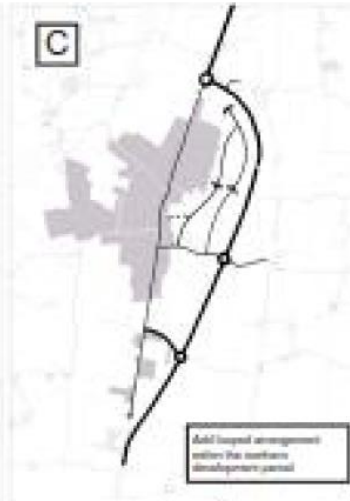
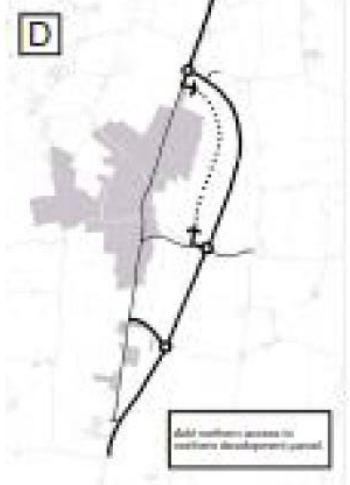
Figure 10 - Land east of the A140

BYPASS OPTIONS

- 5.2.8. As part of the discussion to shape the developers 2018 planning application Canon Consulting Engineers have undertaken work in support of a bypass around Long Stratton, to accommodate the proposed 1,800 dwellings.
- 5.2.9. A **Bypass Testing Options Report (November 2016)** was produced which presented nine alignments, as shown in **Table 4**. For each option a summary of the benefits and dis-benefits is provided, which is taken from the TA review.

Table 4 - Bypass Options

Option	Description	Benefits	Dis-Benefits	Drawing
<p>A</p>	<p>This option as designed by Norfolk County Council and Suffolk County Council as part of the Long Stratton AAP. This option includes three roundabouts, two allowing access to the ring road to the north and south of the village and the other linking to the new development and points east.</p>	<ul style="list-style-type: none"> ▪ The new route will enjoy a shorter journey time than the original route, supported by traffic calming measures on the old alignment through the village centre. 	<ul style="list-style-type: none"> ▪ The roundabouts do not directly encourage traffic onto the new route in favour of the old route. ▪ Large number of trips from the proposed development route via High Street. ▪ Limited flexibility of route options. 	
<p>B</p>	<p>This route provides a slight adjustment to Option A, relocating the southern roundabout further north onto bypass and cutting the A140's southern end. Long Stratton is then accessed from the bypass, rather than from the south.</p>	<ul style="list-style-type: none"> ▪ Long Stratton is only accessed from the bypass by conscious choice, encouraging people to use the bypass unless they have a reason to visit the village. ▪ Reduction of development trips using the A140 High Street. 	<ul style="list-style-type: none"> ▪ Testing suggested that this option had a large impact on Hall Lane. 	

Option	Description	Benefits	Dis-Benefits	Drawing
C	<p>This route is the same as Option B, however, there is a looped arrangement within the northern development parcel.</p>	<ul style="list-style-type: none"> ▪ Long Stratton is only accessed from the bypass by conscious choice, encouraging people to use the bypass unless they have a reason to visit the village. ▪ Reduction of development trips using the A140 High Street. 	<ul style="list-style-type: none"> ▪ Testing suggested that this option had a large impact on Hall Lane. 	
D	<p>This option proposes a further junction just south of the northern bypass roundabout on the southern arm of the former A140 through Long Stratton.</p>	<ul style="list-style-type: none"> ▪ Relocating the southern bypass roundabout further north, and diverting the A140, encourages more traffic to stay on the bypass. ▪ Provision of north-west access balances the impact of development on the bypass and southern arms (50/50) to the northern bypass roundabout. ▪ Reduction of development trips using the A140 High Street by 51%. 	<ul style="list-style-type: none"> ▪ Results in a small junction immediately south of the northern roundabout. In this case, traffic turning right from the development's road conflicts with traffic coming into village off the roundabout. ▪ Limited flexibility of routeing options. 	

