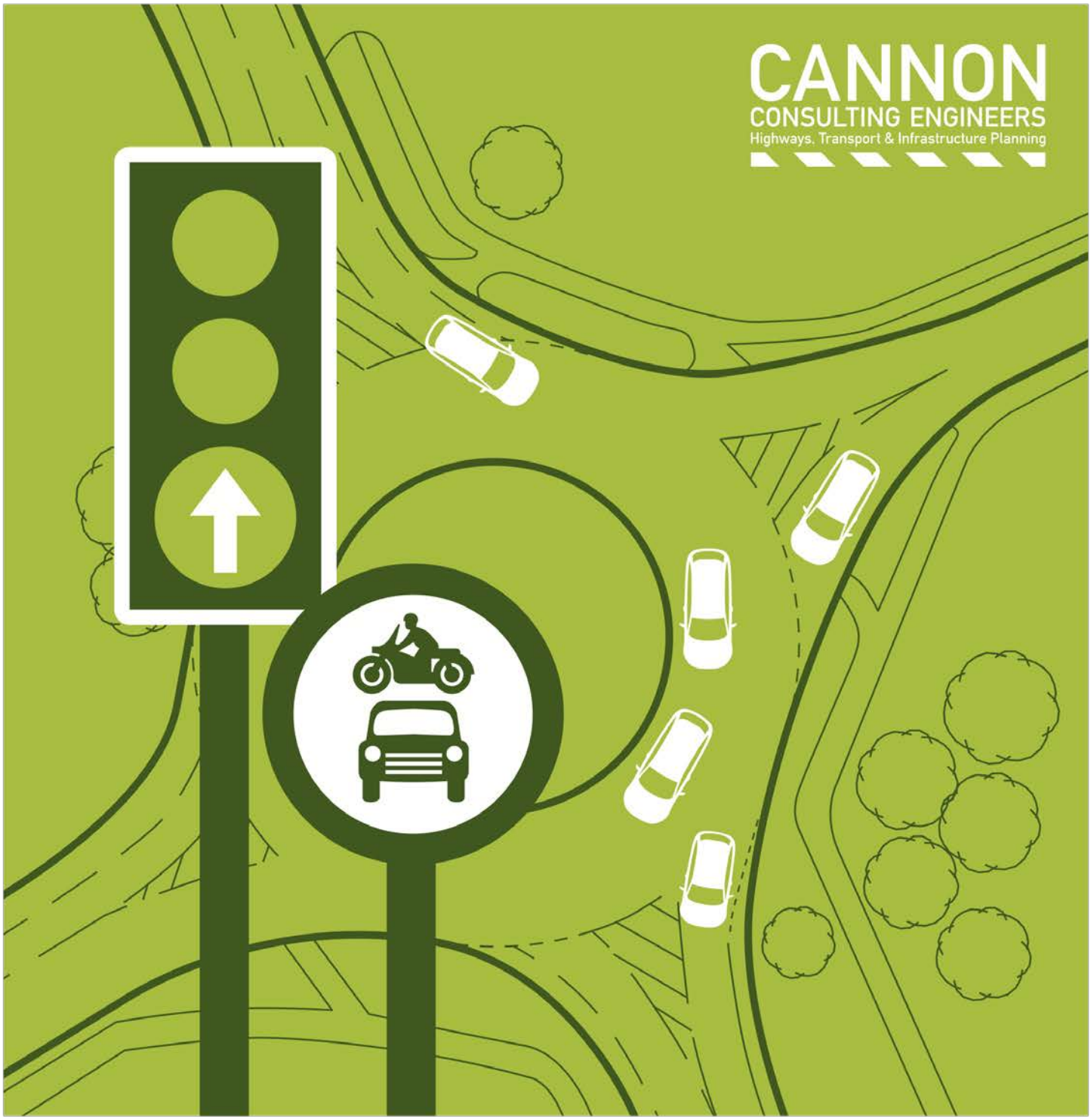

transport assessment

Land south of Beyton Road, Thurston, Suffolk

CCE/X601/TA-01

June 2019

For Bloor Homes and Sir George A. Agnew

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Document Review Sheet

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Document status

Issue	Date	Author	Checked
01	June 2019	JP	RE

EXECUTIVE SUMMARY

The site is located to the south of Thurston village centre on the southern side of Beyton Road. The development proposal comprises up to 210 dwellings.

CCE are aware of the five residential planning applications in Thurston permitted in 2017. As part of the review of these applications and the cumulative impact on the local highway network, Suffolk County Council (SCC) as Highway Authority commissioned AECOM to undertake a review of the local highway network. This is considered to form the new baseline upon which this proposal is assessed.

Whilst the five sites proposed mitigation for their cumulative impact within existing land constraints, SCC made it clear that if any further development were to come forward in Thurston, further improvement would be required at several points on the local highway network. The Neighbourhood Plan also highlights the same local "pinch points", namely:-

- Fishwick Corner – capacity and safety issue
- Pokeriage Corner – safety issue
- Under the railway bridge – restricted footway width

The site is located north-east of Fishwick Corner, north–west of Pokeriage Corner and south-east of the railway bridge.

The traffic survey data demonstrates that the vast majority of traffic leaves Thurston in the peak periods to the south, therefore routing through Pokeriage Corner, the railway bridge and/or Fishwick Corner. Whilst the five permitted sites have a substantial impact on these junctions, limited mitigation was only proposed at Fishwick Corner. This was limited by land constraints and included reversing the priority, reducing the speed limit and providing some signing and lining improvements. The improvement did not overcome the capacity and safety issues at the junction.

The impact of the proposed development on the surrounding highway network has been considered in detail as part of this TA. The site is located to the south of the railway bridge and therefore the traffic impact on this part of the network is minimal. It is however acknowledged that this is a key pedestrian route from the site to amenities such as the Community College, primary school, shops and station to the north of the railway line. The site access strategy has been designed to minimise the traffic impact on both Fishwick Corner and Pokeriage Corner by providing two points of access to the road network.

Two points of access would not normally be required for the scale of development proposed but providing two points of access into the site offers the opportunity to distribute traffic across the network, therefore reducing the impact on the immediate junctions. The southern access proposed onto Mount Road East allows people heading to Bury St Edmunds and the A14 westbound to avoid Pokeriage Corner altogether. Likewise, the northern access proposed on Beyton Road allows traffic heading north to avoid Fishwick Corner (and Pokeriage Corner depending on the end destination).

The site access strategy has therefore been designed to minimise the impact on the identified "pinch points". The traffic impact as a result of the proposals on Fishwick Corner, Pokeriage Corner and the railway bridge is negligible. That said, the development provides a unique opportunity to deliver improvements for the wider betterment of the village, both in terms of existing and future residents of Thurston. In order to achieve this the development includes land specifically for the purpose of delivering off-site highway improvements at junctions identified as an issue in the previous assessments by the Authorities.

A significant improvement is proposed at the Fishwick Corner junction where land has been secured specifically to upgrade the junction to a staggered crossroads. This delivers significant capacity and safety improvements and is not something that could be achieved without the additional land.

At Pokeriage Corner, additional land has been secured to solve the existing drainage issue. Improvements have also been made to visibility from the Thedwastre Road approach that improves safety and capacity. It was noted that vehicle speed on the approach to this junction and the village would benefit from an enhanced gateway.

A detailed review of the existing railway bridge has facilitated a footway improvement which increases the footway width to a continuous 1.5m whilst also allowing the continued operation of the bridge by large vehicles. The proposals also include upgrading the junction of Beyton Road/New Road from a priority T junction to a mini-roundabout. This will slow traffic in the vicinity of the railway bridge and prioritise movements from Beyton Road where existing visibility is restricted.

All improvements will benefit capacity and safety for all road users.

The Development proposals therefore meet the criteria set out in Policy 7 of the Neighbourhood Plan which relates to key road junctions.

The local highway improvements can be delivered by the developer through S278 and/or S106 contributions in parallel with the development coming forward.

As part of the application process Bloor have actively engaged with the process to secure improvements to known issues, even where the scale of the development impact is low and significantly less than the cumulative impact of the five permitted sites which were only able to offer limited improvement.

This has been undertaken in consultation with the Local Planning Authority and Highway Authority and the end result is a package of measures which unlocks the historical network pinch points, improving capacity and importantly safety.

We consider the proposed development to be sustainable when judged in accordance with the National Planning Policy Framework and that there will not be a residual cumulative impact that could be considered to be severe.

1.0 INTRODUCTION

1.1 Introduction

1.1.1 Cannon Consulting Engineers (CCE) have been appointed by Bloor Homes and Sir George A. Agnew to provide highways and transportation advice in relation to proposals for a residential development on land south of Beyton Road, Thurston, Suffolk. The location of the site is presented on **Figure 1**.

1.1.2 This Transport Assessment (TA) and accompanying Residential Travel Plan (TP) form part of the supporting documentation for an outline planning application for up to 210 residential dwellings. A site layout is contained in **Appendix A**.

1.1.3 The site is identified within Babergh and Mid Suffolk District Councils Joint Local Plan – Preferred Options Document (Reg. 18) (July 2019), and is being considered as a residential site allocation for approximately 200 dwellings (site reference LA087).

1.1.4 Thurston is defined as a Key Service Centre (KSC). KSC have access to a range of employment opportunities, services, shops and good public transport links. For this the reason Local Plan proposes that development is focused at towns and KSC.

1.1.5 This Transport Assessment examines the sites' accessibility, sustainability and transport impacts in the context of National & Local Planning Policy. We have made specific reference to past applications and cumulative impact assessment carried out by the Authorities when approving recent development.

1.2 Development Proposals

1.2.1 The site is located to the south of Thurston village centre on the southern side of Beyton Road. The development proposal comprises circa 210 dwellings. The site will be served by two points of access, one from Beyton Road and the second from Mount Road East which borders the southern edge of the site. The development also includes land specifically for the purpose of delivering off-site highway improvements at junctions identified as an issue in historic assessments by the Authorities and within the emerging Neighbourhood Plan.

1.3 Background

1.3.1 A public consultation was held on Friday 17th May at Cavendish Hall, Thurston. The consultation was well attended by residents who provided feedback on the proposals. This feedback has been incorporated into the final scheme included within the planning application where possible. Key concerns of local residents included vehicle speeds, highway capacity and highway safety on the local road network, particularly in the context of planning permissions granted for five residential sites in 2017, totalling 827 dwellings. These concerns have been addressed within this TA and where appropriate improvements identified to mitigate this developments impact over and above the impact of other committed developments.

1.3.2 CCE are aware of the five residential planning applications in Thurston permitted in 2017. As part of the review of these applications and the cumulative impact on the local highway

network, Suffolk County Council (SCC) as Highway Authority commissioned AECOM to undertake a review of the local highway network. The AECOM and SCC technical work referencing the five sites is included in **Appendix B**.

1.3.3 As part of this application CCE have undertaken a detailed assessment of junctions identified in the AECOM study. The AECOM study includes mitigation measures required to support the five development sites and also identified where more improvement would be required to support further development. Most relevant to this site is Fishwick Corner (to the south-west of the site), Pokeriage Corner (to the east of the site) and the footpath under the railway bridge. **Figures 5** and **6** show the location of the five committed developments and the proposed infrastructure improvements associated with them. Many of the improvements will be funded by pooled S106 contributions and delivered by SCC. A range of other site specific improvements to the highway network will be delivered directly by the developers. The timescales for the payment of contributions are dependent on the sites coming forward and SCC will not generally carry out improvements without receiving the full funding. Site specific improvements are also dependent on when sites come forward and are linked to the build out program. As such, there is no set timescale for delivery of the highway improvements and in most cases these will come later than when activity commences on site with site specific improvements generally on first occupation of a dwelling. The improvements being delivered with contributions by SCC will occur significantly later, with no set timescale. We have considered this further in relation to this development as the delivery of key infrastructure that will improve current conditions in timely manner was a concern expressed during public consultation.

1.3.4 The five sites and associated infrastructure has formed the baseline upon which the Beyton Road development has been assessed.

1.4 Scoping

1.4.1 A Scoping meeting was held with Mid Suffolk District Council and Suffolk County Council on Friday 22nd February 2019. This was followed by a formal scoping letter from SCC which is included in **Appendix C**. A summary of the key points raised by SCC in the scoping letter is provided below:

- Rail bridge – improvements required to the pedestrian route under the rail bridge as this is considered to be a key pedestrian desire line
- Beyton Road – additional footway is required along or within the site. Consideration shall be given to providing safe crossing points for pedestrians
- Thedwastre is the main access route toward the east of the village. Consideration should be given to its suitability as a safe route by vulnerable road users.
- Consider links to cycle route 51.
- Mitigation will be required at Fishwick Corner, over and above that proposed by the five sites.

- The assessment should include the following junctions:-
    - A143/C691 junction
    - C691 Barton Road/C562 Station Hill mini roundabout
    - Beyton Road/New Road junction
    - Fishwick Corner
    - Pokeriage Corner
    - Station Hill/Norton Road

1.4.2 A subsequent meeting was held with SCC highway officers on Tuesday 4th June, following the public consultation and consideration of the issues raised. Subsequent improvements to the local highway network were discussed in detail and key parameters agreed. Minutes of the meeting are also included in **Appendix C**.

1.4.3 In preparing the TA reference has been made to Department for Transport (DfT) Transport Assessment Guidance March 2007, National Planning Policy Guidance, Local Plan Policy and The Suffolk Design Guide.

1.5 Report Structure

1.5.1 Following the above summary, the purpose of this TA is to identify the transport impacts and related improvements resulting from the proposed residential development where required. Section 2 of this report describes the application site and existing transport conditions in the vicinity of the proposed development. This includes a review of the existing access and linkages to the site.

1.5.2 Section 3 presents a summary of the relevant transport policies at national and local levels which apply to the application site. Section 4 provides detailed review of the local highways network and the issues that need to be addressed by this application. Section 5 describes the development proposals, including the scale, layout and access into the site.

1.5.3 The assessment year and background traffic used to assess the impact of the proposals at the local level is presented in Section 6.

1.5.4 Section 7 outlines the estimated trip generation and traffic distribution as a result of the proposed development.

1.5.5 The resulting development transport impacts are assessed in Section 8; including capacity assessments of the surrounding highway network and localised assessment of the site access junctions. Proposals to mitigate the impact of the development where required are also included in Section 8.

1.5.6 Section 9 introduces a sustainable access and movement strategy for the residential proposal. This examines connectivity by other modes of transport and the means to improve this in the future which will be embodied in a site specific Travel Plan. A standalone Residential Travel

Plan has been produced to support this application and should be read in conjunction with this report.

1.5.7 Section 10 presents and summary and conclusion to this TA.

2.0 EXISTING CONDITIONS

2.1 Introduction

2.1.1 This section of the report outlines the existing local conditions including the provision for walking, cycling, public transport and the local highway network in the vicinity of the site. Connectivity to local amenities and facilities is also reviewed. This will facilitate an evaluation of the opportunities that exist to help reduce dependence on travel by the private car.

2.2 Site Location

2.2.1 The Beyton Road site is located to the south of Thurston village centre, approximately 2km to the north of the A14, between Bury St Edmunds (10km to the west) and Stowmarket (15km to the east). Thurston is surrounded by villages such as Beyton, Great Barton (A143) and Pakenham. At present the site comprises of agricultural land and is bound to the west by Barton Road/New Road, to the north by Beyton Road and to the east and south by Mount Road (East). A Site Location Plan is included in **Figure 1**. The roads immediately surrounding the site are known locally by different names. For ease of comparison later in the report, the road names used within the AECOM report prepared on behalf of Suffolk County Council (SCC) have been used in this TA. The road names are included on **Figure 1** for ease of reference.

2.3 Local Highway Network

2.3.1 The site currently takes access from an agricultural access onto Barton Road/New Road on the western site boundary. Barton Road/New Road connects the village of Rougham (3.2km south of the proposed site) to Thurston and provides a route from Thurston to the A14 westbound. New Road passes under the Railway Bridge to the north of the site where it meets Station Hill at a mini roundabout which leads to Station Road to the east and Barton Road to the north.

2.3.2 New Road forms the northern and southern arm of Fishwick Corner crossroads to the south-west of the site, with Mount Road (West) to the west and Mount Road (East) to the east forming the other arms if the crossroads. Currently the east to west arms have priority at this junction. However, part of the mitigation for the five sites is to change the priority to north/south. This will be delivered by SCC and funded by S106 contributions. No timescale is identified albeit an associated reduction in the speed limit is to be brought forwards shortly.

2.3.3 To the south-west of the site New Road is subject to a derestricted speed limit (60mph) until approximately 50m south of the junction with Beyton Road where the speed limit decreases to 30mph in the direction of Thurston.

2.3.4 Mount Road to the south-west of the site connects Moreton Hall and the east of Bury St Edmunds (approximately 5km west of the proposed site) to Thurston and provides a route from Thurston to the A14 east and westbound at Junction 45 (Rougham) via Sow Lane, or Junction 46 via the Eastern Relief Road and Bedingfield Way and a 4 arm roundabout with the A14 and the A134.

2.3.5 The A134 provides a route into the centre of Bury St Edmunds and to West Suffolk Hospital. Mount Road is subject to a derestricted speed limit (60mph) until 400m east of the eastern

edge of Moreton Hall where the speed limit decreases to 30mph and a gateway feature and 4 arm roundabout is present.

2.3.6 Beyton Road to the north of the site forms a priority T-junction with New Road/Barton Road to the south of the Railway Bridge. Beyton Road runs adjacent to the site boundary in a north-west to south-east direction and connects with Thurston Road at a crossroads junction with Thedwastre Road/Beyton Road/Thurston Road/Mount Road East. This crossroad junction is known as Pokeriage Corner. Beyton Road provides a connection to the village of Beyton (2km south-east of the proposed site) and to the A14 eastbound only at Junction 46. Beyton Road adjacent to the site is subject to a 30mph speed limit where Thurston Road increases to 40mph approximately 100m east of Pokeriage Corner.

2.3.7 As part of the mitigation proposed for the five sites in Thurston, the speed limit in the vicinity of the site.

2.4 Non-Car Modes

2.4.1 Access to the site by modes other than the private car include the following:

- Walking – Pedestrian Networks;
- Cycling – Cycle Route Networks; and
- Public Transport – Existing Bus and Train service provision.

2.4.2 **Figure 2**, the Accessibility Plan, shows the local facilities in the vicinity of the site.

2.5 Walking and Cycling

2.5.1 A review of the existing pedestrian infrastructure, in regards to pedestrian connectivity, around the site has been undertaken. Routes to local amenities and facilities have been examined in relation to the ability of future residents of the site to reach the local points of interest.

2.5.2 The roads listed in Table 2.1 overleaf have been audited for their pedestrian facilities, the details of which are illustrated in **Figure 3** Walking Routes to School.

Road Name	Comments
Beyton Road	Good quality footway on northern side of carriageway approximately 1.5m in width, currently no footway on southern side. No formal pedestrian crossings or street lighting.
Barton Road (under the railway bridge)	Narrow footway of approximately 1m in width on eastern side of the carriageway. Pinch point of 751mm. No formal pedestrian crossings though one light column is present in the western verge.
Barton Road (north of train line)	Good quality footways on either side of the carriageway. Drop kerb crossing facilities present on all arms of the Barton Road / Station Hill roundabout junction.
Mount Road	No pedestrian access possible at present.
Thedwastre Road	Good quality footway of approximately 1.5m in width present on the western side of the carriageway. Intermittent street lighting present along the length of the road.
Thedwastre Road at the location of the railway bridge	The footway over the railway bridge is delineated with a white line. There is no formal kerb. A priority system is in place to guide drivers.
School Road	Good quality footway around 1.8m in width on northern side of the carriageway only. An uncontrolled pedestrian crossing, in the form of a raised table, is present across Sandpit Lane to the north of the Sandpit Lane / School Road junction which connects to a cycle path link toward Station Hill.
Station Hill	Good quality footways approximately 1.5m in width on both sides of the carriageway. Cycleway link to School Road from the eastern side of the carriageway. To the north of the cycleway link to School Road, a shared use footway/cycleway is present on the eastern side of the carriageway. A zebra crossing across Station Hill is also present to the south of the Station Hill / Norton Road left-right staggered junction, at which the shared footway/cycleway transitions to the western side of the carriageway.
Norton Road (West)	Good quality footways approximately 1.8m in width present on both sides of the carriageway. A cycleway link to Thurston Community College is present on the eastern side of the carriageway. A zebra crossing of Norton Road is also present within close vicinity of the College.

Table 2.1 – Audited Roads – Pedestrian Infrastructure

2.5.3 To further assess the pedestrian facilities in close vicinity of the site, an audit of four routes toward a number of key land uses has been undertaken. The audited routes are as follows:

- Route 1:– Thurston Primary School (CEVC Primary Academy, School Lane IP31 3RY);
- Route 2:– Train Station / Pharmacy (Station Hill, IP31 3NS); and
- Route 3:– Thurston Community College via Station Hill.

2.5.4 Details of all four of the routes are shown in **Figure 3**.

Route 1

2.5.5 The existing footway on Beyton Road is approximately 1.5m in width and currently does not benefit from street lighting.

2.5.6 After approximately 150m to the southeast, pedestrians can connect to the existing footway on the western side of Thedwastre Road. The footway on the western side of Thedwastre Road is approximately 1.5m in width and benefits from intermittent street lighting along its extent.

2.5.7 Approximately 250m to the north of the Beyton Road / Thedwastre Road / Thurston Road crossroads junction, Thedwastre Road forms a narrow bridge across the railway line. At this point the footway is delineated by a white line on the carriageway, with no kerbing present. The traffic over the bridge operates priority working.

2.5.8 The pedestrian route continues north on Sandpit Lane via the existing footway on the western side of the carriageway. An uncontrolled pedestrian crossing, formed as a raised table, across Sandpit Lane is provided a short distance to the north of the Sandpit Lane / School Road junction to facilitate safe pedestrian access to the footway on the northern side of School Road.

2.5.9 Along School Road, the existing footway on the northern side of the carriageway benefits from street lighting and is in excess of 1.5m in width for the majority of its length. Approximately 400m to the east, the footway merges with the footway on the western side of School Lane, which runs in a northeast-southwest alignment as it approaches Thurston Primary School. Here, access to the school can be achieved via a brief crossing of the carriageway.

2.5.10 The route is approximately 1.1km long and therefore can be walked in approximately 14 minutes. The first section of this route can also be utilised to reach the nearby bus stops on Thedwastre Road, at which bus services 384 and 337 can be accessed.

Route 2

2.5.11 The existing footway on Beyton Road is approximately 1.5m in width and currently does not benefit from street lighting.

2.5.12 After approximately 250m to the west of the site, the footway on Beyton Road merges with the footway provided under the railway bridge. Where the footway on the northern side of Beyton Road crosses the existing petrol filling station on the northern side of the carriageway the footway is delineated by a dashed line across the entire frontage of the petrol filling station forecourt.