Option	Description	Benefits	Dis-Benefits	Drawing
E	<p>This option builds upon Option E, proposing a T-junction on the bypass in addition to the three roundabouts on the bypass.</p>	<ul style="list-style-type: none"> ▪ Provides an internal connector road for use of the new development's residents. 	<ul style="list-style-type: none"> ▪ Results in a small junction immediately south of the northern roundabout. In this case, traffic turning right from the development's road conflicts with traffic coming into village off the roundabout. ▪ Design of T-junction not in keeping with other in keeping with other design elements on the bypass. 	
F	<p>Option F is based upon Option A but provides an additional roundabout junction and connection with Hall Lane. However, no connection to the A140 is provided in the northwest corner. This would facilitate two access points into the development area and remove the focus on the northwest corner.</p>	<ul style="list-style-type: none"> ▪ Relocating the southern bypass roundabout further north and diverting the A140 encourages more traffic to stay on the bypass. ▪ Reduction of development trips using the A140 High Street by 57%. ▪ Improve routing flexibility 	<ul style="list-style-type: none"> ▪ Not acceptable with the local authority due to the impact of the additional roundabout. ▪ Disproportionate development impact on the bypass arm of northern bypass roundabout. 	

Option	Description	Benefits	Dis-Benefits	Drawing
<p>G</p>	<p>Option G above provides a roundabout Junction and connection with Hall Lane and the A140 in the north-west corner. This is the most flexible option and balances access and traffic movement throughout the master-planned area as well as at the junctions with the bypass. It has the same benefits as the previous option (F) in terms of allowing phased construction of the bypass.</p>	<ul style="list-style-type: none"> ▪ Relocating the southern bypass roundabout further north and diverting the A140 encourages more traffic to stay on the bypass. ▪ Reduction of development trips using the A140 High Street by 60%. ▪ Improves routing flexibility. 	<ul style="list-style-type: none"> ▪ Risks increasing traffic through the village by encouraging people to drive within the village, potentially detracting from the proposed walking/cycling interventions. ▪ Not acceptable with the local authority due to the impact of the additional roundabout. ▪ Increased impact on the southern arm of the northern roundabout. should be subject to a junction capacity assessment from the high street during simulation. 	
<p>H</p>	<p>This option builds upon Option G, providing a link road directly to the north-western elements of the development.</p>	<ul style="list-style-type: none"> ▪ Introduction of north-west access road would relieve Swan Lane and provide access to the development. 	<ul style="list-style-type: none"> ▪ Not acceptable with the local authority due to the impact of the additional roundabout. 	

Option	Description	Benefits	Dis-Benefits	Drawing
I	<p>This option builds upon Option G, providing a link road directly to the north-western elements of the development, but without a direct link road west of the bypass.</p>	<ul style="list-style-type: none"> An alternative north-west access road would also relieve traffic on Swan Lane. 	<ul style="list-style-type: none"> Not acceptable with the local authority due to the impact of the additional roundabout. 	

5.3. TRANSPORT AND ACCESSIBILITY PROPOSALS

- 5.3.1. The Long Stratton AAP (discussed in **Chapter 3**) states that “*The bypass will be completed before 250 of the new homes are occupied.*”
- 5.3.2. Therefore, the development of a sustainable and effective transport strategy, including significant new infrastructure in the form of a bypass, is crucial to the strategic growth of the village.
- 5.3.3. **Figure 11** shows the accessibility plan for proposed alignment of the bypass, as submitted as part of the planning application, as well as bus stops and Public Rights of Way (PROWs).