2.5.13 The footway under the railway bridge is narrow, at approximately 1m in width with a pinch point of 751mm, and does not currently benefit from street lighting. However, after a short distance to the north, the footway merges with that which is provided on the southern side of Station Hill which provides access to the railway station after approximately 85m. The

footways on Station Hill benefit from street lighting and are well overlooked by properties fronting onto the carriageway.

2.5.14 The route is approximately 480m and therefore can be walked in approximately 3 minutes.

Route 3

2.5.15 The existing pedestrian route to Thurston Community College is the same as the initial section of route 2.

2.5.16 Following the access to Thurston Railway Station, pedestrians would continue east along the footways on either side of Station Hill.

2.5.17 Approximately 200m to the east of the 3-arm mini-roundabout junction of Barton Road with Station Hill and Beyton Road, Station Hill swings to the north and intersects with a cycleway offering an east to west link with Sandpit Lane.

2.5.18 To the north of this point, the footway on the eastern side of the carriageway widens to form a shared use footway/cycleway and continues north toward Thurston Community College. After a further 120m, a pedestrian crossing is provided across Station Hill to facilitate safe crossing of the carriageway for pedestrians.

2.5.19 Continued travel north along the footways on either side of Station Hill provides a route toward the left-right staggered junction of Station Hill with Norton Road after around 200m. Beyond the uncontrolled pedestrian crossing across Station Hill, the footways on either side of the carriageway are of good width and quality, and benefit from street lighting along their extent.

2.5.20 At the left-right staggered junction of Station Hill with Norton Road, the footway on the western side of Station Hill merges with that which is provided on the southern side of Norton Road. Pedestrians can continue their journey along this footway, or use the uncontrolled pedestrian crossing across the bellmouth of the Norton Road arm of the junction to access the footway on the northern side of the carriageway.

2.5.21 The footways on Norton Road benefit from street lighting and are approximately 1.8m in width for the majority of their lengths. To the west, the footway on the northern side of the carriageway affords direct access to Thurston Community College, whilst the footway on the southern side affords access to the Community College via an uncontrolled pedestrian crossing across the carriageway, located approximately 150m to the west of the left-right staggered junction.

2.5.22 The journey is approximately 850m in length, and therefore can be walked in around 11 minutes.

2.5.23 It should be noted that as part of the infrastructure committed to by the five sites, a number of pedestrian and cycle improvements are proposed locally. These are shown on **Figure 6**.

2.5.24 A new Primary School is proposed as part of the Pigeon development in the north-east of Thurston. The location is shown on **Figure 3**. The walking route from the site to the proposed

school will be similar to Route 1 described above, however pedestrians will continue straight along Sandpit Lane as opposed to left along School Road. The walk distance is comparable at 1.2km which equates to a 15 minute walk. As part of the Pigeon Development proposals new footways and pedestrian crossing points will be provided to access the school.

2.5.25 Reference is made to the Department for Transport Local Transport Note 1/04 – Policy, Planning and Designing for Walking and Cycling. This document refers to the Chartered Institution of Highways and Transportation (CIHT) guidelines for "Providing for Journeys on Foot" which considers suggested acceptable walking distances for various journey purposes such as commuting, walking to school and recreational.

CIHT Guidelines	Distance		Walk Time	
	Commuting, Walking to School and Recreational	Other Non-Commuter Journeys	Commuting, Walking to School and Recreational	Other Non-Commuter Journeys
Desirable	500m	400m	6.25 mins	5 mins
Acceptable	1,000m	800m	12.5 mins	10 mins
Considered	2,000m	1,200m	25 mins	15 mins

Table 2.2: CIHT guidance 'Providing for Journeys on Foot'

2.5.26 Table 2.2 provides a summary of walking and cycling distances and journey times to key local services/facilities from the centre of the site. The calculations are based on a walk time of approximately 80m per minute and a cycle time of approximately 270m per minute. **Figure 2** shows the location of the site in relation to key amenities.

Facility/Service	Distance (Metres)	Category	Journey Time (mins)	
			Walking	Cycling
Petrol station and Garage	150	D	2	1
Public House	280	D	4	1
Bus Stop (reference sufgajdw/sufgajga)	350	D	4	1
Thurston Train Station	350	D	4	1
Local Shop (Londis)	550	A	7	2
Post Office	550	A	7	2
New Green Centre and Play Park	650	A	8	2
Thurston Veterinary Centre	800	A	10	3
Thurston Community College	850	A	11	3
Library	1,000	C	13	4
Thurston Primary School	1,100	A/C	14	4
NEW Thurston Primary School	1,200	C	15	4
Thurston Rugby Club	1,500	C	19	6

Table 2.3: Walking and Cycling Journey Time Summary

2.5.27 The table above shows that the proposed development is widely accessible by foot and cycle to a number of key services and facilities and many are within an acceptable distance when categorised. Key facilities that encourage sustainable travel such as the bus stops and rail station are within the desirable walking distance.

2.5.28 The routes identified above are considered to be the 'primary routes' for walking and cycling from the new development. The access strategy for the development will be designed to connect to these routes.

2.5.29 National Cycle Route 51 runs through Thurston in an east/west direction approximately 450m north of the proposed site. Part of this route is off road including a level crossing over the railway line.

2.6 Public Transport

Bus Services

2.6.1 **Figure 4** summarises the local public transport. There is a local bus service operating along Barton Road. This can be accessed from the bus stop to the north of the site located on Barton Road, identified as 'Thurston Opp Fox and Hounds (stop reference - sufgajdw/sufgajga),

approximately 360 metres from the centre of the site. There are multiple bus stops within close proximity of the site, 400m northwest along Barton Road opposite the post office and outside Thurston Community College 850m north of the site.

2.6.2 At present, two bus services are identified as operating along Barton Road within 350m of the proposed site, namely Service 384 385, all of which are operated by First in Essex. On average these services provide a service every two hours Monday-Saturday to Bury St Edmunds (20 minutes) including Moreton Hall, West Suffolk Hospital, Arc Shopping Centre and Bury St Edmunds Bus Station. There are a number of school services including the 304, 337, 988 operating in the morning and afternoon to coincide with school opening times and a number of school services provided by Thurston Community College including a service that take students to the Beyton 6th Form Campus. Further details of school bus services can be found on the Thurston Community College website http://www.thurstoncollege.org.uk/Daily-Bus-Routes/.

2.6.3 A summary of the bus frequencies is provided at Table 2.4/2.5 below. Full bus service maps and timetables for the routes within the vicinity of the site, are contained at **Appendix D**. Further details of bus services listed and others within the wider vicinity of the site can be found on the Traveline website for East Anglia www.travelineeastanglia.org.uk.

Service	Operator	Route	Frequency			
			Mon-Fri	First & Last Bus	Sat	Sun
384	Galloway	Bury St Edmunds - Thurston - Beyton - Woolpit - Stowmarket	Every three hours	0759 1814	Every three hours	No service
385	Galloway	Bury St Edmunds - Thurston - Norton - Woolpit - Stowmarket	Every three hours	0857 2057	Two services a day	No service

Table 2.4: Bus Services and Frequencies (Bus Stop Reference Opp and adj Fox and Hounds sufgajdw/sufgajga)

Service	Operator	Route	Frequency			
			Mon-Fri	First & Last Bus	Sat	Sun
304	Simonds	Bury St Edmunds - Stanton - Diss	One service a day in Term time	0823	No service	No service
304	Simonds	Diss - Stanton - Bury St Edmunds	One service a day in Term time	1527	No service	No service
337	Simonds	Thurston Community College - Stanton - Garboldisham	One service a day in Term time	1530	No service	No service
988	Mulleys Motorways	Thurston Community College - Woolpit - Elmswell - Stowmarket	One service a day in Term time	1535	No service	No service
FH1 Connecting Communities	The Voluntary Network	Santon Downham, Dalham, Icklington, Gazeley, Newmarket, Kentford, Moulton, Higham, Brandon, Cavenham, Eriswell	Hourly (Journeys must be booked in advance)	0700 1800	Hourly (Journeys must be booked in advance)	No service

Table 2.5: Bus Services and Frequencies (Bus Stop Reference Thurston Community College sufgajmw)

Rail Services

2.6.4 The closest Train Station is located in Thurston, approximately 350m north of the site. This equates to a 4 minute walk and 1 minute cycle ride.

2.6.5 Thurston Train Station is serviced by Greater Anglia, Table 2.6 provides a summary of the services and the operating frequencies.

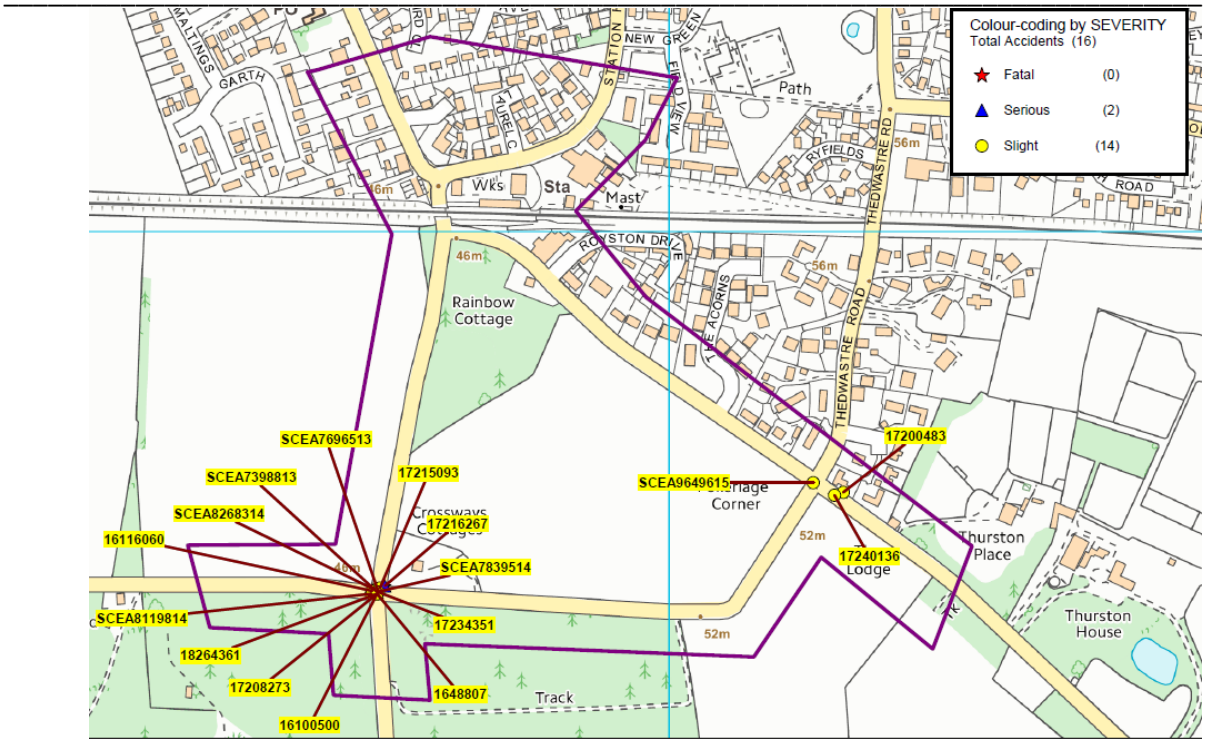
Destination	Journey Time (min)	Route	Frequency			
			Mon-Sat		Sunday	
			Typical Frequency	First & Last Train	Typical Frequency	First & Last Train
Ipswich	32	Elmswell, Stowmarket, Needham Market,	Hourly	0537 2335	Every two hours	1003 2339
Cambridge	17	Bury St Edmunds, Kennet, Newmarket, Dullingham	Hourly	0541 2148	Every two hours	0803 2133

Table 2.6: Rail Services and Frequencies from Thurston Train Station

2.6.6 Thurston Train Station provide regular service to local towns and employment opportunities, including Bury St Edmunds Train Station which provides a direct route to Ely and Peterborough and Stowmarket Train Stations.

2.7 Personal Injury Accident Review

2.7.1 An analysis has been undertaken of Personal Injury Accident (PIA) data for the most recently available 5-year period between 01/06/2013 – 01/06/2018. Accident details have been obtained from Suffolk County Council (ECC) for the area shown on Image 2.1 below. Full details of the PIA data is contained at **Appendix E.** CCE requested an update on this data from SCC. SCC confirmed that there had been no further PIAs recorded.



Insert 2.1 Accident plot and search area

2.7.2 There are a total of 16 personal injury accidents were recorded within the study area, of which two was recorded as serious in severity and 14 recorded as slight.

2.7.3 13 of the 16 personal injury accidents were recorded at the location of Fishwick Corner a crossroad junction with an unnamed Road, New Road and Mount Road. 11 of these accident were recorded as slight and two recorded as serious.

2.7.4 7 of the accident recorded as slight occurred when the driver was on the northern arm of the Fishwick Corner crossroads on New Road heading southbound, failed to look properly and pulled out of the junction, over the give way line, into the path of an oncoming vehicle heading westbound. 6 of these accident where caused by a collision between two vehicles and the other accident occurred when the oncoming vehicle swerved to avoid the oncoming vehicle, hitting a verge and ended up on its side. Two of these accidents occurred in the hours of darkness.

2.7.5 Two of the slight accidents occurred where the driver was on the northern arm of the Fishwick Corner crossroads on New Road, failed to look properly and pulled out of the junction, over the give way line, into the path of an oncoming vehicle. One where the driver on the northern arm was turning right towards Mount Road pulled out the junction into the path of a driver heading westbound causing a collision and the other where the driver on the northern arm was heading southbound pulled out the junction into the path of a driver heading eastbound causing a collision.

2.7.6 One of the accidents recorded as slight occurred where a driver on the southern arm of the crossroads heading northbound failed to look properly and, pulled out of the junction in to the path of an oncoming driver travelling westbound, causing a collision.

2.7.7 Another slight accident occurred when a driver travelling eastbound on Mount Road indicated to turn left (northbound) into New Road but cancelled the signal when the vehicle was at the junction and carried on eastbound. On seeing the indication the driver travelling southbound waiting at the give way line on New Road pulled out of the junction into the path of the oncoming vehicle causing a collision.

2.7.8 One of the serious accidents occurred when a driver traveling from Thurston stopped at the crossroads junction give way line waiting to right (westbound) to Mount Road and was waved out by a driver opposite, facing north. The driver turning right has pulled out into the path of a driver traveling eastbound from Mount Road to the unnamed road, causing serious injury.

2.7.9 The other serious accident occurred when a driver was waiting at the give way line on New Road heading southbound failed to look properly and pulled out in to the path on an oncoming vehicle heading eastbound from Mount Road to the unnamed Road causing a collision and serious injury to the passengers and driver.

2.7.10 In total 11 of the 13 accidents that occurred at Fishwick Corner were caused by drivers failing to look properly on the minor arms of the crossroads. This has highlighted an accident pattern at Fishwick Corner, a safety issue which has been identified by a study commissioned by Suffolk County Council as the Highway Authority. A scheme has been proposed by SCC to change the priorities at the junction where by reducing speeds and providing stop lines rather than give way. This scheme has been seen as an acceptable adaption to the junction to mitigate the existing safety issues and the increase in traffic from the five proposed developments in Thurston. However, this application will look at further safety improvement in this location.

2.7.11 Three accidents occurred at or near Pokeriage Corner, a crossroads junction with Mount Road East, Thedwastre Road, Beyton Road and Thurston Road. All three PIAs were recorded as slight and occurred in dry conditions; two in the hours of daylight and one in the hours of darkness. All accident occurred due to drivers failing to look properly and overshooting the junction on either the Mount Road East or Thedwastre Road approach colliding with an oncoming vehicle.

2.7.12 Table 2.7 summaries the recorded personal injury accidents.

Year	No. of Accidents	Severity		Time		Road Surface		
		Slight	Serious	Day	Night	Dry	Wet	Ice
2013	2	2		3		1	1	
2014	3	2	1	3		2	1	
2015	1	1			1	1		
2016	3	3		2	1	3		
2017	6	5	1	5	1	6		
2018	1	1		1		1		

Table 2.7: Personal Injury Accident Data Summary

2.7.13 The PIA data for the search area was reviewed to establish any existing accident problems which may be exacerbated by the proposed development. It is considered that there are visibility issues at both Fishwick Corner and Pokeriage Corner that require further review.

2.8 Traffic Surveys

2.8.1 To determine existing traffic flows in the area traffic surveys were undertaken by PCCTIC on Thursday 3rd May 2018 between the hours of 07:00 to10:00 and 15:00 to 19:00 at the following locations:

- Thurston Road / New Road crossroads (Fishwick Corner);
- Beyton Road / Thedwastre Road / Thurston Road / Mount Road crossroads;
- Beyton Road / New Road priority junction;
- Barton Road / Station Hill / New Road mini-roundabout;
- Barton Road / Norton Road priority junction;
- Sandpit Lane / School Road / Thedwastre Road priority junction;
- Norton Road / Sandpit Lane / Meadow Lane crossroads; and
- A143 / Thurston Road / Brand Road crossroads.

2.8.2 Analysis of the survey data revealed that the peak hours were defined as 07:45 to 08:45 for the morning peak hour and 16:45 to 17:45 for the evening peak hour period.

2.8.3 The surveyed AM and PM peak hour traffic flows are presented in **Traffic Flow Diagram T1.**

2.9 Summary

2.9.1 The site is considered to be well located in relation to existing facilities and amenities on offer within Thurston, all of which are in a reasonable walking and cycling distance from the site.

3.0 POLICY REVIEW

3.1 Policy Overview

3.1.1 This section of the report considers the transport policy background against which the planning application will be assessed. This includes National, Regional and Local Policy. The main policy documents setting the context within which the assessment will be undertaken are:

- National Planning Policy Framework (February 2019)
- Planning Practice Guidance (2014)
- Suffolk County Council Local Transport Plan 2011-2031
- Mid Suffolk Core Strategy 2008
- Babergh and Mid Suffolk Joint Local Plan – Preferred Options Consultation (Reg 18) (July 2019)
- Thurston Neighbourhood Plan (May 2018)

1.1 National Planning Policy Framework (February 2019)

3.1.2 A revision to the 2012 National Planning Policy Framework (NPPF) was published on 24th July 2018, and later updated on 19th February 2019. NPPF (2019) has been prepared as a result of proposals set out in the Budget 2017, including changes to planning policy and legislation to bring forward more land for development and investment in infrastructure.

3.1.3 Section 2 sets out the overarching objectives to achieve sustainable development at paragraph 10 confirms states that *"so that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development."* Paragraph 11 confirms that *"plans and decisions should apply a presumption in favour of sustainable development".*

3.1.4 Section 9 of the document refers to the promotion of sustainable transport.

3.1.5 Paragraph 102 notes that *"transport issues should be considered from the earliest stages of plan-making and development proposals, so that:*

- *The potential impacts of development on the transport networks can be addressed;*
- *Opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;*
- *Opportunities to promote walking, cycling and public transport use are identified and pursued;*
- *The environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net gains in environmental quality; and*
- *Patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places."*

3.1.6 Paragraph 104 notes that the planning system should "*actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are*

or can be made sustainable through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making."

3.1.7 Paragraph 106 notes 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 accordance with chapter 11 of the Framework). In town centres, local authorities should seek to improve the quality of parking so that it is convenient, safe and secure, alongside measures to promote accessibility for pedestrians and cyclists."*

3.1.8 Paragraph 108 notes that *"in assessing sites that may be allocated for development in plans, or specific applications for development, 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.*

3.1.9 Paragraph 109 notes that "*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."*

3.1.10 Paragraph 110 notes that within this context, applications for development should:

- *"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;*
- *Address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- *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;*
- *Allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- *Be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations."*

Planning Practice Guidance (2014)

3.1.11 The Planning Practice Guide (PPG) March 2014 aims to provide an accessible web based source for all national planning guidance. In the section relating to Travel Plans, Transport Assessments and Statements, the NPPG defines Transport Assessments and Statements as documents which:

> **"… are ways of assessing the potential transport impacts of developments (and they may propose mitigation measures to promote sustainable development. Where that mitigation relates to matters that can be addressed by management measures, the mitigation may inform the preparation of Travel Plans)."**

3.1.12 The PPG also discusses the relationship between Transport Assessments and Travel Plans:

> **"Transport Assessments and Transport Statements primarily focus on evaluating the potential transport impacts of a development proposal. (They may consider those impacts net of any reductions likely to arise from the implementation of a Travel Plan, though producing a Travel Plan is not always required). The Transport Assessment or Transport Statement may propose mitigation measures where these are necessary to avoid unacceptable or "severe" impacts. Travel Plans can play an effective role in taking forward those mitigation measures which relate to on-going occupation and operation of the development."**

3.1.13 The PPG identifies key principles governing the production of these documents stating that they should be:

- ***proportionate to the size and scope of the proposed development to which they relate and build on existing information wherever possible;***
- ***established at the earliest practicable possible stage of a development proposal;***
- ***be tailored to particular local circumstances (other locally-determined factors and information beyond those which are set out in this guidance may need to be considered in these studies provided there is robust evidence for doing so locally);***
- ***be brought forward through collaborative ongoing working between the Local Planning Authority / Transport Authority, transport operators, Rail Network Operators, Highways Agency where there may be implications for the strategic road network and other relevant bodies. Engaging communities and local businesses in Travel Plans, Transport Assessments and Statements can be beneficial in positively supporting higher levels of walking and cycling (which in turn can encourage greater social inclusion, community cohesion and healthier communities).***

Local Policy

3.1.14 Local policy is contained within the following documents and these are discussed in turn below.

Suffolk County Council Local Transport Plan 2011-2031

3.1.15 The Suffolk County Council Local Transport Plan (LTP) outlines a 20 year strategy that highlights the council's long-term ambitions for the transport network. The LTP aims to show how transport can play an important part in supporting and facilitating future sustainable economic growth by:

- Maintaining (and in the future improving) transport networks
- Tackling congestion
- Improving access to jobs and market
- Encouraging a shift to more sustainable travel patterns.

Mid Suffolk's Core Strategy 2008

3.1.16 Mid Suffolk's Core Strategy was adopted in September 2008. As the key Development Plan Document it sets out the vision, objectives, spatial strategy and core policies that will guide development across the district until 2025, and beyond. Thurston is identified within the strategy as a Key Service Centre.

3.1.17 A Focused Review of the Core Strategy (CSFR) has been adopted in December 2012, which updates the Core Strategy adopted in September 2008. Policy FC1 "Presumption in favour of sustainable development" states the following:

"When considering development proposals the Council will take a positive approach that reflect the presumption in favour of sustainable development contained in the National Planning Policy Framework. It will always work proactively with applicant jointly to find solution which mean that proposals can be approved wherever possible, and to secure development that improves the economic, social and environmental conditions of an area.

Planning applications that accord with the policies in this Local Plan (and, where relevant, with polices in neighbourhood plans) will be approved without delay, unless material considerations indicate otherwise.

Where there are no policies relevant to the application or relevant policies are out of date at the time of making the decision then the Council will grant permission unless material considerations indicate otherwise – taking into account whether:

Any adverse impacts of granting permission would significantly and demonstrably outweigh the benefits, when assessed against the policies in the National Planning Policy Framework taken as a whole; or

Specific policies in that Framework indicate that development should be restricted."

3.1.18 The Core Strategy describes Thurston as follows:

"The large villages closest to Bury are Thurston and Elmswell, which are the two largest villages in the District with multiple services. Both have railway stations, good bus links and are therefore well served by public transport to higher order settlements. They have good access to primary health care facilities in either Bury or in the nearby village of Woolpit, which is the third largest village in Mid Suffolk. It also has a high level of facilities including an industrial estate. All three are therefore key service centres."

Babergh and Mid Suffolk Joint Local Plan – Preferred Options Consultation (Reg 18) (July 2019)

3.1.19 This document has been recently prepared for public consultation. The site is identified for approximately 200 dwellings under Policy LA087 – Land south of Beyton Road, Thurston. The policy state the following:-

"The development shall be expected to comply with the following:

I. The relevant policies of the Joint Local Plan;

II. On-site open space is retained or an alternative provision of equal or greater quality, accessibility and quantity is provided as part of the scheme;

III. An ecological survey, and any necessary mitigation measures are provided;

IV. Contributions to the satisfaction of the LPA, towards provision of pre-school, primary school and secondary school provision;

V. Contributions to the satisfaction of the LPA, towards healthcare provision;

VI. Provision of a new footway links to the village;

VII. Transport Assessment required to assess the impact on highway under the railway bridge;

VIII. Mitigation measures at crossways junction near the site; and

IX. Contributions may be required, to the satisfaction of the LPA, towards accessibility improvements at Thurston railway station."

Draft Thurston Neighbourhood Plan (Dec 2018)-

3.1.20 This document represents the Neighbourhood Plan for Thurston parish for the period 2018 to 2036. The Plan contains a vision for the future of Thurston and sets out clear planning policies to realise this vision.

3.1.21 In March 2019 Mid Suffolk District Council appointed Janet Cheesley BA (Hons) DipTP MRTPI to carry out an independent examination of the Thurston NDP. At the time of writing this process is still ongoing.

3.1.22 Neighbourhood Plans can identify and allocate sites for new development including housing, employment, business use, leisure and other forms of development. They can also protect and safeguard land for future uses such as open space. The Thurston Neighborhood Plan undertook an assessment of each potential development site.

3.1.23 Land South of Beyton Road is identified in the NP as site 13. The NPs detailed assessment of the site is included in **Appendix F**. The site is considered to be well located in relation to the amenities on offer within Thurston. The review did highlight the narrow footway connection under the railway bridge on Barton Road and the lack of footway on Thedwastre Road at the railway bridge.

3.1.24 The plan includes the following objectives with regard to "Movement":-

M1. To ensure the road and rail infrastructure serving Thurston is safe and meets the needs of the growing population.

M2. To maximise the potential for the use of sustainable modes of transport, including cycling and walking.

M3. To plan for and adequately mitigate the impact of new development on traffic congestion and pedestrian safety.

3.1.25 POLICY 7 relates to Highway Capacity at Key Road Junctions. It states the following:-

"A. All Transport Assessments (for larger sites) or Transport Statements (for smaller sites) - as required by paragraph 32 of the National Planning Policy Framework – should address to the satisfaction of the highway authority the cumulative transport impact on road junctions, in particular including the following, identified on the Policies Map:

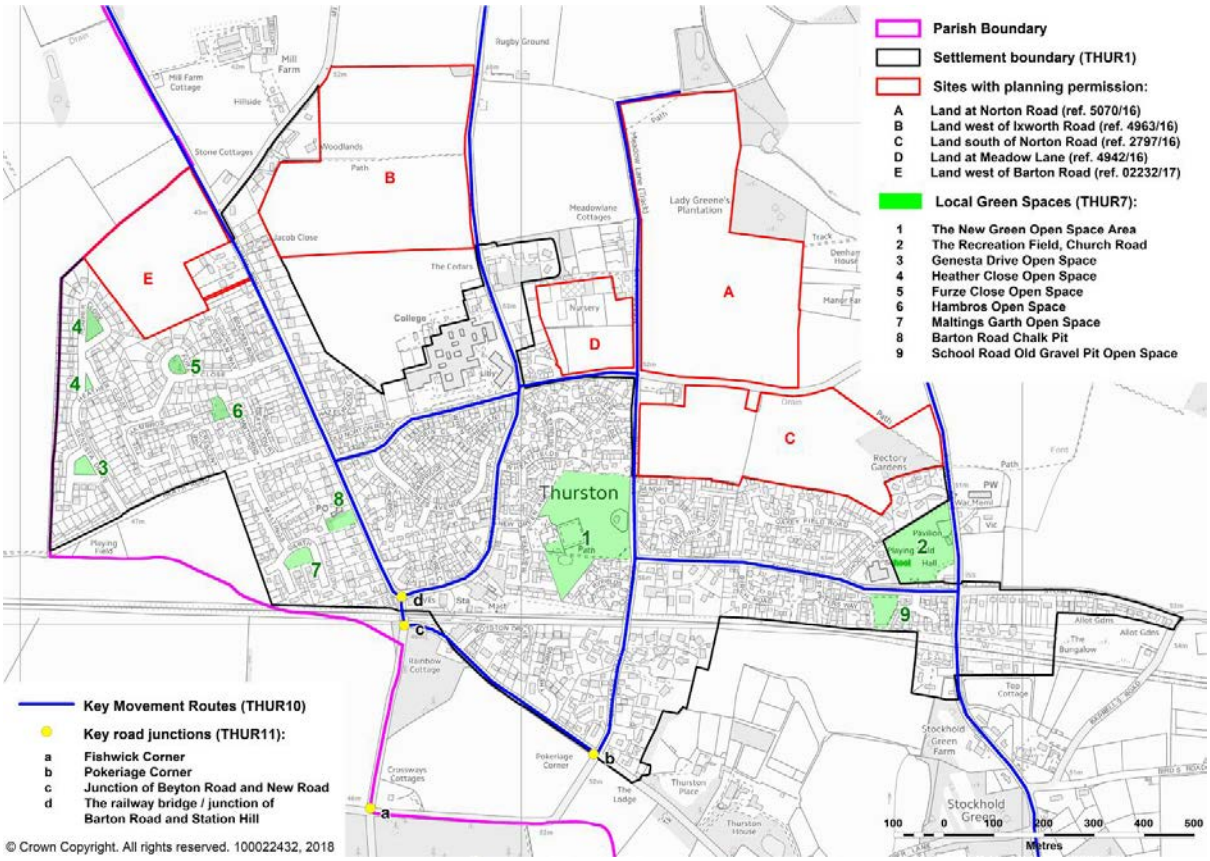
a. Fishwick Corner;

b. Pokeriage Corner;

c. Junction of Beyton Road and New Road;

d. The railway bridge / junction of Barton Road and Station Hill.

B. The provision of junction improvements at these points which are intended to reduce vehicle accidents and increase safety of cyclists and pedestrians is critical. Their provision is essential."



Insert: Figure 9.2 from Thurston Neighbourhood Plan: Detailed locations within the Parish.

3.2 Summary

3.2.1 The site is located in a Key Service Centre and well located in relation to the amenities and facilities on offer. The Neighbourhood Plan highlights a number of local concerns with the highway network which have been reviewed in detail within this TA.

3.2.2 The requirement of the draft Local Plan policy related to the site have been considered in detail within the report and as part of the preparation for this planning application there has been an extensive review of the highways under the railway bridge, mitigation measures at the crossways junction near the site and consideration of the impact of development on Thurston Rail Station.

4.0 DETAILED HIGHWAY NETWORK REVIEW

4.1 Overview

4.1.1 The village of Thurston has been the subject of a number of residential planning applications in recent years, totally 827 new dwellings in the village.

4.1.2 Five residential planning applications were submitted to Mid Suffolk District Council in 2016 for residential schemes within Thurston parish, namely:

- 2797/16 – Application for residential development of up to 175 dwellings with associated car parking, landscaping, public open space areas, allotments and vehicular access from Sandpit Lane. This application was submitted by Hopkins Homes Ltd and was supported by a Transport Assessment dated 12 May 2016;
- 4386/16 – Application for the erection of 138 dwellings, new vehicle access and provision of cycle/pedestrian link to Barton Road, road and drainage infrastructure, landscaping and open space. This development is location on land to the west of Barton Road. The applicant is Bovis Homes and was supported by a Transport Assessment dated June 2016;
- 4942/16 – Application for a residential development consisting of 64 dwellings and associated highway, car parking and public open space on land at Meadow Lane. The applicant was Laurence Homes Ltd and the application was supported by a Transport Statement dated October 2016;
- 4963/16 – Application for up to 250 dwellings, open space and associated infrastructure and the provision of a primary school, on land west of Ixworth Road. The applicant was Persimmon Homes Ltd, and the application was supported by a Transport Assessment dated November 2016; and
- 5070/16 – Application for the erection of up to 200 homes, primary school together with associated access, infrastructure, landscaping and amenity space on land at Norton Road. This submission was made by Pigeon Capital Management 2 Ltd with a Transport Assessment dated December 2016.

4.1.3 The location of these developments is presented in **Figure 5**. SCC indicated that they considered that the following junction may be at or over capacity with the combined impact of the developments

- A143 Bury Road/C691 Thurston Road/C649 Brand Road;
- C693 Thurston Road/C692 Thurston Road/C693 New Road (Fishwick Corner):
- C560 Beyton Road/C592 Thurston Road/U4920 Thedwastre Road (Pokeriage Corner).

4.1.4 Before the schemes were taken to planning committee a schedule of proposed mitigation was drafted by Suffolk County Council. The applications were all presented to the planning committee meeting of Mid Suffolk District Council on 12th July 2017, with the following recommendations:

- 2797/16 – Hopkins's Development - minded to approve;
- 4386/16 – Bovis's Development –minded to refuse;
- 4942/16 – Laurence's Development –minded to approve;
- 4963/16 – Persimmon's Development –minded to approve; and
- 5070/16 – Pigeon's Development –minded to approve.

4.1.5 The committee report for the meeting is contained in **Appendix B.** Whilst the planning committee conditionally approved four of the five applications, the final approval for the applications was to be made by delegated powers subject to the condition that the applicants considered and agreed to highways mitigation associated with the cumulative impact of the all the developments on the local highway network.

4.1.6 Following the planning committee meeting SCC commissioned AECOM to consider the cumulative impact of the developments on the local highway network. This study would be utilised to agree a single schedule of mitigation in terms of physical Section 278 works and proposed S106 obligations to mitigate the impact of the developments on the local highway network.

4.1.7 All five sites gained planning approval and the **Appendix G** contains the agreed local mitigation. This is also included on **Figure 5**.

4.1.8 The section below reviews key points on the local highway network in more detail taking into account the concerns raised in the Neighbourhood Plan, discussions with the Parish Council, feedback from local residents at the public consultation, onsite observations and the work undertaken by AECOM on behalf of SCC to inform the decision on the five application sites. Each junction will be reviewed below in turn. Details of proposed mitigation agreed as part of the planning process for the five sites will also be considered.

A143 Bury Road/C691 Thurston Road/C649 Brand Road

4.1.9 This junction links Thurston with the A143. Queues currently occur on Thurston Road approaching the A143 in the AM peak and on the A143 in the PM peak. The proposed mitigation is to introduce right hand turn lanes with traffic signals to control the junction. This is being funded by S106 contributions from the five sites. The proposed improvements are contained in SCC's letter to the planning authority dated 13th October 2017 (**Appendix B).**

4.1.10 The SCC letter concludes that the junction modelling indicates that the proposed traffic signal option will increase capacity although the junction will operate close to the theoretical capacity in 2021 with the traffic from the five sites included on the network. The figure below is an extract from the letter which summarises the modelling results.

			Base + growth (2021)		Base + growth + 629 dev (2021)		Base + growth + 827 dev (2021)	
	Dwellings considered (year)		0		689		827	
Ref	Junction		AM	PM	AM	PM	AM	PM
1	A143 Bury Road / C691 Thurston Road/ C649 Brand Road	4 way priority					1.38	1.20
1a	A143 Bury Road / C691 Thurston Road/ C649 Brand Road	4 way signalised junction (DoS)	92	80	97	86	98	87

Fig 2: A143/ Thurston Road Junction capacity

Insert 4.1: Extract from SCC letter dated 13th October 2017.

4.1.11 SCC Concluded the following with regards to this junction: *"No further capacity can be provided at the A143 Bury Road / Thurston junction within the existing highway boundary for traffic traveling to / from the Thurston area."*

4.1.12 This TA will review the impact of the proposed Beyton Road development at this junction in Section 8 in accordance with the pre-application advice received from SCC.

C693 Thurston Road/C692 Thurston Road/C693 New Road (Fishwick Corner)

4.1.13 A review of traffic survey data for Thurston reveals that the majority of traffic leaving Thurston travels through Fishwick Corner (around 70-80% typically in the peak periods). The junction is operating close to capacity at present with a queue forming on the northern arm of the crossroads junction in the AM peak. With traffic from the five sites included the AECOM junction review predicted the junction to be operating well over capacity in the future year scenarios.

4.1.14 The congestion issues are the result of a large right turn demand from north to west causing queues on the northern arm of the junction. The primary cause for vehicle delay is associated with visibility at the junction and its crossroads configuration which adds delay each vehicle making the manoeuvre. This in turn adds to the queue accumulation. The crossroad arrangement also means drivers have to observe multiple approaches before being able to commit to the making the turn. At certain times of day, the give way lines can be difficult to see due to the "sun dazzle" and areas of light & dark due to the trees. The accidents data reviewed in Section 2 confirms that there is a road safety issue at the junction. SCC has recently carried out tree clearance to improve such areas of light & dark on the approaching roads.

4.1.15 It is understood that several minor traffic management features such as improved signing, marker posts and high friction surfacing have been used at this junction in the past as crash reduction measures. Despite this, accidents causing injury continue to occur. It has been noted that few of these measures have been maintained since their introduction which appears to have been around 2008/9.

4.1.16 As part of the local network review for the five sites, SCC/AECOM reviewed possible mitigation measures at this location. Accordingly it was proposed to change the priorities at the junction.

To reduce the severity of the crashes it was also proposed to restrict the road to 40mph (all approaches are currently subject to derestricted speed limits (60mph)) and undertake local safety improvements such as enhanced road signs and markings. This would be delivered through a jointly funded S106 contribution. The scheme was considered to offer two benefits:-

1. An increase in capacity by prioritising those arms of the junction with the heaviest traffic
2. By reducing speeds and providing stop lines rather than give way road safety can be improved.

4.1.17 The proposals were modelled by AECOM and demonstrated that whilst capacity was improved there was still likely to be queue in the PM peak from west to north. The priority change resulted in the capacity issues moving from the AM peak to the PM peak, albeit not as severe due to the scale of traffic demand and lack of opposing traffic flows. This is summarised by the extract below.

			Base (2017)		Base + growth (2021)		Base + growth + 629 dev (2021)		Base + growth + 827 dev (2021)	
			0		0		689		827	
	Dwellings considered (year)		AM	PM	AM	PM	AM	PM	AM	PM
5	C693 Thurston Road / C692 Thurston Road	4 way priority. (Fishwick Corner)	0.88	0.45	0.91	0.46	1.15	0.57	1.21	0.60
5a	C693 Thurston Road / C692 Thurston Road	*Revised 4 way priority. (Fishwick Corner)*	0.67	0.83	0.69	0.85	0.80	0.92	0.82	0.93

Fig 5: Modelling data for Fishwick Corner

Insert 4.2: Extract from SCC letter 13th October 2017.

4.1.18 SCC concluded that *"The C692 / C693 Thurston Road (Fishwick Corner) cannot be improved further in terms of either road safety or capacity due to the highway boundary constraints."*

4.1.19 Section 8 considers further improvements that can be delivered at this location by the Beyton Road development. This specifically includes securing additional land beyond the site and highway boundary to deliver a focused and extensive improvement to the junction.

C560 Beyton Road/C592 Thurston Road/U4920 Thedwastre Road (Pokeriage Corner)

4.1.20 Pokeriage Corner forms a four arm crossroads. Beyton Road has priority and is subject to 30mph speed limit at the location of the junction. Though there have been few accidents recorded, there are perceived safety concerns at the junction. This is principally related to restricted visibility out of Thedwastre Road which delays drivers pulling out from the northern arm of the junction.

4.1.21 SCC and AECOM reviewed the junction as part of the assessment of the five sites. They concluded "*The C560 Beyton Road / C692 Thurston Road / U4920 Thedwastre Road (Pokeriage Corner) junction with full development is close to capacity in 2021. This results in a maximum queue length of 5 vehicles in the am peak. This is not considered to be severe impact…*

The relatively low number of crashes suggests that the issue of road safety is not as important as it is for the other two junctions and mitigation measures would only comprise low cost work, such as road signs and markings."

Beyton Road/Barton Road

4.1.22 This junction forms a priority T junction with Barton Road having priority. The junction is located immediately south the railway bridge. On site observations suggest that visibility to the south from Beyton Road is restricted. Vehicles travelling southbound on Barton Road were observed to be travelling in excess of the speed limit and many did not indicate if they were turning east into Beyton Road from Barton Road. In combination this makes it difficult for drivers to exit Beyton Road and short queues form at busy periods.

4.1.23 This junction was not assessed as part of the five sites applications nor cumulative impact assessment.

4.1.24 Local residents voiced concerns regarding vehicle speeds along Beyton Road at the public consultation. The speed survey data confirms that 85th percentile speed are in excess of the 30mph speed limit.

Barton Road under the Railway Bridge

4.1.25 Barton Road under that railway bridge is two-way for all but tall sided vehicles that have to use the centre of the carriageway to utilise the maximum height of the bridge. This section of carriageway is used by a number of school buses (coaches) in the AM peak associated with Thurston Community College.

4.1.26 The footway under the bridge is narrow, with a pinch point at the bridge parapet of 0.75m. The existing footway dimensions are presented on **CCE Drawing X601_PL_223**. There are no recorded accidents in this location.

4.1.27 SCC and AECOM concluded that *"The C691 Barton Road under the railway bridge is operating above capacity in the am peak. No mitigation has been identified that may alleviate this. There is a degree of uncertainty in the calculation of theoretical capacity as future growth may vary from current assumptions. For example, robust travel plans may encourage modal shift away from car use thus reducing demand. The link is very short (@50m) and the duration of any congestion is likely to be short lived being restricted to the morning peak. Under these circumstances it is considered that the localised congestion is not considered to represent a severe impact by the Highways Authority."*

4.1.28 On site observations confirm that the AM peak is a short period within the overall hour. It is also apparent that there is limited congestion observed on either of the surveys that have been carried out by CCE, so the AECOM desktop link capacity assessment is correct to have caveated the scale of the theoretical issue. It is a fact that in a network junctions play the most significant role in maximising capacity and that vehicle speeds is an important factor in link capacity. An overall scheme that moderates these key influences will improve traffic throughput, capacity and safety. There is a 15 minute period when the majority of coach traffic associated with the College can be observed. Coaches have to pass under the centre

of the bridge so this momentarily disrupts the two-way operation. However, no existing queues were observed.

4.1.29 A video survey of the footway under the bridge from both directions showed that pedestrians do use the current footway without issue. A mobility scooter, parents with children and parents with pushchairs, school pupils and dog walkers were seen to be using the existing footway without evident difficulty.

4.1.30 The impact of the Beyton Road development on this section of the network is reviewed in Section 8.

C691 Barton Road / C562 Station Hill Mini Roundabout

4.1.31 Barton Road/Station Road meet at a three arm mini roundabout just north of the railway bridge. The conclusion of the AECOM study was that "*the junction is predicted to operate within desirable capacity limits in the 2017 base and all three 2021 scenarios in both the AM and PM peak hours. The maximum RFC in the 2021 with Development (827 dwellings) scenario is predicted to be 0.69 on Station Hill East in the AM peak hour and 0.78 on New Road South in the PM peak hour. Queueing at this junction in the 2021 with Development (827 dwellings) scenario is minimal with the maximum queue predicted on New South Road of 4 vehicles in the PM peak, indicating that queueing would not affect the C560 Beyton Road / C691 Barton Road 'T' Junction to the south. Mitigation at this junction would not need to be considered if all five proposed developments in Thurston received planning permission and were developed, unless intensified use exacerbated an existing safety issue*."

4.2 School Bus Provision

4.2.1 WSP was commissioned by SCC to undertake a traffic impact assessment to detail the implications of removing school bus services at Thurston Community College. CCE have reviewed the report "Thurston Community College – Traffic impact assessment – removing school bus entitlement at the college" (WSP, March 2018).

4.2.2 SCC advised that 1,134 pupils currently travel to Thurston Community College and the bus services may potentially be removed from 782 pupils. SCC requested that the assessment of impact should be based on the Technical Note (Ref 60445024) dated 14th September 2017 prepared by AECOM (included in **Appendix B**) that considered the cumulative impact of the five sites. The WSP report builds on the AECOM assessment and details the potential traffic impact the removal of bus services for 782 pupils travelling to Thurston Community College will have on the key local junctions and links. It is estimated by WSP that this would generate an additional 365 car trips in the AM peak on the local highway network.

4.2.3 SCC provided a spreadsheet that details the number of pupils that will potentially lose their travel entitlement and the parish that they travel from. The distribution of new school trips by car is as follows:

- 11% - Bran Road / Thurston Road / Barton Road / Norton Road
- 52% - Ixworth Road / Norton Road

- 22% - Norton Road (E)
- 10% - Thurston Road (S) / Thedwastre / Sandpit Lane / Norton Road
- 1% - Rougham Road South / Barton Road / Norton Road
- 4% - Mount Road West / Barton Road / Norton Road

4.2.4 The pupil trips by car were assigned on the local Thurston road network in accordance with the above distribution.

4.2.5 The additional school trips by car resulting from the removal of travel entitlement were added to the AECOM base and future year flows to create the following assessment scenarios:

- 2021 baseline scenario + School car trips
- 2021 Future Year with Development of 827 dwellings scenario (full five proposed developments) + School car trips
- Sensitivity Test – 2021 Future Year with Development of 689 dwellings scenario (four developments granted 'minded to approve') + School car trips

4.2.6 The insert below is a summary table of the impacts of the removal of the school buses.

Table 10 – Summary of junction capacity assessments – AM Peak Hour – Sensitivity Test

Junction	AM Peak Max RFC						
	2017 Base	2021 Base	2021 with dev (689)	2021 with dev (827)	2021 Base + School trips	2021 with dev (689) + School trips	2021 with dev (827) + School trips
2. C560 Beyton Road / C692 Thurston Road / U4920 Thedwastre Road crossroads (Pokeridge Corner)	0.52	0.54	0.84	0.86	0.60	0.93	0.95
4. C559 Norton Road / C562 Ixworth Road / C562 Station Hill staggered crossroads	0.32	0.33	0.55	0.55	0.80	0.98	0.98

4.2.7 The report concludes that *"the impact of the school traffic at junction 2 will see the junction continue to operate over desirable capacity limits and very close to capacity in the AM peak. The impact of the school traffic in both the 2021 with residential dwelling scenarios, moves the junction from operating within capacity to exceeding desirable capacity, but not operating over capacity.*

As both junctions 2 and 4 are not predicted to exceed maximum theoretical capacity in the AM peak hour and is predicted to operate within capacity in the PM peak hour, it is suggested that mitigation at this junction may not need to be considered based on the school traffic generation scenario 2 (sensitivity test), unless intensified use exacerbated an existing safety issue."