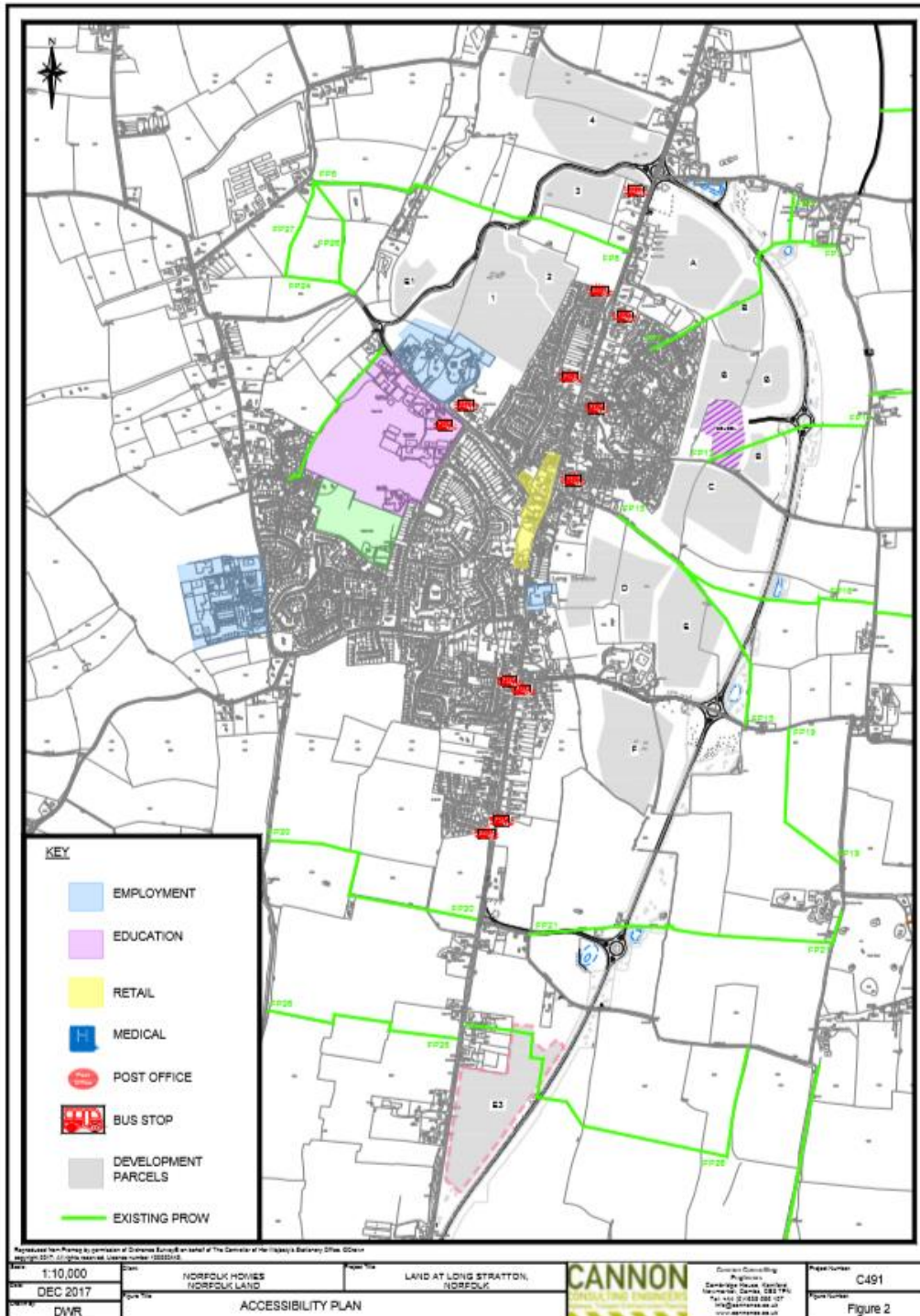