4.2.8 The Beyton Road development is proposing a number of local highways improvements which will be of benefit to all local road users, including additional traffic associated with the removal of school buses. This is discussed in more detail in Sections 8 and 9.

4.3 Network Rail and Thurston Level Crossing

4.3.1 As part of the five sites review, MLM were commissioned by Mid Suffolk District Council and 4 of the five sites to undertake a study to look at the cumulative impact of development in Thurston on the rail infrastructure. This was in response to a late objection from Network Rail to the applications.

4.3.2 Originally Platform 1 of the station was accessed via a subway. This has since been removed and the platform is now accessed via a Station Platform Crossing (SPC). As part of a national programme of improvement, Network Rail are seeking to improve all level crossings and had developed a scheme to remove the crossing within the station that is used by passengers and train staff. In response to the five planning applications Network Rail raised concerns regarding increased risk at the crossing with an increase in passenger numbers as a result of the five sites and requested funding to provide a local improvement. At the time they sought funding for the whole scheme for improvement from the new developments, notwithstanding that this was a project they were promoting in any event.

4.3.3 The improvement put forward by Network Rail involved one way working under the railway bridge managed by traffic signal control at the junctions north and south in order to provide a widened footway of 1.8m that would effectively replace the need to use the level crossing. Upon review of the scheme SCC highlighted that it could not delivered without third party land and would result in significant loss of capacity under the railway bridge leading to significant vehicle delay. SCC noted that NR had not provided any justification for traffic signal scheme nor had they assessed the operation. We noted that NR own assessment concluded that a high risk to their scheme would be if the Highway Authority objected.

4.3.4 Officers concluded that any improvement would be a matter to be funded by CIL as a public transport improvements and could not be secured through S106. This was later reinforced by a Planning Inspector as a result of an appeal of the one of the five sites.

4.3.5 Network rail estimated 130 usages per day of the SPC based on surveys. This was estimated to increase by 88 usages per day (as a result of five sites plus the Granary at Station Hill) which changes the crossing risk from D4 to D3. If it is assumed the threshold from D4 to D3 is 200 there is only 18 pedestrians over the D3 threshold. MLM noted that probability of risk ranking is still classified as D and this risk did not change as a result of the increased use. The ranking of D identifies that the risk of an incident is between 1 in 125,000 and 1 in 25,000.

4.3.6 Both SCC and MLM requested more information from Network Rail as to how the increased risk at the crossing had been calculated and raised a number of queries over the assumptions in the Network Rail model.

4.3.7 Officers concluded that the railway station safety issues would not be such to warrant refusal either individually or cumulatively. They applied a condition to each planning application when approved requiring part of the travel plan information packs for householders would alert new residents to the safe use of the level crossing.

4.3.8 If the same principles are applied to the proposals at Beyton Road, 210 dwellings would yield an additional 504 residents (based on 2.4 residents per dwelling). If 3% used rail (in

accordance with the 2011 Census data) that would equate to 15 additional rail passenger per day, or if we use the same methodology as MLM it would be 22 rail passengers per day. Assuming each passenger travels on a return trip then they would use the crossing at least once, i.e. 8 or 11 crossing movements. This is therefore not considered to change to the "D3" risk factor identified by Network Rail and the conclusions of the Officers reviewing the five sites that development should not be refused for reason of railway station safety.

5.0 DEVELOPMENT PROPOSALS

5.1 Overview

5.1.1 This TA has examined the transport aspects of the proposed Outline Application for the development of up to 210 dwellings, means of access, open space and associated infrastructure, including junction improvements.

5.1.2 An illustrative site layout is provided in **Appendix A**.

5.2 Proposed Access Arrangements

5.2.1 The local highway constraints in the immediate vicinity of the site have been discussed in detail throughout this report. To minimise the impact of the development on the surrounding highways network, two points of access are proposed.

5.2.2 The northern access will form a priority T junction with Beyton Road. This junction will form a raised table as part of a proposed traffic calming strategy along Beyton Road.

5.2.3 The southern access will form a priority T junction with Mount Road (East).

5.2.4 At both access points the visibility splays have been determined by the recorded 85th percentile speed of the road and provided in accordance with DMRB. **CCE Drawings X601_PL_ 200** and **200B.**

5.2.5 A single northern access would mean that all traffic associated with the development would have to utilise the Beyton Road/Barton Road junction or Pokeriage Corner. The predominate movement from the site will be south, therefore by providing a southern access, the traffic is distributed across the network negating the need to use the Beyton Road/Barton Road junction or Pokeriage Corner.

5.2.6 A number of pedestrian connections are proposed on the desire line. There will be pedestrian footways at the northern junction with uncontrolled crossings provided to connect with the existing footway on the northern side of Beyton Road.

5.2.7 Two additional pedestrian connections will be provided onto Beyton Road. The eastern most pedestrian link will connect to Pokeriage Corner with a new uncontrolled pedestrian crossing providing a connection to the existing footway on the northern side of the road. The second pedestrian link will be at the north-western corner of the site onto Beyton Road. Again, an uncontrolled pedestrian crossing will be provided.

5.2.8 It is proposed to provide two new bus stops on Barton Road on the western boundary of the site. Pedestrian connections to the bus stops from the site will be provided.

5.3 Off-Site Mitigation

5.3.1 As part of the local highways assessment, a number of local highways improvements are proposed. These are discussed in more detail in Section 8 and 9. **Drawing CCE X61_PL_211_P01** summarises the local highway improvements which include the following:-

- A site access and raised table traffic calming feature on Beyton Road
- A site access onto Mount Road East
- Improvements to Pokeriage Corner – raised table to slow traffic, uncontrolled pedestrian crossing and visibility improvements by moving the northern stop line out by approximately 1m. Widening of the footway on the north western radii which will be the desire line for residents accessing Thedwastre Road.
- Traffic calming on Beyton Road – raised table as per the accepted traffic calming treatment on Mount Road, Bury St Edmunds to reduce traffic speeds.
- Beyton Road/Barton Road junction to form a three arm mini roundabout. This improves visibility to the north from Beyton Road and reduces traffic speed on Barton Road. The roundabout will give priority to the Beyton Road traffic that currently has poor visibility and has to give way to traffic from the south. The mini roundabout also allows for changes under the railway bridge.
- Realignment of the carriageway under the railway bridge to increase the carriageway width to 1.5m whilst maintaining access under the bridge for large vehicles. The realignment makes the carriageway parallel to the bridge abutments which reduces the skewed effect that currently exists. In combination with the mini-roundabout this treatment will reduce the observed vehicle speeds under the bridge and the current centreline infringement by most traffic exiting the bridge when travelling south. The carriageway width is maintained with this improvement.
- Minor changes to the Station Hill Road/Barton Road mini roundabout to accord with carriageway realignment and provide capacity improvements.
- Major improvement to Fishwick Corner including the realignment of Barton Road to create a staggered junction. A flared northern approach improves capacity and the junction changes improve visibility and reduce the delays to individual vehicles negotiating the junction.
- Enhancement of the existing bend warning signs on Mount Road East. It should be noted that the speed on this section of road is being reduced to 40mph as part of the local highway improvements proposed by the five sites and to be delivered by S106 funding. It is suggested this is reduced to 30mph.

5.4 Parking Provision

5.4.1 Car parking spaces will be provided in accordance with Suffolk County Council Guidance for Parking (adopted 2014, second edition 2015). The standards relevant to the site are summarised in the table below.

Property Size	Vehicle Minimum*	Cycle Minimum
1 bed	1 space per dwelling	2 secure covered spaces per dwelling (satisfied if garage or secure area is provided within curtilage of dwelling to minimum dimensions)
2 bed	1.5 spaces (1 allocated and 1 shared between 2 units for flexible use); 2 spaces per dwellings when provided within curtilage (or where sharing a space between 2 units is not practical)	
3 bed	2 spaces per dwelling	
4+ bed	3 spaces per dwelling	

Table 7.1: Suffolk Guidance for Parking (second edition 2015)

**Standards exclude garages under 6m x 3m (internal dimensions) as a parking space but can include under croft parking and car ports providing as they have no other current or potential use.*

5.5 Servicing

5.5.1 Paragraph 6.8.5 of MfS notes that the design and layout of developments should help secure opportunities for sustainable waste management. Planning Authorities should ensure that for new developments, there is sufficient provision for the appropriate collection of waste without an adverse impact on the street scene.

5.5.2 Further consideration of MfS identifies at paragraph 6.8.9 that the maximum distance that a resident should have to carry their waste is no more than 30m and waste vehicles should be able to get within 25m of a refuse storage point, equating to a maximum distance of approximately 55m from a residential property to an appropriate location that a refuse vehicle can stop within. It should also be noted that whilst the maximum reversing distance of a refuse vehicle is approximately 12m (paragraph 6.8.8), if the road is straight and clear of obstacles or visual obstructions, this distance can be extended.

5.5.3 As this is an outline application the internal configuration will be examined in detail as part of a detailed application, however it is considered that the design and layout will adhere to the guidance set in MfS.

5.5.4 The access points have been designed to accommodate a refuse vehicle. Swept path analysis for an 11.2m refuse vehicle has been undertaken and is included on **CCE Drawing X601_216 and 217**.

5.6 Internal Site Layout

5.6.1 The indicative site layout is contained in **Appendix A.** The internal road layout is anticipated to comprise of major and minor access roads with footways and direct frontage access and shared surface driveways also with direct frontage access.

5.7 Construction Management

5.7.1 It is anticipated that a construction management plan will form a condition of any planning permission, however consideration has been given at this early stage as to how the proposed local highway improvements could be implemented with minimal disruption:-

1. New Road at Fishwick to be built off-line; only road closure required when tying in. A. temporary road closure would require all traffic to use Pokeriage Corner as a diversion.
2. A temporary road closure at Pokeriage Corner would require a diversion to the rail bridge and Fishwick Corner.
3. Works under the bridge could be undertaken under a lane closure to realign kerbs.
4. No major utility work upgrades are anticipated.

6.0 ASSESSMENT YEAR AND BACKGROUND GROWTH

6.1 Introduction

6.1.1 The assessment of the development will be considered in the future year of 2024 which is 5 years after submission as requested by Suffolk County Council.

6.2 Forecast Year & Assumptions

6.2.1 For the local network it is proposed to apply Tempro 7.2 National Transport Model (NTM) AF 15 Dataset growth factors for a design year 2024.

6.2.2 The growth factors to be applied are as follows:

Year	Period	NTM
2018 - 2019	AM	1.0073
	PM	1.0067
2018-2024	AM	1.0633
	PM	1.0609

Table 6.1: TEMRPO/NTM Growth Factors (Mid Suffolk 004 – E02006264)

6.2.3 The 2018, 2019 and 2024 base AM and PM traffic flows are included at **Traffic Flow Diagrams T1, T2 and T3.** 2018 has been included as the base year to provide a direct comparison to the work undertaken by AECOM on behalf of SCC. It should be noted that most traffic growth is the result of development and therefore there is double counting in the above factors when the committed development traffic is added.

6.3 Committed Development

6.3.1 The capacity assessment will included the recently determined five planning applications for residential development in Thurston;-

- T1 – Norton Road/Sandpit Lane, Thurston – 175 dwellings (planning ref: 2797/16)
- T2 – West of Barton Road, Thurston – 138 dwellings (planning ref: 4386/16)
- T3 – Land to the west of Meadow Lane, Thurston, -64 dwellings (planning ref: 4942/16)
- T4 – Land west of Ixworth Road, Thurston – 250 dwellings (planning ref: 4963/16)
- T5 – Land north of Norton Road, Thurston – 200 dwellings (planning ref: 5070/16)

6.3.2 The location of the above developments is presented on **Figure 5.** The AECOM assessment included a traffic distribution for the five sites. The same distribution has been used in this assessment and is presented on **Traffic Flow Diagram T4**. This includes traffic for all five site. This forms the base upon which the development impact has been assessed. **Traffic Flow Diagram T5** shows the 2024 base plus committed development.

6.3.3 In addition to the above, Gladman have recently submitted a planning application for 210 dwellings on land east of Ixworth Road (planning reference:- DC/19/02090). SCC have requested that this is included as a sensitivity test. The application documents have limited transport data, therefore the traffic distribution has been assumed to be the same as the five sites as derived by AECOM for SCC. **Traffic Flow Diagram T9** shows the assumed percentage distribution and **Traffic Flow Diagram T10** shows what this equates to in vehicle numbers associated with the Gladman's site.

7.0 TRIP GENERATION AND DISTRIBUTION

7.1 Vehicle Trip Rates

7.1.1 AECOM undertook a number of assessments for SCC in determining the five recently permitted applications. AECOM considered the impact of the five sites on the local highway network and used the trip rates below as part of the assessment.

Peak Hour	Vehicle Trips Rates per Dwelling		
	Arrivals	Departures	Total
AM Peak Hour	0.158	0.520	0.678
PM Peak Hour	0.456	0.211	0.667

Table 7.1: Vehicle Trip Rates

7.1.2 The above trip rates used by AECOM in their Technical Note dated September 2017 were derived from a survey undertaken at a housing development access on Blackbourne Road in Elmswell.

7.1.3 The trips rates have been applied to the Beyton Road proposals for up to 210 dwellings. The anticipated vehicle trips are summarised in Table 7.2.

Peak Hour	Vehicle Trips		
	Arrivals	Departures	Total
AM Peak Hour	33	109	142
PM Peak Hour	96	44	140

Table 7.2: Vehicle Trip (210 dwellings)

7.1.4 It is anticipated that a development of 210 dwellings would generate 142 vehicle in the AM peak and 140 vehicle in the PM peak. It should be noted that arrivals are generally associated with vehicles leaving in the same period for shorter car journeys, such as the school run.

7.2 Traffic Distribution

7.2.1 The proposed distribution has been based on 2011 Census Data 'Journey to Work' for Thurston and is summarised in **Table 7.3** below for all work journeys made by car.

2011 Census 'Journey To Work' From Thurston (Mid Suffolk 004)	
Key Place of Work	**Disaggregated by Car Proportion**
Mid Suffolk 004 (Thurston)	7%
St Edmundsbury 009 (St Eds town centre -outer)	11%
St Edmundsbury 006 (St Eds town centre)	11%
St Edmundsbury 005 (Moreton Hall)	7%
Mid Suffolk 006	5%
St Edmundsbury 004	5%
St Edmundsbury 007	4%
Mid Suffolk 010	4%
St Edmundsbury 008	3%
Remainder of Mid Suffolk	8%
Remainder of St Edmundsbury	5%
Forest Heath	5%
Ipswich	5%
Cambridge	2%
Remainder of destinations	18%

Table 7.3: 2011 Census Proportion of Car Work trips by Work Destination from Thurston (Mid Suffolk 004)

7.2.2 The development traffic has been distributed on the network with reference to the 2011 Census Data, the existing turning movements recorded by the traffic surveys alongside a review of journey times and likely route choices. **Traffic Flow Diagrams T6 and T7** show the distribution of the development traffic on the local highway network.

8.0 JUNCTION IMPACT APPRAISAL

8.1 Scope of Assessment

8.1.1 SCC requested that the impact analysis include and assessment of the following junctions. To examine the impacts of the proposals on the local highway network, capacity analysis for the following junctions has been undertaken (as requested by SCC):

- A143/C691 junction
- C691 Barton Road/C562 Station Hill mini roundabout
- Beyton Road/New Road junction
- New Road/Mount Road crossroads (Fishwick Corner)
- Beyton Road/Thedwastre Road crossroads (Pokeriage Corner)
- Station Hill/Norton Road junction

8.1.2 In addition to the above, the assessment will included the proposed site access. **Drawing X601_PL_212** shows the location of the junction which have been modelled as part of this TA.

8.2 Percentage Impact Assessment

8.2.1 The impact of proposals on the A143/C691 and Station Hill/Norton Road junctions is limited. Therefore this has been considered in terms of a percentage impact in accordance with the request by SCC. The table below summarises the development impact at each junction. The traffic flow data used to assess the development impact in contained in **Appendix H.**

Junction	Total Junction In-flow		Total Development In-flow		Junction percentage Impact	
	AM	PM	AM	PM	AM	PM
A143/C691 (2018 Base)	1,881	1,827	18	18	<1%	<1%
Station Hill/Norton Road (2017 AECOM Base)	714	389	5	6	<1%	<2%

Table 8.1: Percentage Impact of development traffic

8.2.2 The desire line from the site is to the south. Therefore the impact on the above junction which are north of the site is minimal. S106 contributions were made by the five sites for improvements to the A143/C691 Thurston Road junction which will improve capacity and road safety.

8.2.3 The capacity of the Station Hill/Norton Road junction was assessed as part of work undertaken by AECOM in September 2017 (**Appendix B**). The assessment revealed that the maximum RFC in the 2021 with Development (all five site - 827 dwellings) was predicted to be 0.55 on Ixworth Road East in the AM peak hour and 0.35 on Norton Road South in the PM peak hour. It was concluded that mitigation was not required and there is sufficient capacity in the junction to accommodate the future growth. It is considered that the impact of the Beyton Road development does not change this conclusion.

8.2.4 It is not considered that the impact of the development at either junction is severe.

8.3 Junction Capacity Analysis

8.3.1 Junction capacity analysis has been undertaken using Junctions 8 (PICADY and ARCADY), the industry standard software. Junction performance is measured as ratio of flow to capacity (RFC). An RFC value greater than 1 means that a turning movement has a higher level of traffic flow than its theoretical capacity. As a result, flow breakdown and extensive queues can be expected. An RFC below 0.85 is considered acceptable as there is still scope to accommodate future growth without improvement. The following paragraphs discuss the junction capacity analysis for each junction in more detail.

8.3.2 The junctions were modelled by AECOM on behalf of SCC therefore, the junction model geometries and parameters used by AECOM have been used is this TA where applicable.

8.4 Junction 1 –Fishwick Corner C693 Thurston Road / C692 Thurston Road Crossroads

8.4.1 The AECOM study concluded that the Fishwick Corner junction was operating over capacity in their base case of 2017 and therefore would also operate over capacity in the future year with and without development traffic.

8.4.2 CCE have modelled the existing junction and broadly agree with the AECOM findings. The PICADY outputs files are included at **Appendix I** and the results are summarised overleaf.

Fishwick Corner – Existing Junction Arrangement						
	AM Peak			PM Peak		
	Max RFC	Delay (s/Veh)	Max Q (Veh)	Max RFC	Delay (s/Veh)	Max Q (Veh)
2024Base						
Barton Road North - Right, Left, Ahead	0.80	35.21	3.7	0.44	14.28	0.8
Mount Road West - Left, Ahead, Right	0.01	4.92	0.0	0.07	3.96	0.1
Rougham Road South - Left, Ahead, Right	0.15	8.47	0.2	0.16	8.59	0.2
Mount Road East - Ahead, Right, Left	0.01	4.81	0.0	0.00	6.39	0.0
2024 Base + Committed (827 dwellings)						
Barton Road North - Right, Left, Ahead	1.07	179.96	26.8	0.57	18.55	1.3
Mount Road West - Left, Ahead, Right	0.01	4.92	0.0	0.08	3.90	0.1
Rougham Road South - Left, Ahead, Right	0.15	8.82	0.2	0.17	8.81	0.2
Mount Road East - Ahead, Right, Left	0.01	4.72	0.0	0.00	6.38	0.0
2024 Base + Committed + Dev						
Barton Road North - Right, Left, Ahead	1.10	213.10	32.1	0.59	20.17	1.4
Mount Road West - Left, Ahead, Right	0.01	4.95	0.0	0.08	3.84	0.1
Rougham Road South - Left, Ahead, Right	0.16	9.21	0.2	0.17	9.10	0.2
Mount Road East - Ahead, Right, Left	0.01	4.57	0.0	0.00	6.29	0.0
2024 Base + Gladman Sensitivity Test						
Barton Road North - Right, Left, Ahead	1.18	356.80	51.7	0.62	22.09	1.6
Mount Road West - Left, Ahead, Right	0.01	4.94	0.0	0.08	3.84	0.2
Rougham Road South - Left, Ahead, Right	0.16	9.34	0.2	0.17	9.13	0.2
Mount Road East - Ahead, Right, Left	0.01	4.57	0.0	0.00	6.30	0.0

Table 8.2: Summary of PICADY Results – Fishwick Corner Existing Junction Arrangement

8.4.3 The PICADY results show that the impact of the Beyton Road development on the junction operation is minimal. The maximum RFC increased by 0.03 in the AM peak and 0.01 in the PM peak. In normal circumstances, this level of impact would not necessarily require mitigation.

8.4.4 As part of the five sites assessment, SCC identified this junction as needing further improvement. The mitigation scheme for the five sites included changing the priorities at the

junction and providing stop lines rather than give ways. The Fishwick Corner proposal was modelled. It showed capacity improvement when compared to the existing layout however it was still operating over capacity. It was considered that no further improvement could be provided within the land constraints. This led SCC to conclude that further development would not be permitted without additional improvements to this junction.

8.4.5 The impact of the Beyton Road development on the operation of the AECOM proposed improvement was minimal. However, the Beyton Road site provides the unique opportunity to provide further improvements by securing additional land surrounding the junction. The required land has been included in the application specifically for the purposes of delivering an improvement. Whilst such an improvement is arguably beyond the scale of the Beyton Road development impact, it will unlock an existing pinch point for the village as whole. With this in mind, several options for improvement were considered. A staggered junction was concluded to offer the best mitigation in terms of capacity and safety.

8.4.6 The proposed improvement comprises reconfiguring the junction to form a staggered crossroads. A stagger to the west of Barton Road/New Road improves both safety and capacity improvement. It can also be achieved without the need to remove the large oak tree on the corner of the junction. The proposal included a flared approach on the northern arm of the junction to maximise capacity. The northern arm of the junction is where the dominate movement is to and from in the peak periods. By separating the northern arm, making it wider and improving visibility the junction operates significantly better.

8.4.7 The modelling results for the proposed staggered junction are presented overleaf. The proposed junction improvement layout is presented on **CCE Drawing X601_210** and **218**. The PICADY results are included in **Appendix I**.

Fishwick Corner – Staggered Junction Proposal						
	AM Peak			PM Peak		
	Max RFC	Delay (s/Veh)	Max Q (Veh)	Max RFC	Delay (s/Veh)	Max Q (Veh)
2024 Base						
Barton Road North - Left, Ahead	0.33	10.49	0.5	0.14	8.14	0.2
Barton Road North - Right	0.49	15.37	1.0	0.29	11.30	0.4
Mount Road West - Left, Ahead, Right	0.29	7.73	0.4	0.17	5.45	0.3
Rougham Road South - Left, Ahead, Right	0.12	6.65	0.1	0.12	5.90	0.1
Mount Road East - Ahead, Right, Left	0.10	5.47	0.2	0.12	7.14	0.2
2024 Base + Committed (827 dwellings)						
Barton Road North - Left, Ahead	0.57	18.52	1.3	0.21	8.98	0.3
Barton Road North - Right	0.66	25.78	1.8	0.34	12.88	0.5
Mount Road West - Left, Ahead, Right	0.44	9.88	0.8	0.23	5.86	0.4
Rougham Road South - Left, Ahead, Right	0.12	6.88	0.1	0.12	5.97	0.1
Mount Road East - Ahead, Right, Left	0.10	5.45	0.2	0.12	7.25	0.2
2024 Base + Committed + Dev						
Barton Road North - Left, Ahead	0.58	19.81	1.4	0.22	9.32	0.3
Barton Road North - Right	0.68	27.97	2.0	0.35	13.60	0.5
Mount Road West - Left, Ahead, Right	0.45	10.31	0.9	0.24	5.78	0.4
Rougham Road South - Left, Ahead, Right	0.13	7.10	0.1	0.12	6.06	0.1
Mount Road East - Ahead, Right, Left	0.10	5.34	0.2	0.12	7.27	0.2
2024 Base + Gladman Sensitivity Test						
Barton Road North - Left, Ahead	0.69	28.54	2.1	0.24	9.63	0.3
Barton Road North - Right	0.75	38.23	2.8	0.37	14.11	0.6
Mount Road West - Left, Ahead, Right	0.50	11.27	1.0	0.26	5.92	0.5
Rougham Road South - Left, Ahead, Right	0.13	7.17	0.1	0.12	6.08	0.1
Mount Road East - Ahead, Right, Left	0.10	5.35	0.2	0.12	7.29	0.2

Table 8.3: Summary of PICADY Results – Fishwick Corner Proposed Staggered Junction Arrangement

8.4.8 The PICADY results demonstrate that the junction proposals will significantly improve capacity at the junction in both the AM and PM peak in all future year scenarios. All arms operate within capacity in all scenarios. This improvement will be of benefit to existing residents as well as future residents.

8.5 Junction 2 – Station Hill/Barton Road/New Road South Mini Roundabout

8.5.1 This mini roundabout junction was shown to operate within capacity in all the scenarios tested by AECOM. The modelling undertaken by CCE for this TA shows the junction to be operating within capacity at present but over capacity on the New South Road (southern arm) of the

junction in the future year scenarios in the PM. On closer review, the base traffic flows included in this assessment are substantially higher than those included in the AECOM assessment. The ARCADY output files are included in **Appendix I** and summarised in the table below. A review of the junction video which accompanied the traffic survey confirms that there is not a capacity issue at the junction at present.

CCE	AM Peak			PM Peak		
	Max RFC	Delay (s/Veh	Max Q	Max RFC	Delay (s/Veh	Max Q
2024 Base						
Barton Road Northwest	0.46	9.84	0.8	0.44	10.74	0.8
Station Hill East	0.47	10.27	0.9	0.30	7.17	0.4
New Road South	0.50	9.18	1.0	0.81	22.88	3.9
2024 Base + Committed (827 dwellings)						
Barton Road Northwest	0.55	11.92	1.2	0.52	13.84	1.1
Station Hill East	0.73	21.24	2.6	0.40	8.43	0.6
New Road South	0.57	10.55	1.3	0.99	84.83	18.3
2024 Base + Committed + Dev						
Barton Road Northwest	0.55	12.13	1.2	0.54	14.42	1.2
Station Hill East	0.74	21.46	2.7	0.41	8.70	0.7
New Road South	0.59	11.21	1.4	1.00	91.55	20.1
2024 Base + Gladman Sensitivity Test						
Barton Road Northwest	0.56	12.47	1.3	0.55	15.12	1.2
Station Hill East	0.84	33.30	4.6	0.44	9.27	0.8
New Road South	0.61	11.70	1.5	1.04	128.60	30.9

Table 8.4: Summary of ARCADY Results Station Hill/Barton Road/New Road South mini Roundabout Existing

8.5.2 In response to improvements proposed under the railway bridge to improve pedestrian connectivity from the site (to be discussed in more detail in Section 9), minor improvements are proposed at the mini roundabout junction which will improve the capacity. The proposed junction layout can be seen on **CCE Drawing X601_ 214 and 220.** The updated ARCADY results are summarised below. The output files are included in **Appendix I.**

CCE	AM Peak			PM Peak		
	Max RFC	Delay (s/Veh	Max Q	Max RFC	Delay (s/Veh	Max Q
2024 Base						
Barton Road Northwest	0.41	7.96	0.7	0.38	8.62	0.6
Station Hill East	0.49	11.16	1.0	0.32	7.59	0.5
New Road South	0.43	6.71	0.7	0.68	11.91	2.1
2024 Base + Committed (827 dwellings)						
Barton Road Northwest	0.48	9.28	0.9	0.46	10.81	0.8
Station Hill East	0.77	25.42	3.1	0.41	9.01	0.7
New Road South	0.48	7.41	0.9	0.84	22.88	4.8
2024 Base + Committed + Dev						
Barton Road Northwest	0.49	9.40	1.0	0.48	11.20	0.9
Station Hill East	0.77	25.73	3.2	0.42	9.33	0.7
New Road South	0.50	7.73	1.0	0.85	23.88	5.1
2024 Base + Gladman Sensitivity Test						
Barton Road Northwest	0.50	9.62	1.0	0.50	11.95	1.0
Station Hill East	0.88	43.58	5.9	0.46	9.99	0.8
New Road South	0.52	7.97	1.1	0.88	29.85	6.5

Table 8.5: Summary of ARCADY Results Station Hill/Barton Road/New Road South mini Roundabout Proposed Improvement

8.5.3 The ARCADY results shows that the improvement increase the capacity of the junction with all arms operating at 0.85 RFC or below. The maximum RFC increases to 0.88 in the PM in the sensitivity test which includes the Gladman's development. This is on the New Road South arm where the maximum queue is predicted to be only 6.5 vehicles which can be accommodated without blocking back to the Beyton Road/Barton Road junction.

8.6 Junction 3 – C560 Beyton Road / C692 Thurston Road / U4920 Thedwastre Road Crossroads (Pokeriage Corner)

8.6.1 The AECOM assessment of the Pokeriage Corner junction concluded *"…that the C560 Beyton Road / C692 Thurston Road crossroads, the junction is predicted to operate within desirable capacity limits for the 2017 base and two of the 2021 scenarios in both the AM and PM peak hours – the 2021 Base and the 2021 with Development (689 dwellings) scenarios.*

However, in the 2021 with Development (827 dwellings) scenario the junction is predicted to operate just over desirable capacity limits in the AM peak hour, with a maximum RFC of 0.86 on Thedwastre Road Northeast. In the PM peak hour the junction is predicted to operate within capacity, with a maximum RFC of 0.58 on Unnamed Road Southwest.

As the junction is not predicted to exceed maximum theoretical capacity in the AM peak hour and is predicted to operate within capacity in the PM peak hour, it is suggested that mitigation at this junction would not need to be considered if all five proposed developments in Thurston received planning permission and were developed, unless intensified use exacerbated an existing safety issue."

8.6.2 As part of this application, CCE have also modelled the existing junction operation. The results are summarised in the table below. The PICADY output files are included in **Appendix I**.

Pokeriage Corner Existing Junction						
	AM Peak			PM Peak		
	Max RFC	Delay (s/Veh)	Max Q (Veh)	Max RFC	Delay (s/Veh)	Max Q (Veh)
2024 Base						
Thedwastre Road Northeast - Right, Left, Ahead	0.44	14.37	0.8	0.19	9.44	0.2
Beyton Road Northwest - Left, Ahead, Right	0.09	5.62	0.1	0.01	4.87	0.0
Unnamed Road Southwest - Left, Ahead, Right	0.12	9.47	0.1	0.41	13.21	0.7
Thurston Road Southeast - Ahead, Right, Left	0.11	4.90	0.2	0.11	4.98	0.2
2024 Base + Committed (827 dwellings)						
Thedwastre Road Northeast - Right, Left, Ahead	0.73	29.97	2.6	0.31	11.95	0.4
Beyton Road Northwest - Left, Ahead, Right	0.10	5.48	0.2	0.01	5.12	0.0
Unnamed Road Southwest - Left, Ahead, Right	0.15	11.19	0.2	0.52	19.33	1.1
Thurston Road Southeast - Ahead, Right, Left	0.22	5.43	0.4	0.37	6.52	0.8
2024 Base + Committed + Dev						
Thedwastre Road Northeast - Right, Left, Ahead	0.75	32.93	2.8	0.33	12.59	0.5
Beyton Road Northwest - Left, Ahead, Right	0.10	5.36	0.2	0.01	5.12	0.0
Unnamed Road Southwest - Left, Ahead, Right	0.15	11.54	0.2	0.54	20.66	1.1
Thurston Road Southeast - Ahead, Right, Left	0.22	5.46	0.5	0.38	6.49	0.9
2024 Base + Gladman Sensitivity Test						
Thedwastre Road Northeast - Right, Left, Ahead	0.78	37.51	3.3	0.34	12.98	0.5
Thedwastre Road Northeast - Right, Left, Ahead	0.10	5.33	0.2	0.01	5.15	0.0
Thedwastre Road Northeast - Right, Left, Ahead	0.16	11.86	0.2	0.55	22.05	1.2
Thedwastre Road Northeast - Right, Left, Ahead	0.24	5.53	0.5	0.41	6.75	1.0

Table 8.6: Summary of PICADY Results: Pokeriage Corner

8.6.3 The results are broadly similar to those of AECOM. It should also be noted that the impact of the Beyton Road development on the operation of the junction is minimal. Despite there not being a capacity or safety issue at this junction, SCC requested that improvements were looked at, particularly in relation to improving visibility from the northern arm of the junction (Thedwastre Road). This is also considered to provide an opportunity to solve an existing drainage problem at this junction.

8.6.4 The proposed junction improvements are shown on **Drawing X601_PL_213** and includes the following:

- Moving the northern stop line out by approximately 1m to improve visibility from Thedwastre Road. This improves both capacity and safety.

- Creating a raised table at the junction to enforce reduce vehicle speeds. This will improve safety and make the junction more visible on all approaches.

- Incorporating an uncontrolled pedestrian crossing from the site to the existing footway on the northern side of the road and widening the footway as it turns into Thedwastre Road.

- Provide highway drainage within the development site.

8.6.5 The junction improvements are presented on **CCE Drawing X601_ PL_213 and 219**. The updated modelling results are presented in the table below. The PICADY output files are included in **Appendix I**.

Pokeriage Corner Improvement						
	AM Peak			PM Peak		
	Max RFC	Delay (s/Veh)	Max Q (Veh)	Max RFC	Delay (s/Veh)	Max Q (Veh)
2024 Base						
Thedwastre Road Northeast - Right, Left, Ahead	0.38	11.09	0.6	0.16	7.87	0.2
Beyton Road Northwest - Left, Ahead, Right	0.09	5.62	0.1	0.01	4.87	0.0
Unnamed Road Southwest - Left, Ahead, Right	0.10	7.94	0.1	0.35	10.21	0.5
Thurston Road Southeast - Ahead, Right, Left	0.12	5.02	0.2	0.11	5.11	0.2
2024 Base + Committed (827 dwellings)						
Thedwastre Road Northeast - Right, Left, Ahead	0.63	19.33	1.7	0.27	9.76	0.4
Beyton Road Northwest - Left, Ahead, Right	0.10	5.48	0.2	0.01	5.12	0.0
Unnamed Road Southwest - Left, Ahead, Right	0.13	9.32	0.1	0.44	14.23	0.8
Thurston Road Southeast - Ahead, Right, Left	0.22	5.58	0.5	0.38	6.77	0.9
2024 Base + Committed + Dev)						
Thedwastre Road Northeast - Right, Left, Ahead	0.65	20.72	1.8	0.28	10.23	0.4
Beyton Road Northwest - Left, Ahead, Right	0.10	5.36	0.2	0.01	5.11	0.0
Unnamed Road Southwest - Left, Ahead, Right	0.13	9.60	0.1	0.46	15.07	0.8
Thurston Road Southeast - Ahead, Right, Left	0.23	5.61	0.5	0.39	6.75	1.0
2024 Base + Gladman Sensitivity Test						
Thedwastre Road Northeast - Right, Left, Ahead	0.68	22.66	2.0	0.30	10.51	0.4
Thedwastre Road Northeast - Right, Left, Ahead	0.10	5.34	0.2	0.01	5.15	0.0
Thedwastre Road Northeast - Right, Left, Ahead	0.13	9.85	0.2	0.47	15.94	0.9
Thedwastre Road Northeast - Right, Left, Ahead	0.24	5.69	0.5	0.42	7.04	1.1

Table 8.6: Summary of PICADY Results: Pokeriage Corner Improvement

8.6.6 The results confirm that the proposed improvement does increase junction capacity. The maximum RFC on the northern arm of the junction is 0.68 in the AM peak with all committed development, the Beyton Road site and Gladman's proposal included in the assessment.

8.7 Junction 4 – Barton Road/ Beyton Road T junction

8.7.1 The Beyton Road/Barton Road T junction was not modelled by AECOM however, due to the proximity of the Beyton Road site, this junction has been included in the CCE assessment. The PICADY results for the exiting junction are summarised in the table below. The PICADY output files are included in **Appendix I**.

	AM Peak			PM Peak		
	Max RFC	Delay (s/Veh	Max Q	Max RFC	Delay (s/Veh	Max Q
2024 Base						
Beyton Road East to Barton Road South Left	0.04	10.52	0.0	0.03	8.60	0.0
Beyton Road East to Barton Road North Right	0.60	22.89	1.5	0.54	19.76	1.1
Barton Road South to Beyton Road East	0.05	5.71	0.1	0.08	4.54	0.1
2024 Base + Committed (827 dwellings)						
Beyton Road East to Barton Road South Left	0.08	20.50	0.1	0.11	38.39	0.1
Beyton Road East to Barton Road North Right	0.78	45.45	3.3	0.87	65.14	5.4
Barton Road South to Beyton Road East	0.05	6.15	0.1	0.08	4.54	0.2
2024 Base + Committed + Dev						
Beyton Road East to Barton Road South Left	0.11	30.48	0.1	0.17	64.29	0.2
Beyton Road East to Barton Road North Right	0.84	57.93	4.4	0.90	74.84	6.3
Barton Road South to Beyton Road East	0.05	6.17	0.1	0.08	4.55	0.2
2024 Base + Gladman Sensitivity Test						
Beyton Road East to Barton Road South Left	0.23	73.87	0.3	0.99	535.77	1.5
Beyton Road East to Barton Road North Right	0.89	78.55	6.1	0.98	119.47	11.2
Barton Road South to Beyton Road East	0.05	6.28	0.1	0.09	4.55	0.2

Table 8.7: Summary of PICADY Results: Barton Road/Beyton Road T junction

8.7.2 The T junction is shown to be operating at capacity in the future year scenarios, however the maximum queue does not exceed 6 vehicles on the Beyton Road approach to the junction in the with development scenario. This increases to 11 vehicles with the Gladman proposals included.

8.7.3 During scoping discussion with SCC, CCE were asked to look at improvement to the footway under the railway bridge immediately north of the Beyton Road/Barton Road junction. As part of this assessment (which is discussed in more detail in the next Section 9) a mini roundabout is proposed at the Beyton Road/Barton Road junction. This will improve the capacity of the junction and slow vehicles on all approaches. The proposed mini roundabout layout is present

on **CCE Drawing X601_PL_214**. The ARCDY results are summarised in the table below and the output files are included in **Appendix I**.

CCE	AM Peak			PM Peak		
	Max RFC	Delay (s/Veh	Max Q	Max RFC	Delay (s/Veh	Max Q
2024 Base						
Beyton Road East to Barton Road South Left	0.61	9.48	1.5	0.42	6.34	0.7
Beyton Road East to Barton Road North Right	0.40	9.80	0.7	0.30	7.04	0.4
Barton Road South to Beyton Road East	0.21	5.30	0.3	0.54	8.87	1.2
2024 Base + Committed (827 dwellings)						
Beyton Road East to Barton Road South Left	0.82	20.14	4.3	0.50	7.42	1.0
Beyton Road East to Barton Road North Right	0.53	14.23	1.1	0.47	9.78	0.9
Barton Road South to Beyton Road East	0.23	5.61	0.3	0.63	12.08	1.7
2024 Base + Committed + Dev						
Beyton Road East to Barton Road South Left	0.83	20.90	4.5	0.52	7.70	1.1
Beyton Road East to Barton Road North Right	0.57	15.36	1.3	0.49	9.99	0.9
Barton Road South to Beyton Road East	0.24	5.72	0.3	0.64	12.28	1.7
2024 Base + Gladman Sensitivity Test						
Beyton Road East to Barton Road South Left	0.88	28.45	6.3	0.54	8.06	1.2
Beyton Road East to Barton Road North Right	0.61	17.73	1.5	0.53	11.00	1.1
Barton Road South to Beyton Road East	0.25	5.81	0.3	0.66	13.47	1.9

Table 8.8: Summary of ARCADY Results: Barton Road/Beyton Road Proposed Mini Roundabout

8.7.4 The ARCADY results demonstrate that the junction will operate within capacity in all scenarios as a mini roundabout with committed development and the Beyton Road development included. The Beyton Road approach reaches an RFC of 0.88 in the AM peak with the Gladman's site included, however the maximum vehicle queue is 6 vehicles which is not considered to be significant or severe.

8.8 Junction 5 – Norton Road/Barton Road

8.8.1 The AECOM report concluded that "*the C691 Barton Road / C559 Norton Road 'T' Junction, the junction is predicted to operate within desirable capacity limits in all three 2021 scenarios in both the AM and PM peak hours. The maximum RFC in the 2021 with Development (827 dwellings) scenario is predicted to be 0.50 on Norton Road East in the AM peak hour and 0.22 on Norton Road East in the PM peak hour.*

Mitigation at this junction would not need to be considered if all five proposed developments in Thurston received planning permission and were developed, unless intensified use exacerbated an existing safety issue."

8.8.2 The impact of the proposed Beyton Road development is minimal in this location and SCC have not requested that this junction is modelled as part of this assessment. It is considered that the proposed development would not change the conclusion drawn by AECOM in this location.

8.9 Junction 6 – Southern Site Access T junction

8.9.1 The proposed southern site accesses has been modelled. The PICADY results for the junction are summarised in the table below. The PICADY output files are included in **Appendix I**.

CCE	AM Peak			PM Peak		
	Max RFC	Delay (s/Veh	Max Q	Max RFC	Delay (s/Veh	Max Q
2024 Base + Committed + Dev						
Site Access	0.13	8.67	0.2	0.06	8.15	0.1
Mount Road East (East)	0.00	0.0	0.0	0.0	0.00	0.0
2024 Base + Gladman Sensitivity Test						
Site Access	0.13	8.67	0.2	0.06	8.15	0.1
Mount Road East (East)	0.00	0.0	0.0	0.0	0.00	0.0

Table 8.9: Summary of PICADY Results: Proposed Southern Site Access

8.9.2 The PICADY model demonstrates that the proposed site access can accommodate the development.

8.10 Junction 7 – Northern Site Access T Junction.

8.10.1 The proposed northern site accesses has been modelled. The PICADY results for the junction are summarised in the table below. The PICADY output files are included in **Appendix I**.

CCE	AM Peak			PM Peak		
	Max RFC	Delay (s/Veh	Max Q	Max RFC	Delay (s/Veh	Max Q
2024 Base + Committed + Dev						
Site Access	0.10	8.26	0.1	0.04	8.02	0.0
Mount Road East (East)	0.01	4.90	0.0	0.04	5.14	0.1
2024 Base + Gladman Sensitivity Test						
Site Access	0.10	8.33	0.1	0.04	8.15	0.0
Mount Road East (East)	0.01	4.87	0.0	0.04	5.14	0.1

Table 8.9: Summary of PICADY Results: Proposed Northern Site Access

8.10.2 The PICADY model demonstrates that the proposed site access can accommodate the development.

9.0 ACCESS AND MOVEMENT STRATEGY

9.1 Introduction

9.1.1 The existing transport networks and the opportunities for sustainable travel by non-car modes are described in Section 2. This section of the TA details the proposed transport access strategy for non-car modes at the development which is consistent with local and national transport policy aims and objectives. An audit of such local facilities has been undertaken and an accessibility plan produced. This is shown on **Figure 2. Figure 3** shows the walking routes to the local primary school from the site.

9.2 Walking Strategy

9.2.1 The site will have a number of pedestrian connections as shown on **CCE Drawings X601_PL_211_P01.** The pedestrian desire will be to the north from the site. Several pedestrian connections will be provided from the site onto Beyton Road and the surrounding area as follows:-

- An internal footpath running along the northern boundary of the site adjacent to Barton Road
- Pedestrian connections and uncontrolled pedestrian crossing at northern the site access
- Pedestrian link and uncontrolled pedestrian crossing at Pokeriage Corner
- Pedestrian link and uncontrolled crossing at the north-western corner of the site
- Pedestrian link from the western boundary of the site to Barton Road/New Road and new bus stops.

Footway under the Railway Bridge

9.2.2 The pedestrian desire line from the site to the Rail Station, local shops, pub and Community College routes under the railway bridge. SCC have raised concerns regarding the current footway width under the bridge. **CCE Drawing X601_PL_223** shows the existing footway dimensions. The footway on the western side of the carriageway is generally not used and has a pinch point of 493mm at the bridge parapet. The footway on the eastern side of the road is wider at approximately 1m, however there is a pinch point of 751mm at the bridge parapet.

9.2.3 A video survey of the pedestrian use of the existing footway showed mobility scooters, pedestrian with pushchairs, dog walkers, parents and children do currently use the footway without issue. There have been no recorded accidents in the vicinity of the bridge. That said, in consultation with SCC, a footway improvement scheme is proposed as part of a package of local highway improvement measures to be delivered by Beyton Road development.