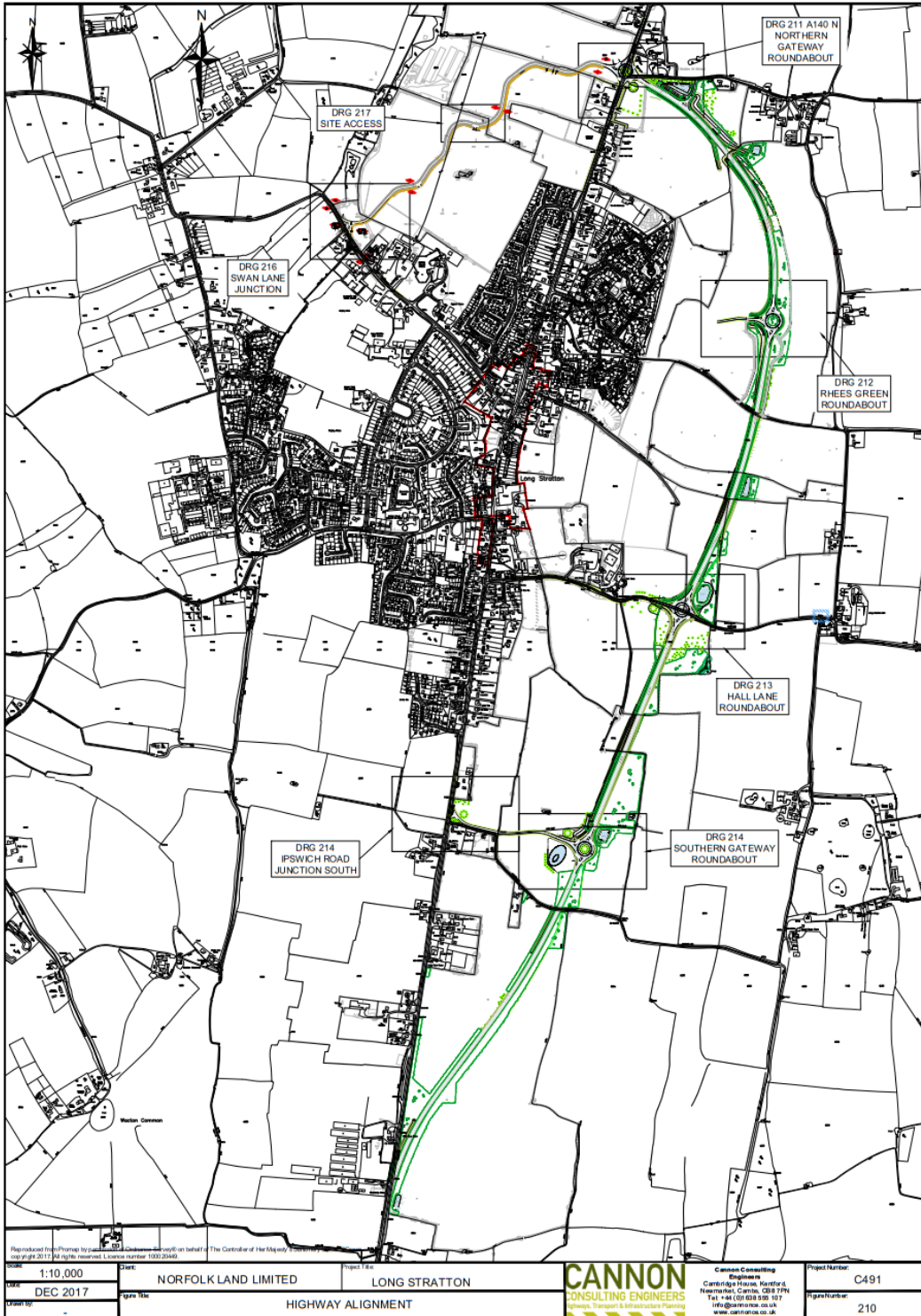