9.2.4 **CCE Drawing X601_PL_214** presents the proposed footway widening. The carriageway under the bridge has been realigned to provide at continuous 1.5m footway on the eastern side. The realignment still allows HGVs to travel under the full height section of the bridge as per the

existing situation and improves this by making the road parallel with the bridge abutments to remove the existing skewed approach.

9.2.5 As discussed in Section 8, the Beyton Road/Barton Road junction is proposed as a mini roundabout. This will improve capacity and reduce vehicle speeds. Vehicles currently travel at speed from Barton Road north, left into Beyton Road. The proposed change in the corner radi at the junction will force drivers to slow down. This will be complimented by further traffic calming along Beyton Road.

Beyton Road Traffic Calming Scheme

9.2.6 A number of local residents raised concerns about the speed of traffic travelling along Beyton Road. The speed survey data confirms that drivers are travelling in excess of the speed limit. The site proposals offer an opportunity to address this and implement traffic calming measures.

9.2.7 **CCE Drawing X601_PL_211_P01 s**hows the proposed traffic calming on Beyton Road. The scheme comprises of three raised table junctions with appropriate signing and lining. The raised tables will be similar to those recently implemented on Mount Road in Bury St Edmunds.

Thedwastre Road

9.2.8 Thedwastre Road forms part of the walking route to the proposed and existing Primary School in Thurston. This route has been reviewed in detail in Section 2. Pupils walking to the Primary School would be accompanied by an adult. It is not considered that any improvements to this is route are required as a result of the Beyton Road development.

9.3 Cycling Strategy

9.3.1 National Cycle Route 51 can be access via Barton Road. It is considered that the proposed traffic calming and changes in the vicinity of the railway bridge will be of benefit to local cyclist by reducing traffic speeds.

9.4 Public Transport

9.4.1 The proposal include provision of two additional bus stops on the western boundary of the site at Barton Road/New Road. The exact location will be agreed with SCC. Bus services 384 currently routes along Barton Road/New Road so could serve the additional stops.

9.5 Local Highway Network Improvements

9.5.1 The site provides a unique opportunity to address key concerns raised by local residents, the Parish Council and SCC as highway authority. **CCE Drawing X601_PL_211_P01** shows the improvements at the following locations:

- Beyton Road/Barton Road junction mini roundabout (**CCE Drawing X601_PL_214**)
- Improvements to Station Hill/Barton Road mini roundabout (**CCE Drawing X601_PL_214**)

- Footway improvement under the railway bridge (**CCE Drawing X601_PL_214**)
- Traffic calming on Beyton Road (**CCE Drawing X601_PL_211_P01 and Drawing X601_PL_200)**
- Improvements to Pokeriage Corner – improved visibility, drainage and raised table (**CCE Drawings X601_PL_213**)
- Staggered junction at Fishwick Corner to improve safety and capacity (**CCE Drawing X601_PL_201 and 201B**)
- Reduce speed limit on Mount Road East to 30mph to Fishwick Corner

9.5.2 These improvements can be delivered through S.278 works by the site or by means of contribution to pooled S.106 contributions with other developments in Thurston. If delivered by S.278 this means the improvements will be delivered in a timely manner linked to the delivery of the housing on this site, as opposed to waiting on contributions from different sites to be collected before improvements can be made.

9.5.3 This is seen as a positive contribution and given the overall scale of development impact from the Beyton Road site. It should also be noted that the overwhelming beneficiaries of the suggested improvements are the users of the road network that are generated principally from the north of the site. Given the more important capacity and safety improvements required as a result of the committed development were at these locations south of the village, this site is making a substantial and important contribution to ensuring that right infrastructure is delivered at the right time.

10.0 SUMMARY & CONCLUSIONS

10.1.1 This Transport Assessment (TA) has been prepared by Cannon Consulting Engineers (CCE) on behalf of Bloor Homes and Sir George A. Agnew in relation to an outline planning application for up to 210 residential units on land adjacent to south of Beyton Road, Thurston, Suffolk.

10.1.2 It is proposed to provide two points of access into the site. The northern access will form a raised table priority T junction with Beyton Road. The southern access will form a priority T junction with Mount Road East. It is proposed to extend the 30mph speed limit along Mount Road East from Pokeriage Corner to Fishwick Corner.

10.1.3 The existing transport conditions have been considered. These include all transport modes from non-motorised users (pedestrian and cyclists) to public transport and the road network. It is considered that the site is well located in relation to the existing transport network. There is a well-established and well connected walking and cycling network. The bus routes provide services to key local destinations and are accessible within 400m of the site.

10.1.4 Traffic surveys undertaken in July 2018, and TEMPRO growth factors have been used to inform the junction capacity analysis.

10.1.5 The proposed site access junctions have been shown to operate well within capacity for the proposed development.

10.1.6 A review of parking, servicing and emergency access has been undertaken and is policy and design compliant. A review of national, regional and local (current and draft) policy has been undertaken and it has been demonstrated that the development proposals are policy compliant.

10.1.7 Both Suffolk County Council as Highway Authority and the Neighbourhood Plan identified key local junction improvements required within Thurston to facilitate any further development in the village. Whilst the impact of the proposed development was shown to be minimal on the surrounding highway network, the site offers the opportunity to provide major improvement which will benefit both existing and future residents. Bloor have positively engaged in the process of reviewing the need for improvements. The result of the review is the inclusion of land within the planning application to specifically deliver improvements.

10.1.8 The site proposal includes the following highway improvements:-

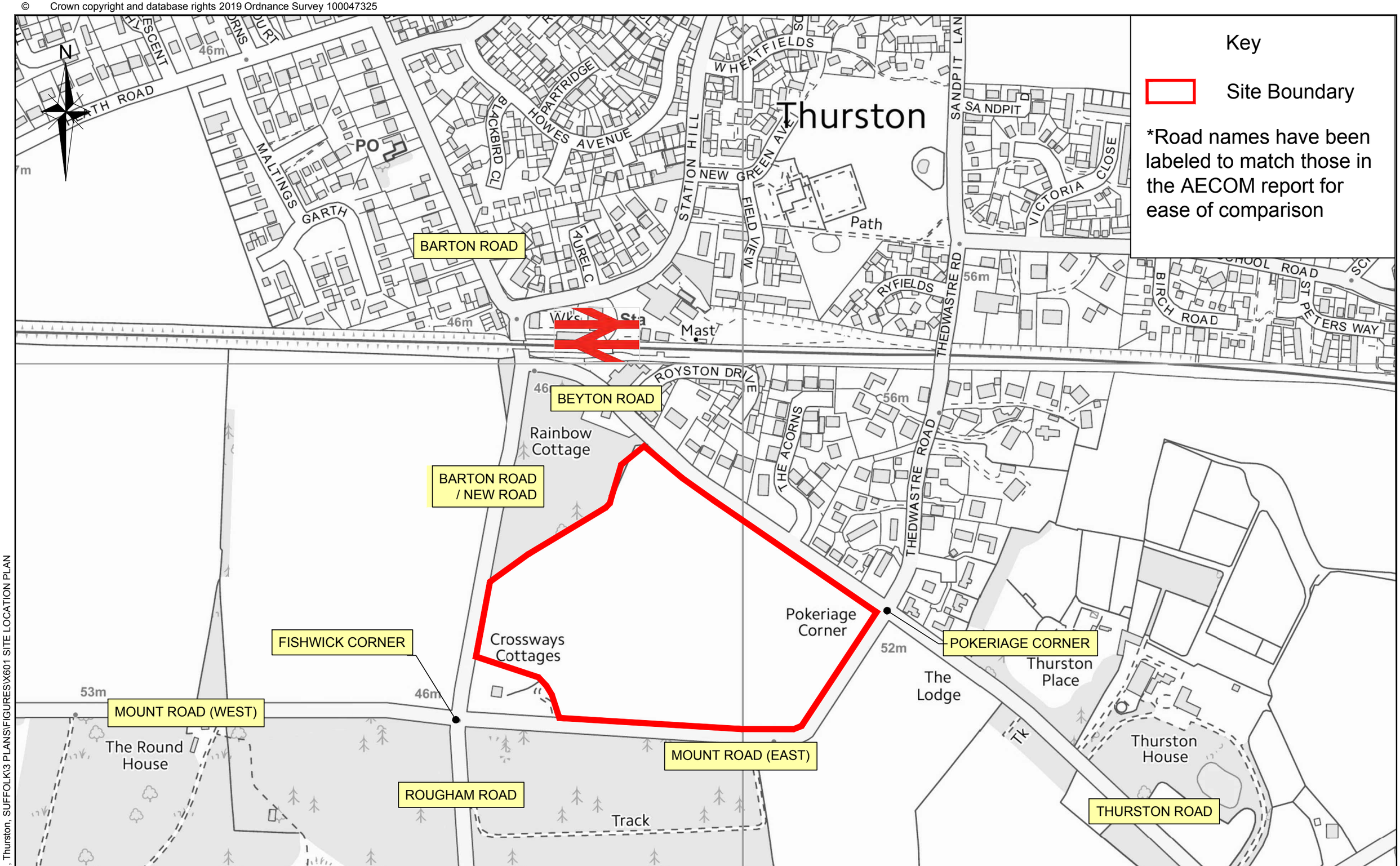
- Beyton Road/Barton Road junction mini roundabout
- Improvements to Station Hill/Barton Road mini roundabout
- Footway improvement under the railway bridge
- Traffic calming on Beyton Road
- Improvements to Pokeriage Corner – improved visibility, drainage and raised table
- Staggered junction at Fishwick Corner to improve safety and capacity

- Reduce speed limit on Mount Road East to 30mph to Fishwick Corner

Conclusion

10.1.9 It is considered that the development will have an acceptable impact on, and relationship to, existing transport infrastructure. The residual cumulative impacts on development would not be severe.

Figures



M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\FIGURES\X601 SITE LOCATION PLAN

DATE 06/2019	PROJECT TITLE: BEYTON ROAD, THURSTON	CANNON CONSULTING ENGINEERS Highways, Transport & Infrastructure Planning
DRAWN BY CCC	FIGURE TITLE: SITE LOCATION PLAN	
SCALE @ A3 SIZE NTS		

60 Cannon Street, London, EC4N 6NP
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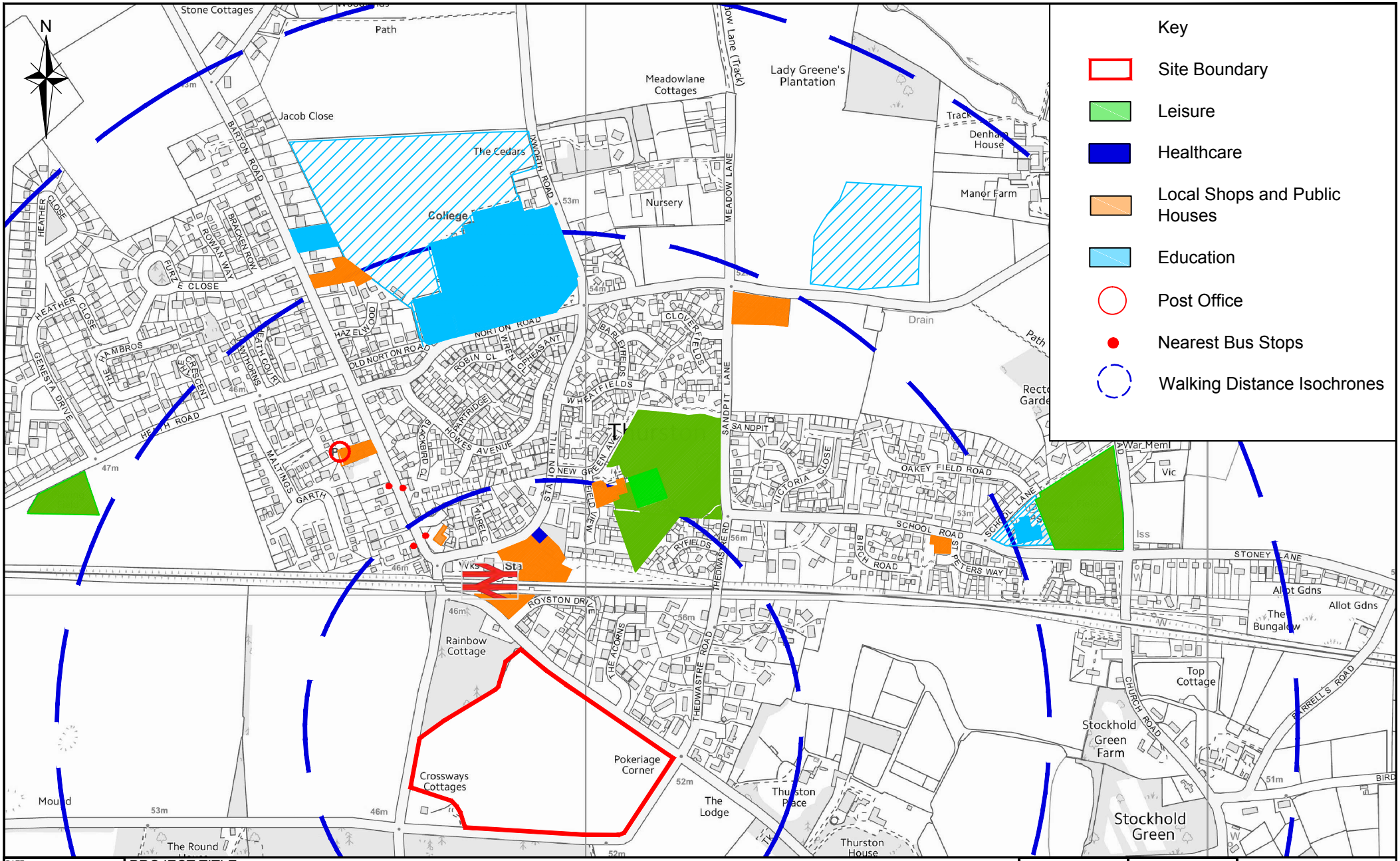
info@cannonce.co.uk

Cambridge House, Lanwades Business Park, Kentford Newmarket, CB8 7PN
Tel: 01638 555107
www.cannonce.co.uk

FIGURE NUMBER	PROJECT NO.
FIGURE 1	X601



DATE 06/2019	PROJECT TITLE BEYTON ROAD, THURSTON, SUFFOLK	FIGURE NUMBER 2	PROJECTNO. X601
DRAWN BY CCC	FIGURE TITLE SITE ACCESSIBILITY PLAN		
SCALE @ A4 SIZE NTS			

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M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\FIGURES\X601 Accessibility Plan

N

Good quality footways approximately 1.8m in width on both sides of carriageway.
Controlled pedestrian crossing within close vicinity of TCC.

Good quality footways on either side of carriageway. Uncontrolled pedestrian crossings present on all arms of the Barton Rd / Station Hill mini-roundabout.

Narrow footway approximately 1m in width on eastern side of carriageway. No pedestrian crossing or street lighting south of the railway bridge.No footway provision on southern side of carriageway.

850m
11 mins
3 mins

THURSTON COMMUNITY COLLEGE (TCC)

Pigeon proposed Primary School
1,200m
4 mins
15 mins

Uncontrolled pedestrian crossing, in the form of a raised table, connects to cycle path link towards Station Hill.

Controlled pedestrian crossing and footway provision on both sides of the carriageway.

Proposed Site

Footway provision present on western side of the carriageway which narrows over the railway bridge.

THURSTON PRIMARY SCHOOL
1,100m
4 mins
14 mins

Key
- Site Boundary
- Existing Schools
- Proposed School Facilities
- Verge
- Footway Provided
- Dropped Kerb
- Nearest Bus Stops

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\FIGURES\walking routes school

DATE	06/2019
DRAWN BY	CCC
SCALE @ A3 SIZE	NTS
PROJECT TITLE	BEYTON ROAD, THURSTON
FIGURE TITLE	WALKING TO SCHOOL PLAN

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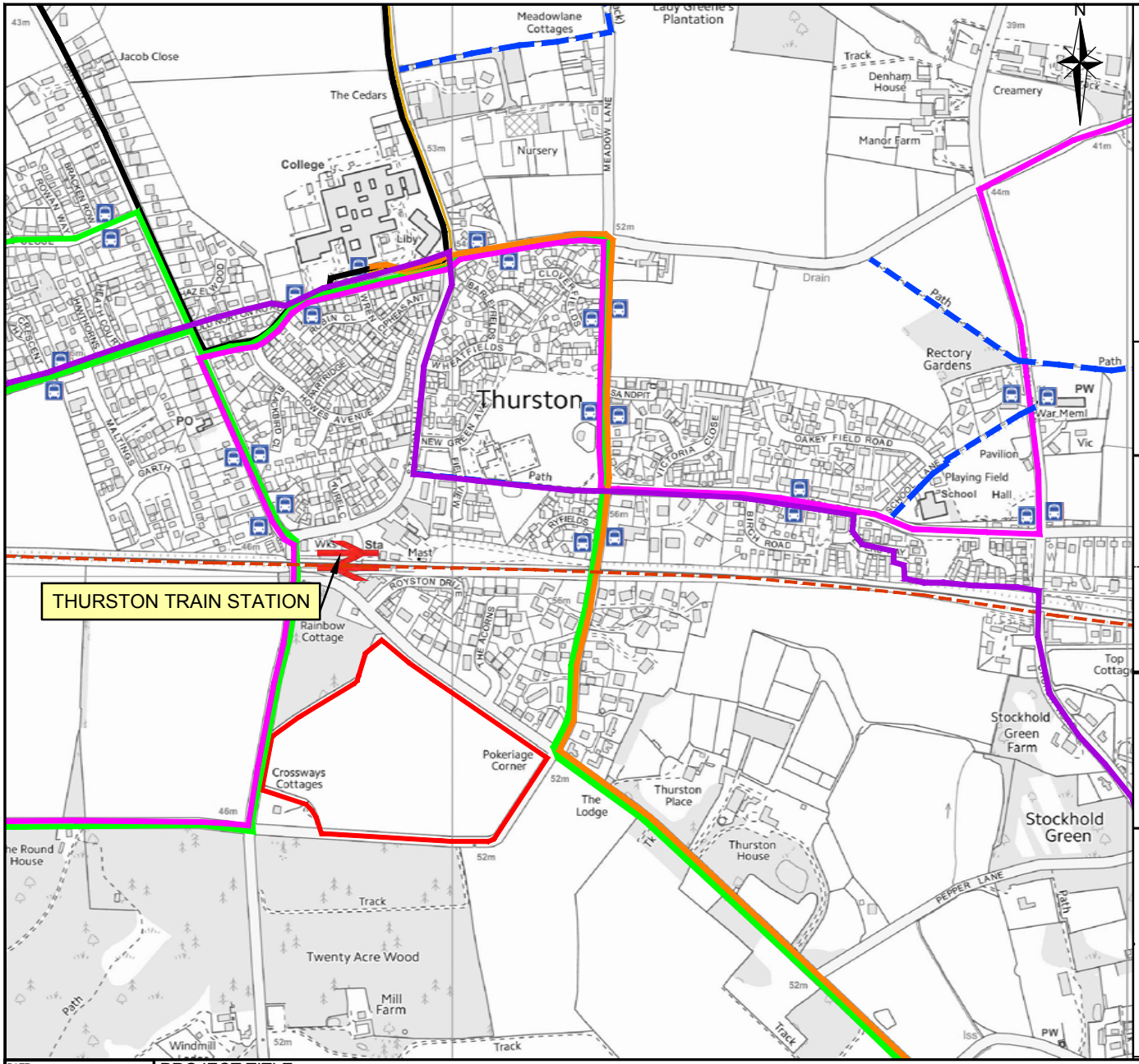
FIGURE NUMBER	Figure 3
PROJECT NO.	X601



Key

- Site Boundary
- Nearest Bus Stops
- Railway Line
- National Cycle Route 51
- Public Right of Way

Key

- Bus Service Route 304
- Bus Service Route 337
- Bus Service Route 384
- Bus Service Route 385
- Bus Service Route 988

Service	Bus Frequency			
	Mon-Fri	First & Last Bus	Sat	Sun
384	Every three hours	0759 1814	Every three hours	No service
385	Every three hours	0857 2057	Two services a day	No service

Destination	Rail Frequency			
	Mon-Sat		Sunday	
	Typical Frequency	First & Last Train	Typical Frequency	First & Last Train
Ipswich	Hourly	0537 2335	Every two hours	1003 2339
Cambridge	Hourly	0541 2148	Every two hours	0803 2133

DATE 05/2019	PROJECT TITLE BEYTON ROAD, THURSTON, SUFFOLK		FIGURE NUMBER 4	PROJECTNO. X601
DRAWN BY CCC				
SCALE @ A4 SIZE NTS	FIGURE TITLE PUBLIC TRANSPORT PLAN			

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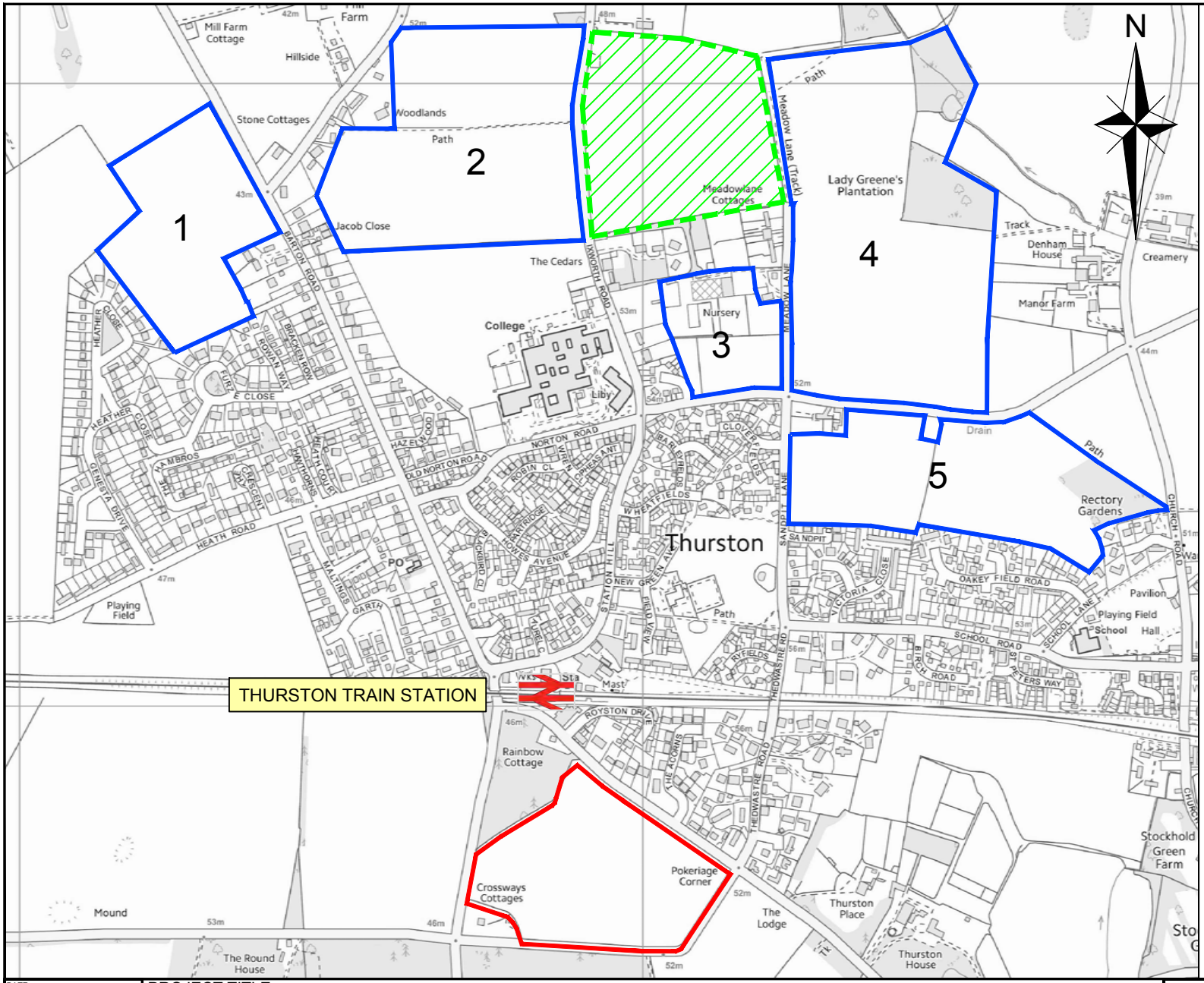
M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\FIGURES\X601 Public Transport Plan



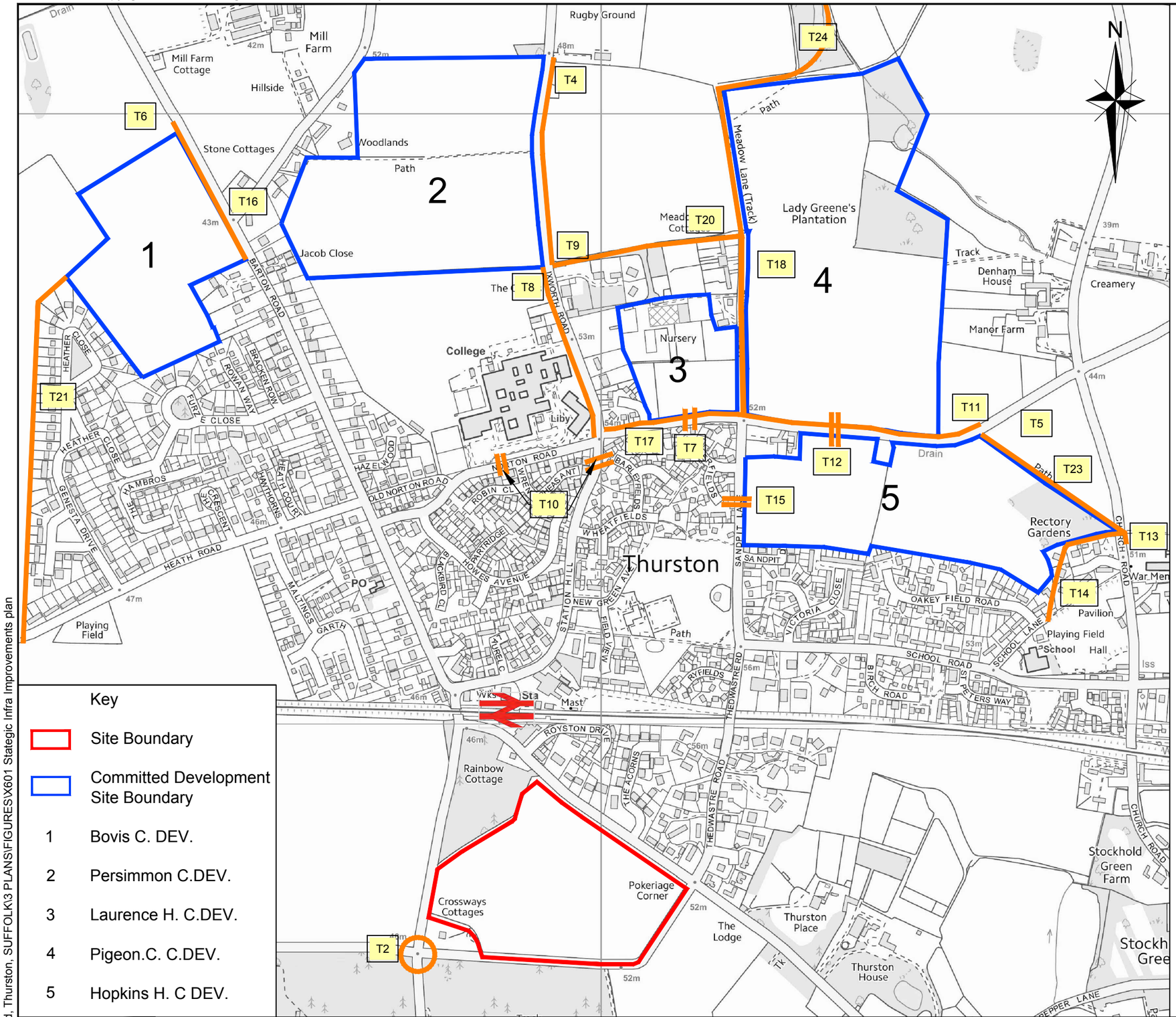
Key

	Site Boundary
1	Bovis C. DEV.
2	Persimmon C.DEV.
3	Laurence H. C.DEV.
4	Pigeon.C. C.DEV.
5	Hopkins H. C DEV.
	Gladmans Proposed DEV.

DATE 06/2019	PROJECT TITLE BEYTON ROAD, THURSTON, SUFFOLK	FIGURE NUMBER 5	PROJECTNO. X601
DRAWN BY CCC	FIGURE TITLE COMMITTED DEVELOPMENTS		
SCALE @ A4 SIZE NTS			

CANNON CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\FIGURES\X601 Committed development plan



Key

- Site Boundary
- Committed Development Site Boundary
- 1 Bovis C. DEV.
- 2 Persimmon C.DEV.
- 3 Laurence H. C.DEV.
- 4 Pigeon.C. C.DEV.
- 5 Hopkins H. C DEV.

Strategic Infrastructure Improvements

- T2 Priority change and reduction speed limit.
- T4 Extend speed limit to Thurston Rugby Club
- T5 Extension of speed limit
- T6 Extension of speed limit west of Mill Lane
- T7 Pedestrian Crossing between Meadow Lane and Station Hill / Ixworth Road (uncontrolled)
- T8 Footway on west side between Norton Road and Persimmon site
- T9 Footway link to Thurston Rugby Club
- T10 Pedestrian crossing facilities (zebra on Norton Rd east and Station Hill)
- T11 Footway on north side from Meadow Lane east towards Church Lane
- T12 Crossing between Hopkins site and Pigeon site (un-controlled)
- T13 Provide metalled footway
- T14 Street lighting
- T15 pedestrian crossing south of Cloverfields and north of Sandpit Drive
- T16 Extension of footway along Barton Road
- T17 Bus stops east of Rylands Close
- T18 Modify to improve cycle / pedestrian facilities (and maintain access to properties)
- T20 Improve PROW 018
- T21 New PROW along southern boundary to Heath Road and Cycle Route 51
- T23 Improve PROW 006
- T24 Improve PROW 007

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\FIGURES\X601 Stategic Infra Improvements plan

DATE 06/2019	PROJECT TITLE: Beyton Road, Thurston	
DRAWN BY DRNBY	FIGURE TITLE: Strategic Infrastructure Improvements Plan Proposed by Committed Development	
SCALE @ A3 SIZE N.T.S		FIGURE NUMBER 6 / PROJECT NO. X601

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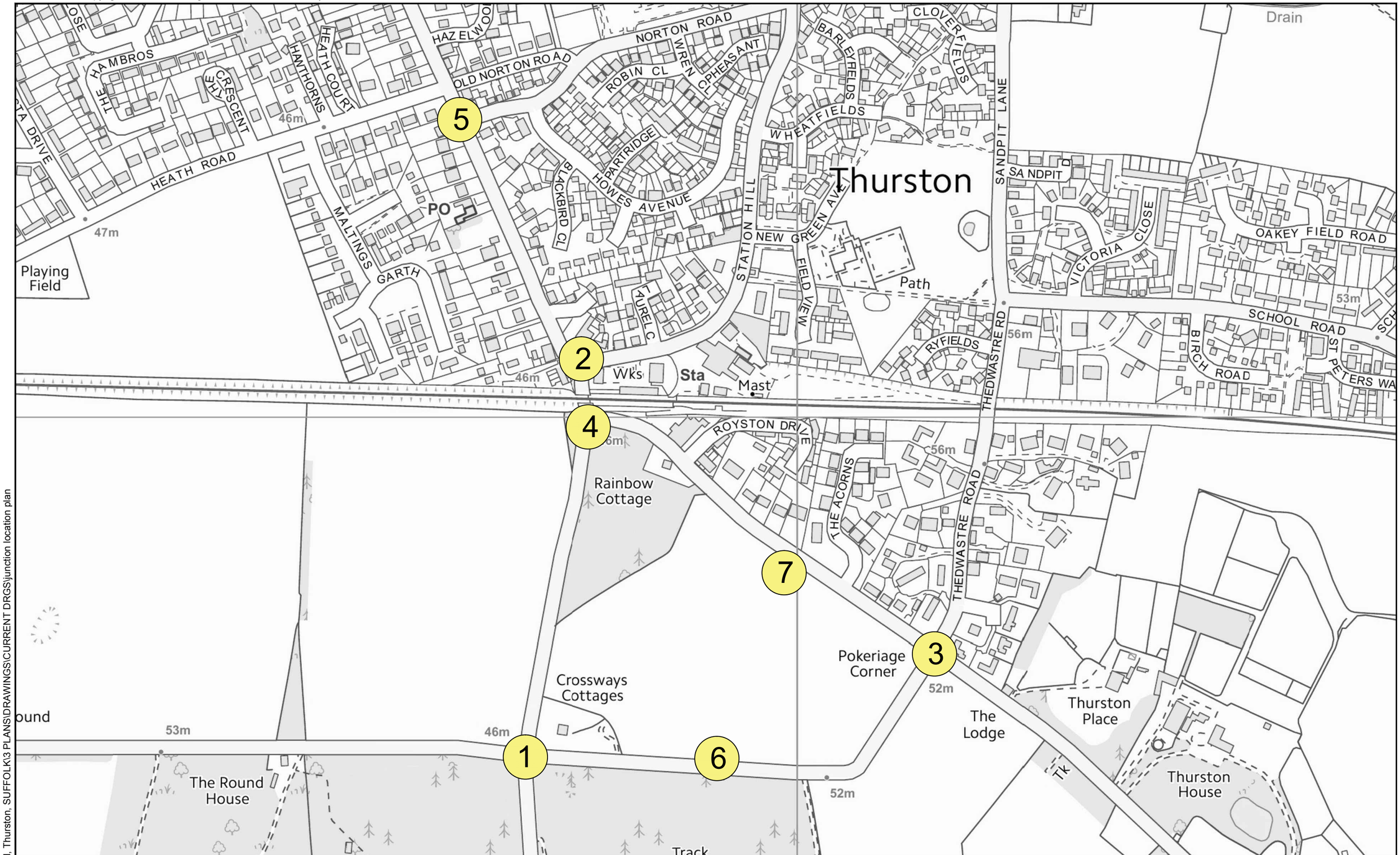
Drawings



M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\junction location plan

REV	DESCRIPTION	DE	DR	CH	DATE

DESIGNED BY	DRAWN BY	CHECKED BY
DR	DR	JP

SCALE @ A3 SIZE	DATE
DNS	18/4/19

PROJECT TITLE
BEYTON ROAD THURSTON

DRAWING TITLE
LOCATION PLAN OF JUNCTION IMPACT ASSESSMENT

CLIENT
BLOOR HOMES EASTERN

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DRAWING NUMBER
X601_212

REV.
-

N

Rainbow Cottage

2

Dove Cottage

VISIBILITY SPLAY
2.4m x 120m

Crackenlow

Cherrywell

Dunelm

Hillside

Paxhill

1

TRAFFIC CALMED SECTION OF
BEYTON ROAD
RAISED TABLE JUNCTION

PROPOSED PEDESTRIAN
CROSSING

PROPOSED UNCONTROLLED
PEDESTRIAN CROSSING

PROPOSED ACCESS 5.5m + 2m
FOOTWAY

TRAFFIC CALMED SECTION OF
BEYTON ROAD
RAISED TABLE JUNCTION

50.6m

50.6m

Sunbury

TREES TO BE AVOIDED
CAT B

VISIBILITY SPLAY
2.4m x 120m

Whitefriars

THEDWASTRE ROAD

CROPS

OVERGROWTH

UNMADE

HEDGE

ASPHALT

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\X601_200 access Beyton Road

DATE 11/9/18	PROJECT TITLE THURSTON	CANNON CONSULTING ENGINEERS Highways, Transport & Infrastructure Planning
DRAWN BY DWR	FIGURE TITLE NORTHERN SITE ACCESS	
SCALE @ A3 SIZE 1:1000		

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FIGURE NUMBER	PROJECT NO.
X601_PL_200	X601

N

Crossways Cottages

VISIBILITY SPLAY
2.4x160m
(48.6mph)

5m

Guide Post

EXISTING TREE TO BE RETAINED

PROPOSED SOUTHERN ACCESS
5.5m WIDE + 2m VERGE

EXISTING TREES TO BE RETAINED

VISIBILITY SPLAY
2.4x120m
(43.6mph)

EXISTING VEGETATION TO BE CUT BACK FROM VISIBILITY SPLAY

EXISTING TREES TO BE REMOVED AND VEGETATION TO BE CUT BACK FROM VISIBILITY SPLAY

VISIBILITY SPLAY
2.4m x 120m
1050mm to 600mm

VISIBILITY SPLAY
2.4m x 120m
1050mm to 600mm

existing road levels
Horiz. 1:250
Vert. 1:50
44.00
Exist. LEVEL
Exist. CHAIN.

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\X601_200b SOUTHERN SITE ACCESS

DATE: 11/9/18	PROJECT TITLE: THURSTON	
DRAWN BY: DWR	FIGURE TITLE: SOUTHERN SITE ACCESS	
SCALE @ A3 SIZE: DWR		

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FIGURE NUMBER	PROJECT NO.
X601_PL_200B	X601

N

ARABLE LAND

ARABLE L

MJ2

S1

S2

ASPHALT

HEDGE 47.48

HEDGE 47.61

HEDGE 48.07

HEDGE 49.49

GRASS/UNMADE

GRASS

FOLIAGE

DITCH

UNMADE

SIGN

POST

TP

RS

EP

OVERGROWTH

Crossways Cottages

RIDGE 55.30

EAVES 51.46

Guide Post

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRG\X601_201 B staggered junction

DATE 11/9/18	PROJECT TITLE THURSTON	
DRAWN BY DWR	FIGURE TITLE FISHWICK CORNER PROPOSED STAGGERED JUNCTION	
SCALE @ A3 SIZE 1:500		

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FIGURE NUMBER	PROJECT NO.
X601_PL_201B	X601

LEGEND

- PROPOSED ACCESS ROAD
- PROPOSED FOOTWAY
- PROPOSED KERB
- HIGHWAY BOUNDARY (ECC 2577503)
- LAND REGISTRY BOUNDARYS
- VISIBILITY SPLAY

N

BARTON ROAD DIVERTED TO FORM STAGGERED JUNCTION

SECTION OF EXISTING ROAD TO BE CLOSED

Crossways Cottages

Guide Post

VISIBILITY SPLAY 2.4x160m

VISIBILITY SPLAY 2.4x160m

VISIBILITY SPLAY 2.4x160m

EXISTING CROSS ROADS REBUILT AS T JUNCTION

VISIBILITY SPLAY 2.4x160m

VISIBILITY SPLAY 2.4m x 160m 1050mm to 600mm

VISIBILITY SPLAY 2.4m x 160m 1050mm to 600mm

EXISITING LEVELS
Horiz. 1:250
Vert. 1:50
42.00
Exist. LEVEL
Exist. CHAIN.

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\X601_201 option 1 staggered junction

DATE	11/9/18
DRAWN BY	DWR
SCALE @ A3 SIZE	DWR
PROJECT TITLE	THURSTON
FIGURE TITLE	FISHWICK CORNER OPTION 1 - STAGGERED JUNCTION - VISIBILITY

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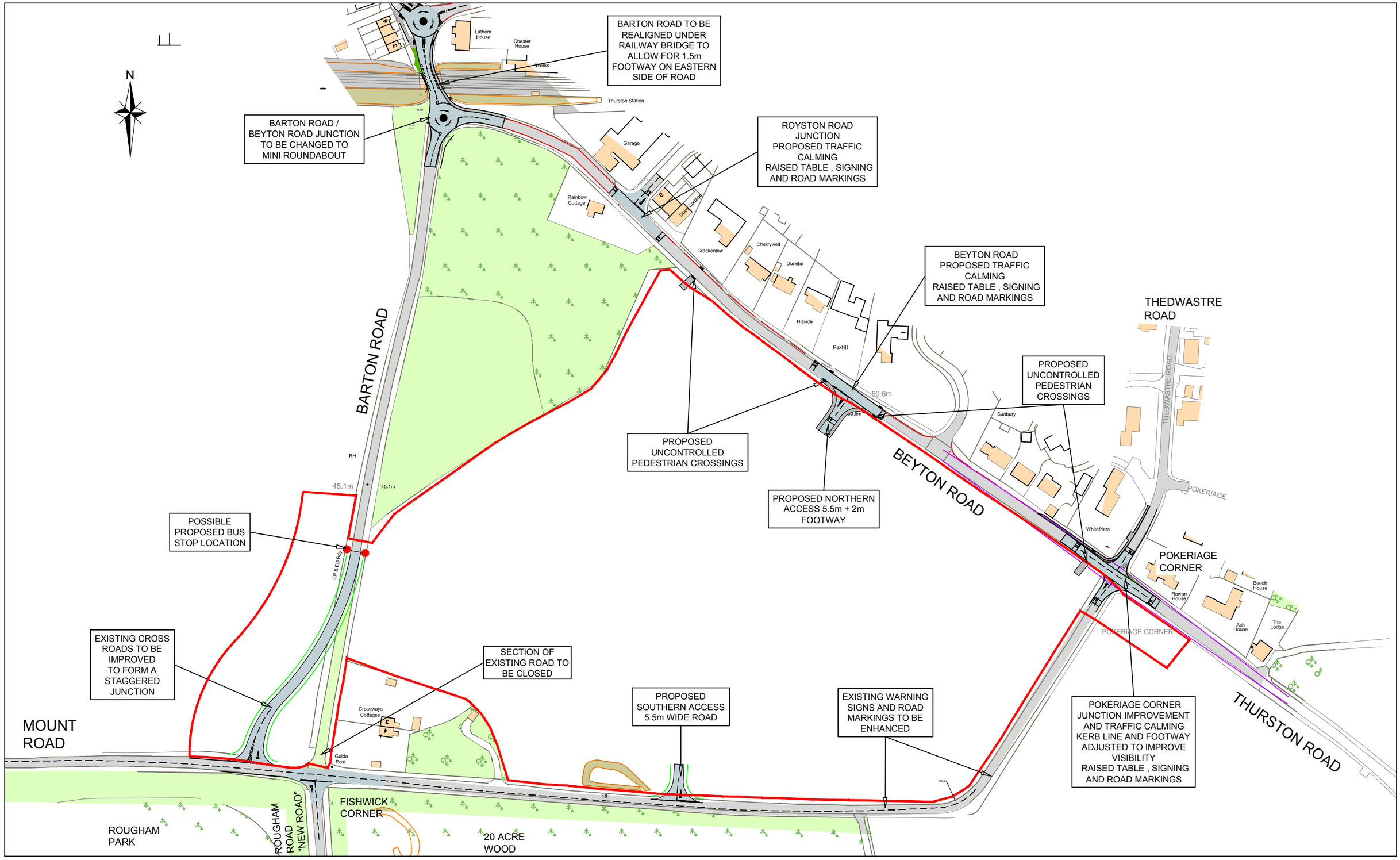
FIGURE NUMBER	X601_PL_201
PROJECT NO.	X601



M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\X601_211 site access strategy + road improvement+redline REV P01

DATE	PROJECT TITLE	
	BEYTON ROAD, THURSTON, SUFFOLK	
DRAWN BY DWR	FIGURE TITLE	
SCALE @ A3 SIZE NTS	SITE ACCESS STRATEGY AND LOCAL JUNCTION IMPROVEMENTS	