Figure 11 - Accessibility Plan

5.4. OPTION SUBMITTED

- 5.4.1. The Transport Assessment (TA) produced in support of the 2018 planning application (ref. 2018/0111) was prepared by CCE. The TA sets out a proposal for a bypass for Long Stratton Bypass.
- 5.4.2. The bypass alignment submitted by the developers, and thus presented in the TA, closely resembles Option G (described in **Table 4**). This route option is shown in the 'Bypass Overview Plan' provided in Drawing C491/210 as well as in **Figure 12**.



<small>Reproduced from Promap by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. Copyright © 2017. All rights reserved. Licence number: 1000292483.</small>		CANNON CONSULTING ENGINEERS <small>Highways, Transport & Infrastructure Planning</small>		<small>Cannon Consulting Engineers</small> Cambridge House, Westford, Newmarket, Cambs, CB8 7FN Tel: +44 (0)1638 958 101 info@cannon.co.uk www.cannon.co.uk	Project Name: C491 Pipe Number: 210
Scale: 1:10,000 Date: DEC 2017	Client: NORFOLK LAND LIMITED Site File: HIGHWAY ALIGNMENT	Project: LONG STRATTON			

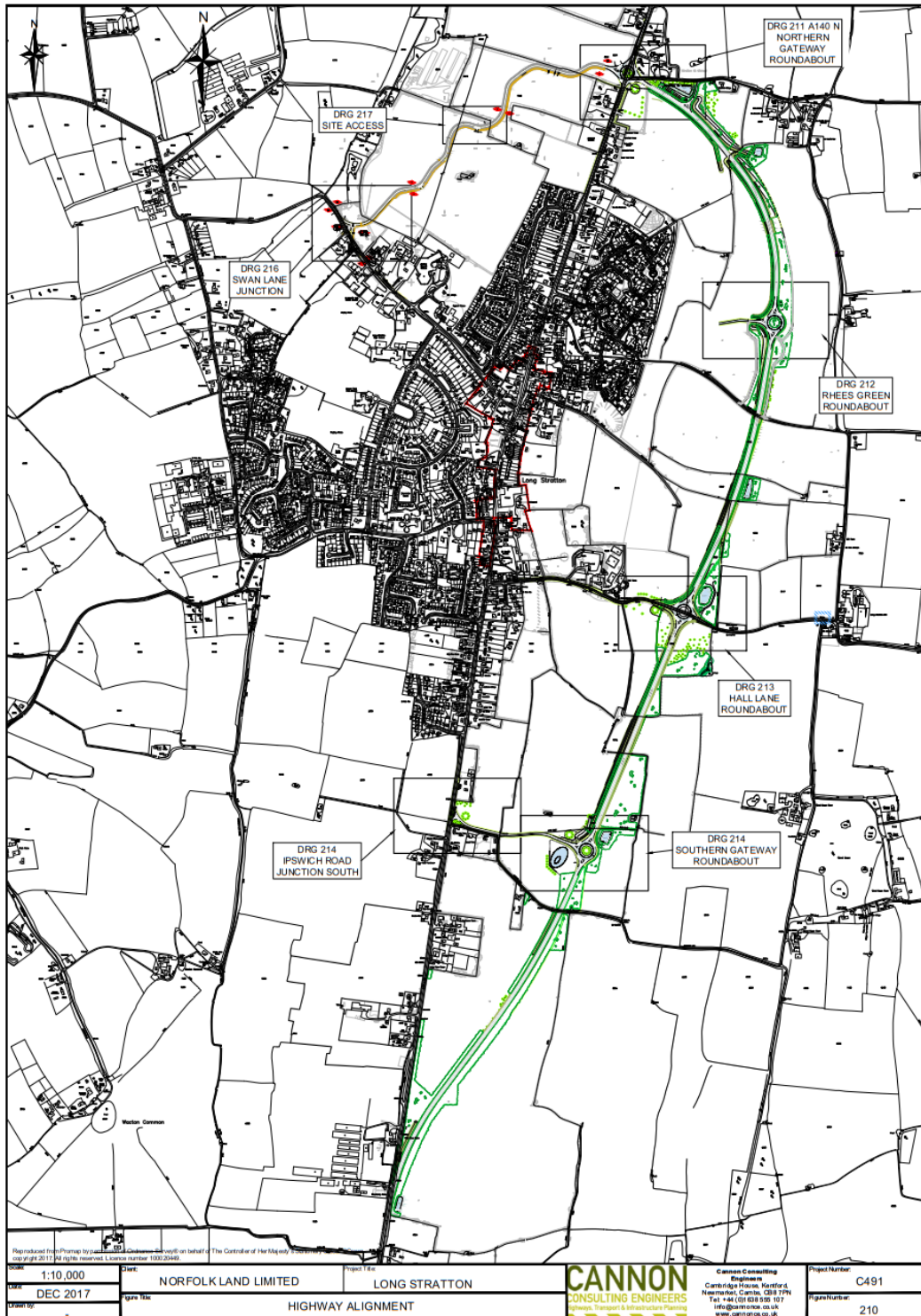


Figure 12 - Preferred Alignment produced by Developer Team

5.4.3. The route includes the following four new roundabouts:

- **Northern Gateway Roundabout:** the northernmost roundabout comprising of a four-arm roundabout which will replace the existing A410 / B1527 priority crossroads;
- **Rhees Green Roundabout:** comprising a three-arm roundabout roughly in equal distance to the Northern Gateway Roundabout and the Hall Lane Roundabout;
- **Hall Lane Roundabout:** comprising a four-arm roundabout which crosses Hall Lane; and



- **Southern Gateway Roundabout:** the southernmost roundabout composing of a three-arm roundabout.

5.5. OUTCOMES

- 5.5.1. This application is currently under consideration, meanwhile ongoing studies are being undertaken to refine the route options and establish a business case for the scheme.

6. ROUTE REFINEMENT – WSP INPUT TO DESIGN

6.1. PROCESS

- 6.1.1. Early in 2018 WSP were commissioned by Norfolk County Council (NCC) to provide technical support with the design of the proposed A140 Long Stratton bypass.
- 6.1.2. Initially WSP undertook a technical review of the developer's preliminary bypass design and from this a list of issues were identified for further review. WSP then worked with the developer team to better understand the background to their proposals and to obtain further information about the design.
- 6.1.3. In May / June 2018 a series of meetings and workshops were held with the developer team and other key stakeholders including officers from Norfolk County Council and South Norfolk District Council to look at opportunities to further enhance the developer led bypass design. Specifically, the following topics were discussed:
- Public Rights of Way (PROW) and how best to integrate them into the scheme;
 - Reducing severance between the existing and proposed settlements to the west of the bypass and amenity land and other communities to the east;
 - Amending the horizontal and vertical geometry to achieve better compliance with relevant design standards;
 - Addressing concerns regarding drainage and flood risk.
- 6.1.4. Following these workshops, WSP reviewed further background information provided by the Developer team including information on the proposed drainage strategy, landscaping etc.
- 6.1.5. WSP also spoke with Officers at NCC and reviewed the NCC led 2005 bypass design to better understand the previous scheme proposals and to ascertain whether any features of the 2005 scheme could be adopted into the current bypass proposal.

6.2. OUTCOMES

- 6.2.1. The outcome of this was a revised bypass design which is largely based on the developer scheme, with the addition of: two grade-separated crossings, some minor revisions to the horizontal and vertical alignment, removal of one of the roundabouts and alterations to the proposed drainage.
- 6.2.2. Full details of these changes are provided in **Chapter 7**.

7. PREFERRED SCHEME

- 7.1.1. As set out in Chapter 6 above, following the planning submission made by the Developer in early 2018, which included the bypass, WSP have been supporting NCC and working in collaboration with the Developer team to enhance the current scheme. The latest bypass proposal is shown indicatively in **Figure 13**.
- 7.1.2. A key theme emerging from the meetings / workshops held in May / June 2018 was to develop proposals for one or more grade separated crossings of the proposed bypass, to be integrated into the proposed topography. Key crossing points were identified and the feasibility of underpasses / overbridges was assessed.
- 7.1.3. The team focussed on potential grade-separated crossings at Church Lane, Edges Lane and Star Lane. It was quickly established that underpasses were undesirable due to drainage considerations and the impact on the proposed topography (due to the need to lift the main bypass alignment). In terms of bridges, all 3 locations were considered feasible, but Church Lane was considered to offer the greatest benefits to non-motorised users because the at-grade alternative was particularly undesirable.
- 7.1.4. Another issue that the WSP team investigated was the lack of safe over-taking opportunities afforded by the developer's design and the associated over-wide verges. There were several solutions to overcome these problems, including making modifications to the horizontal alignment of the road. However, it was felt that the number of at-grade junctions included in the developer's scheme was inconsistent with a road which was seen by the local Highway Authority as being strategic in nature and worthy of inclusion within the Major Road Network.
- 7.1.5. It was concluded that the best solution to the above issues was to remove the Hall Lane roundabout and replace it with an over-bridge catering for east-west connections. This provided many benefits as follows:
- It allowed safe-overtaking sections to be introduced into the scheme, which in turn meant that the over-wide verges could be narrowed, reducing the overall footprint of the bypass and associated earthworks and ensuring that culverts for flood relief could be kept to a manageable length.
 - Replacement of the Hall Lane roundabout with an over-bridge for east-west traffic maintained the connectivity for communities to the east of Long Stratton and doubled up as a secondary grade-separated crossing point for non-motorised users (NMUs).
 - This crossing, coupled with the one proposed at Churches Lane would allow NMU's to enjoy circular routes to and from the proposed development and the amenity land to the east.
 - Removal of the Hall Lane roundabout meant a reduction in the overall number of at-grade junctions on the scheme to three, which was more in keeping with the strategic nature of the road.
- 7.1.6. In addition to deleting the Hall Lane roundabout, the opportunity was taken to re-position the Edges Lane roundabout to better serve the emerging masterplan for the Development.
- 7.1.7. The work going forward, to support the submission of a Strategic Outline Business Case, will be based on the amended bypass scheme described in this chapter, which builds upon the scheme in the planning application (described in **Chapter 5**). Working with the developer, it is intended that there will be a re-consultation on the modified planning application and a planning decision is expected late 2018 / early 2019.

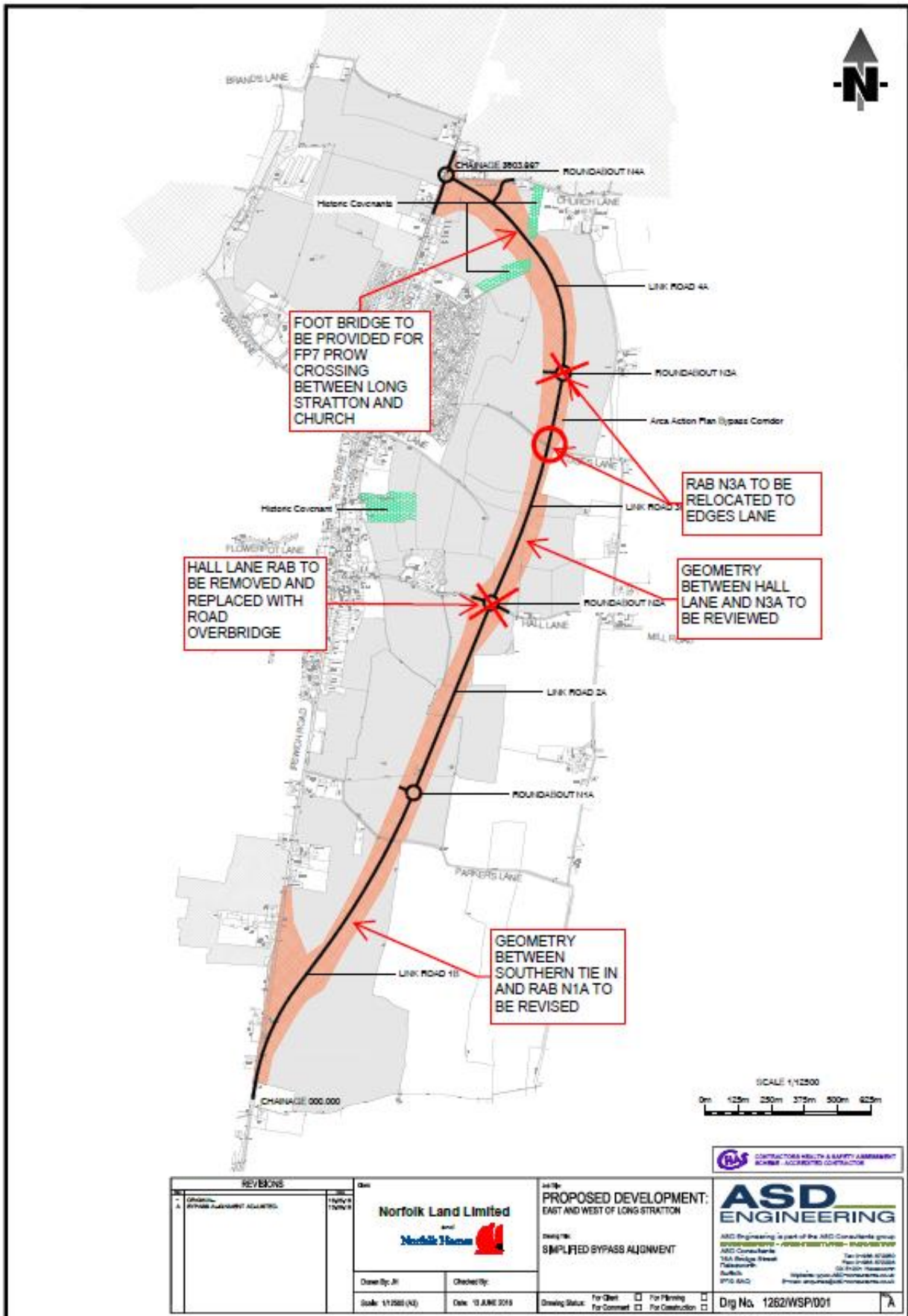


Figure 13 - Latest Proposed Scheme Drawing

8. CONCLUSIONS

- 8.1.1. The A140 Long Stratton Bypass is considered crucial to the successful achievement of growth proposals in the Joint Core Strategy for the development of at least 1,800 dwellings in the village, with the requirements as part of the Long Stratton AAP for the bypass to be delivered ahead of the occupation of the 250th dwelling as a result of any highway implications of the planned growth.
- 8.1.2. The purpose of this document was to set out the scheme development to date and act as an alternative Options Appraisal Report, as agreed with the Department for Transport.
- 8.1.3. The work going forward, to support the submission of a Strategic Outline Business Case, will be based on the amended bypass scheme described in **Chapter 7**.
- 8.1.4. Working with the developer, it is intended that there will be a re-consultation on the modified planning application and a planning decision is expected late 2018 / early 2019.



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