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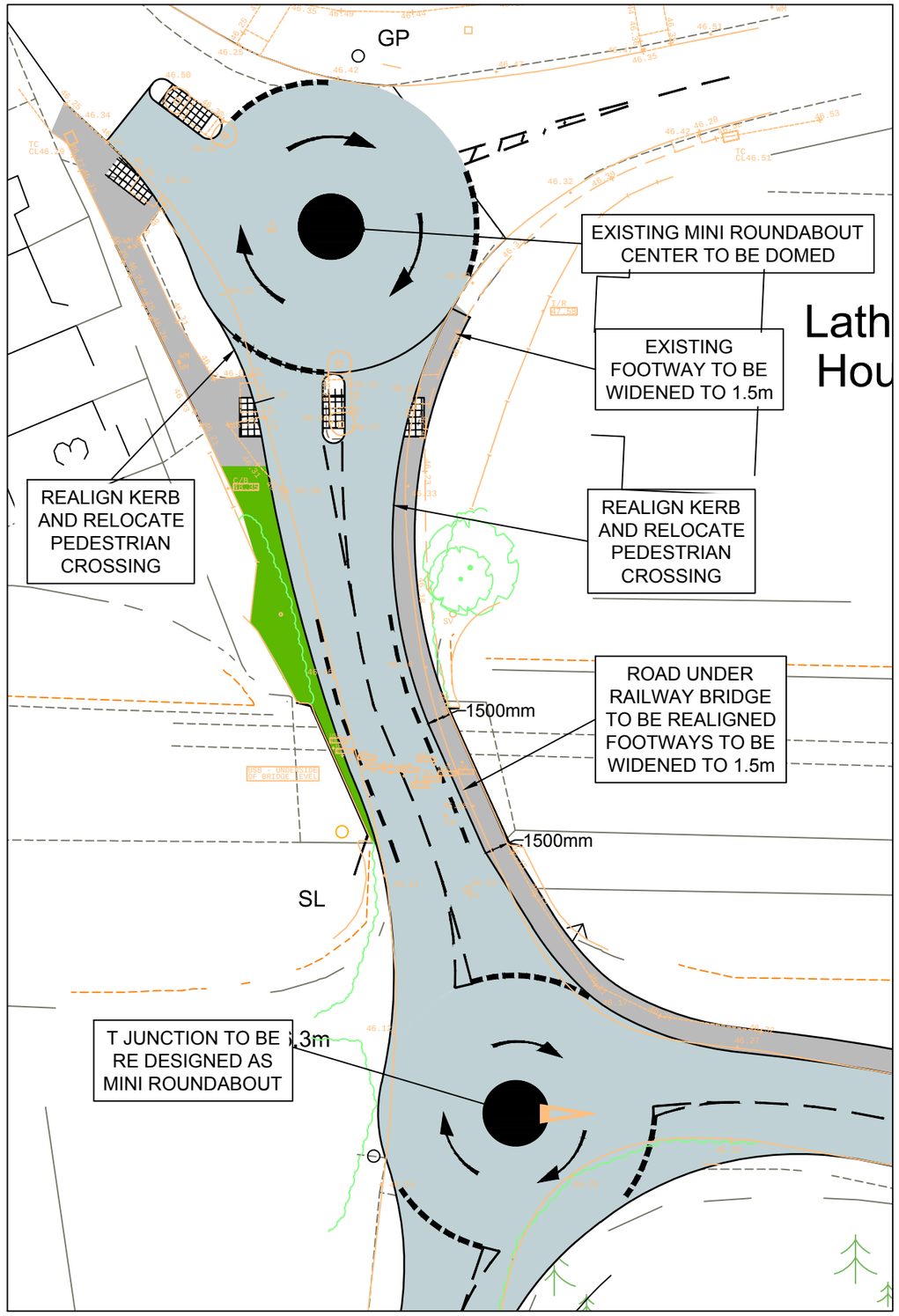
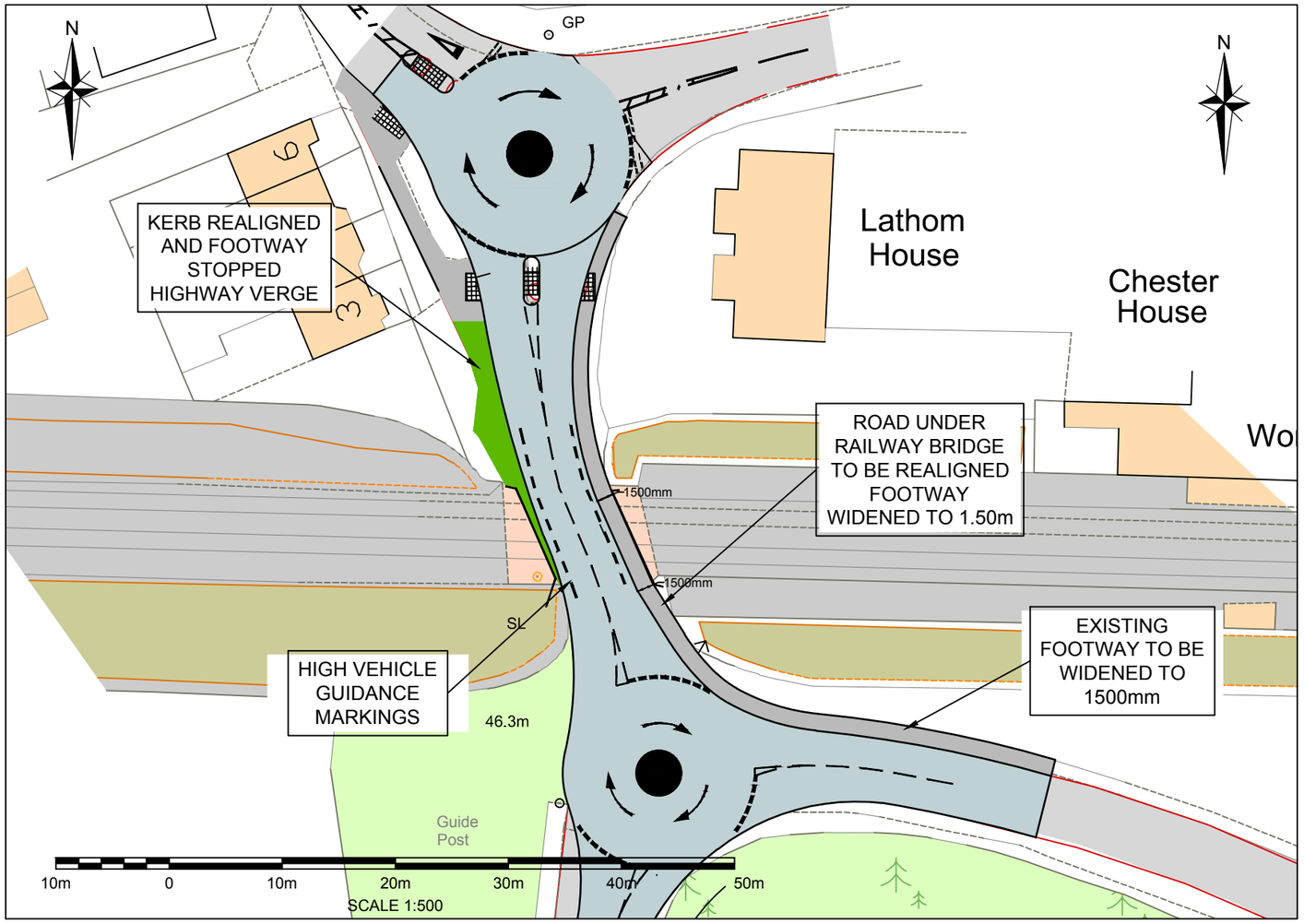
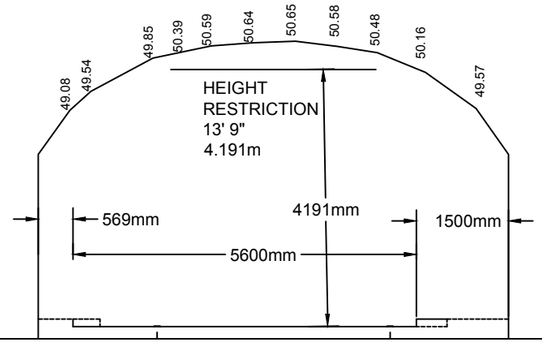
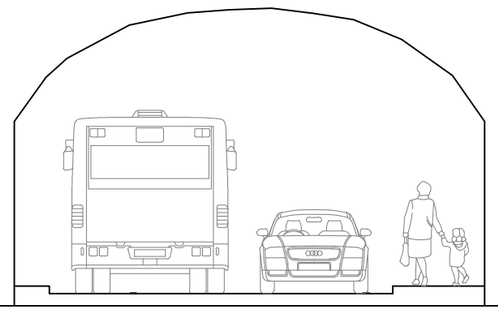
FIGURE NUMBER	PROJECT NO.
X601_PL_211_P01	X601







RAILWAY BRIDGE CROSS SECTION



RAILWAY BRIDGE TYPICAL SECTION

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\X601_214 Bridge improvement

DATE	11/9/18
DRAWN BY	DWR
SCALE @ A3 SIZE	NTS
PROJECT TITLE	THURSTON
FIGURE TITLE	BARTON ROAD MINI ROUNDABOUT AND REALIGNMENT UNDER BRIDGE

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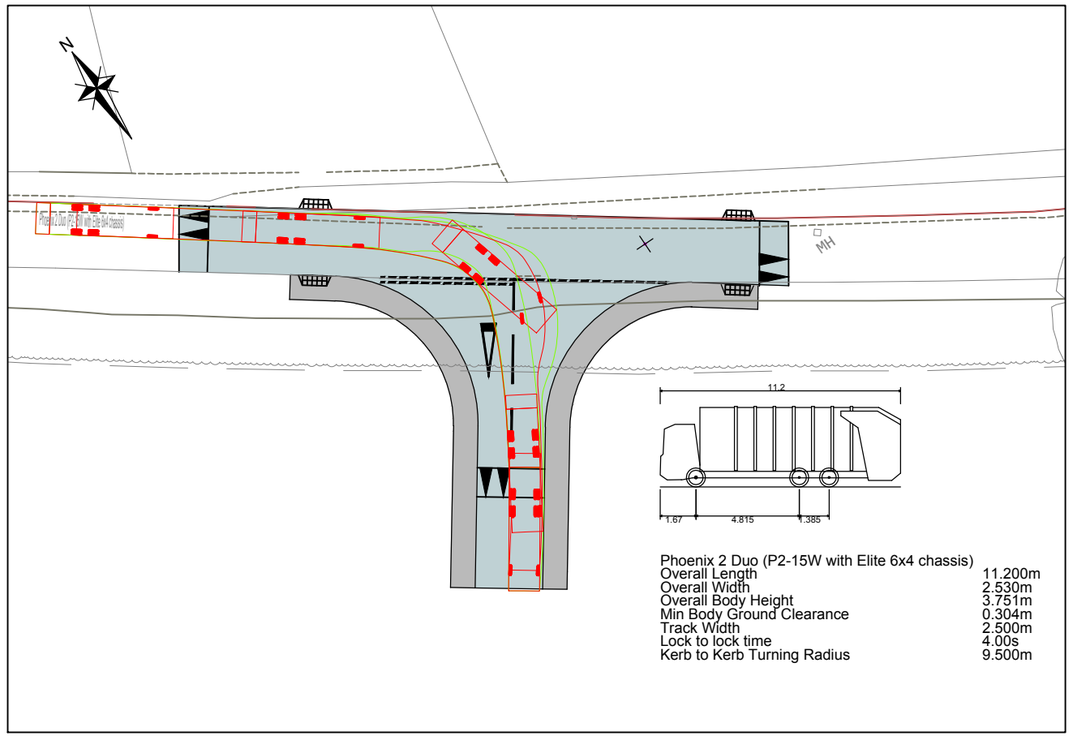
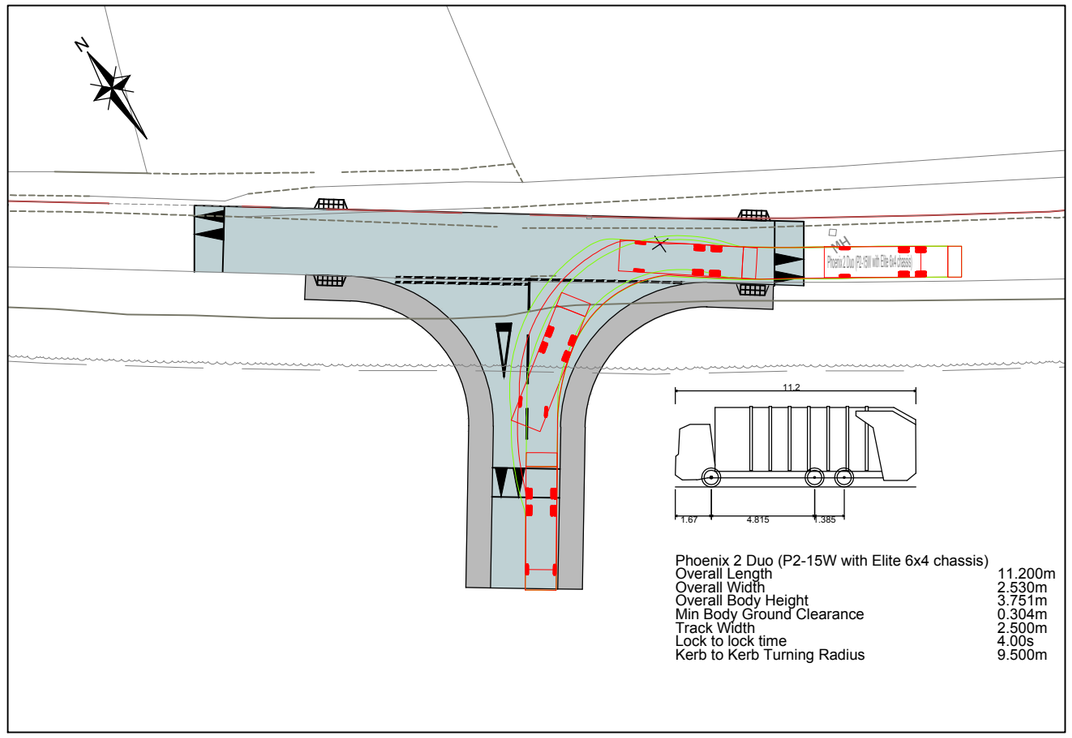
FIGURE NUMBER	X601_PL_214
PROJECT NO.	X601



Phoenix 2 Duo (P2-15W with Elite 6x4 chassis)

Overall Length	11.200m
Overall Width	2.530m
Overall Body Height	3.751m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.500m



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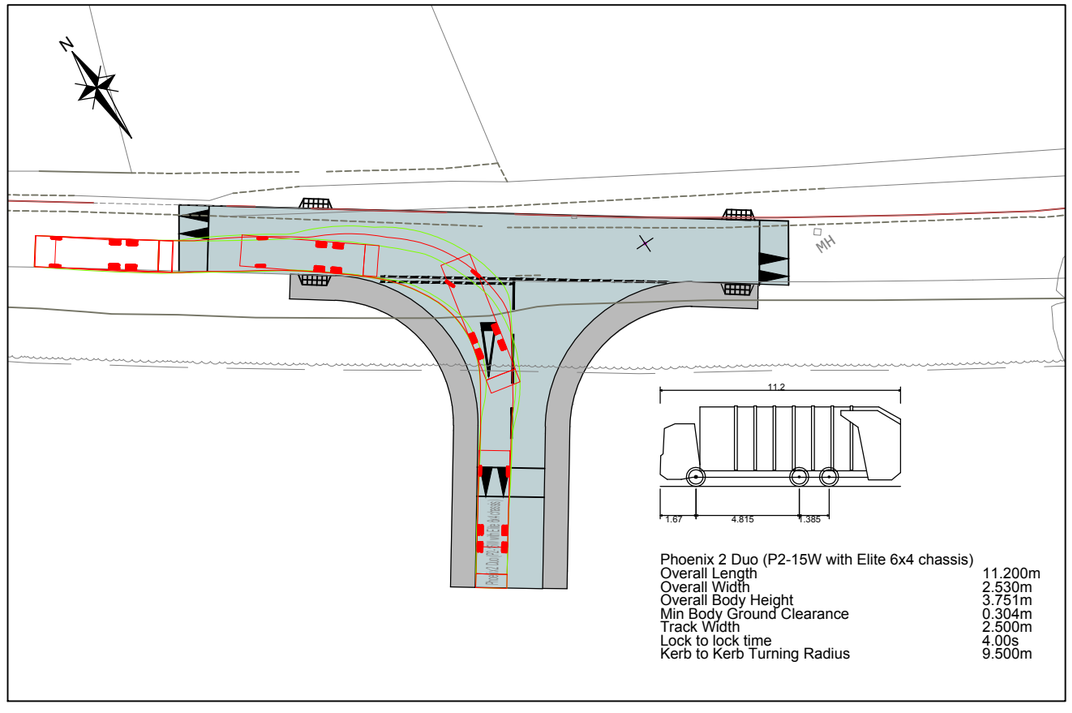

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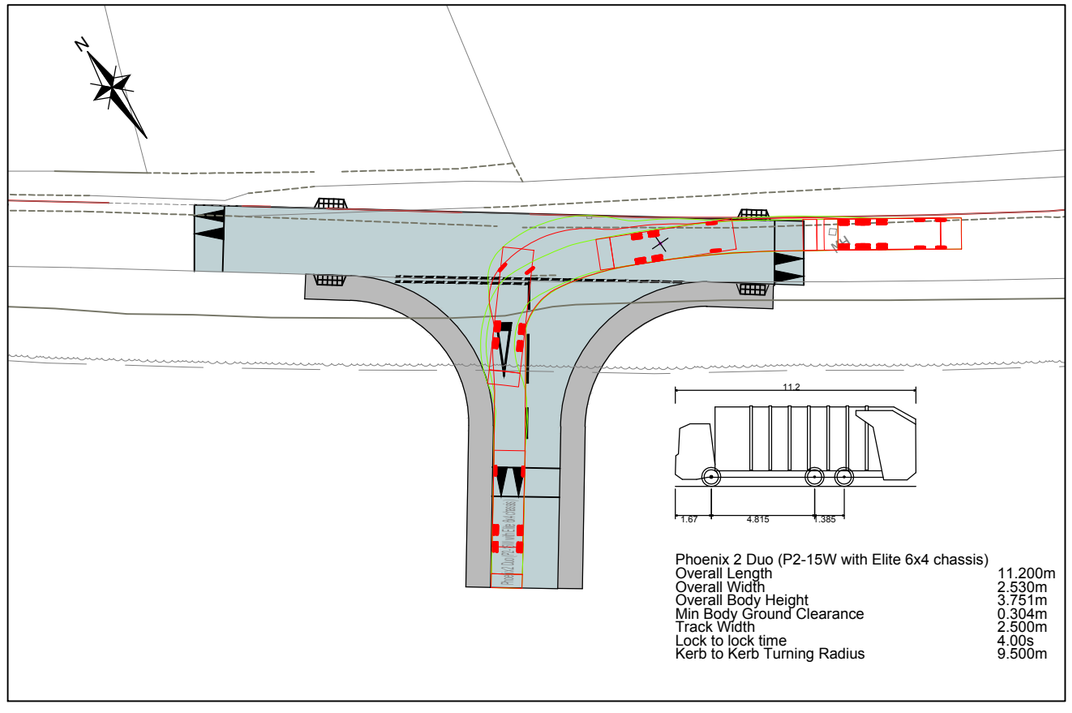

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Kerb to Kerb Turning Radius	9.500m

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\X601_216 tracking

DATE
11/9/18

DRAWN BY
DWR

SCALE @ A3 SIZE
NTS

PROJECT TITLE

BEYTON ROAD, THURSTON, SUFFOLK

FIGURE TITLE

PROPOSED NORTHERN ACCESS
VEHICLE SWEPT PATH

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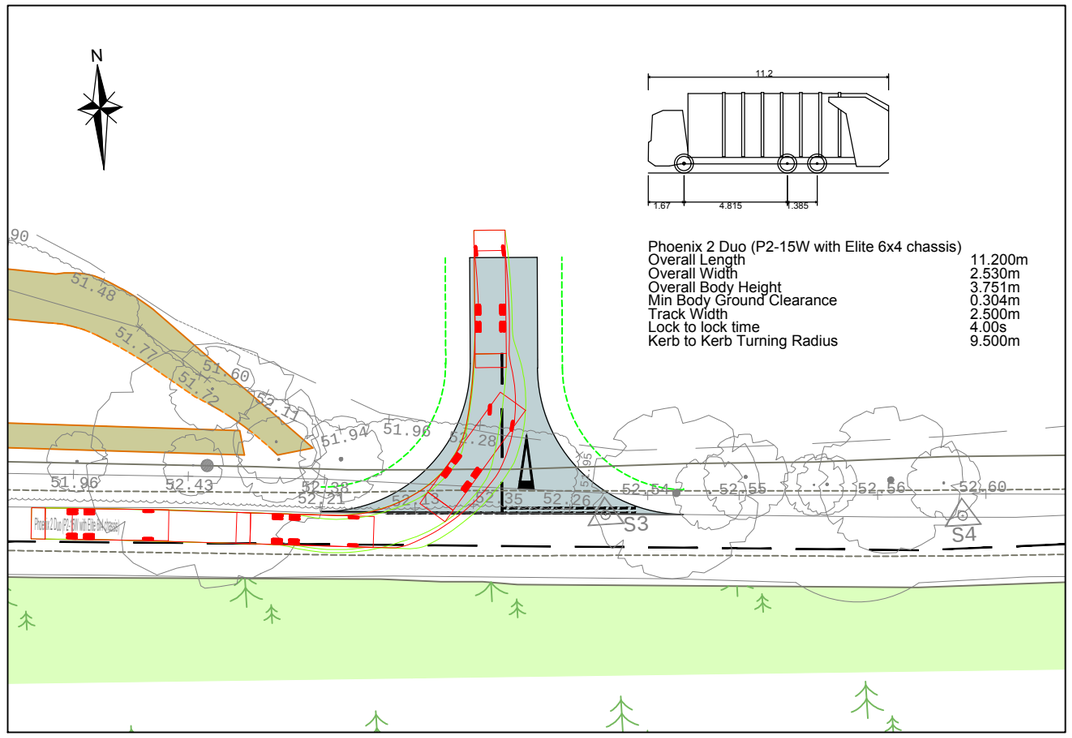
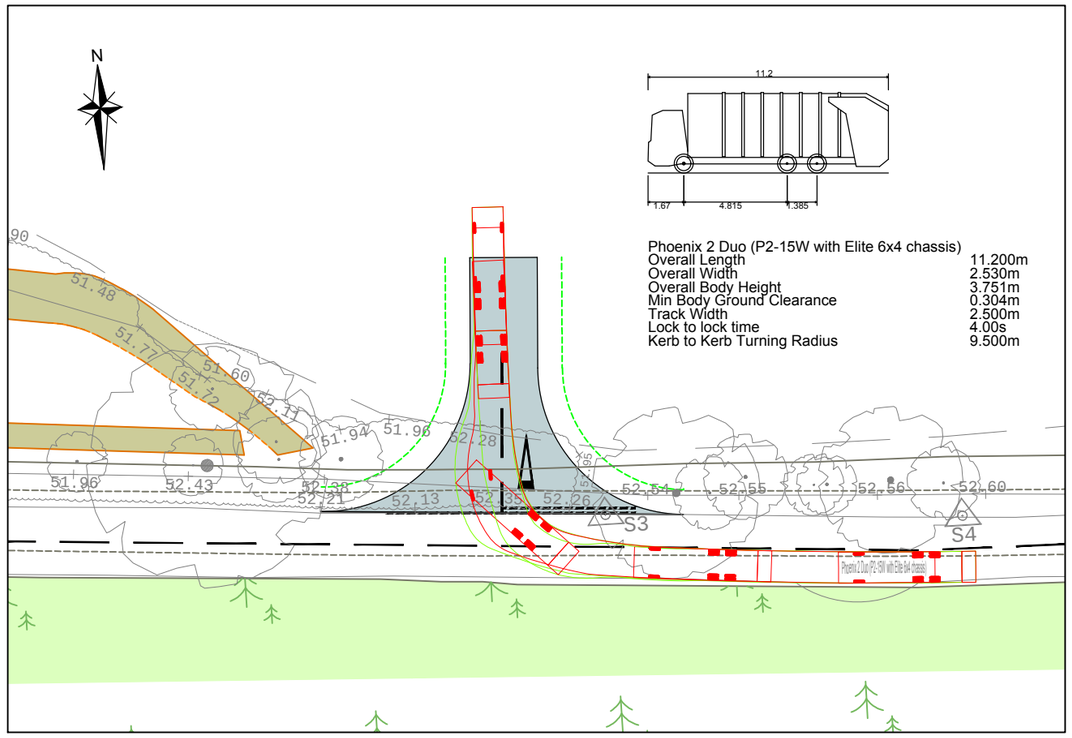
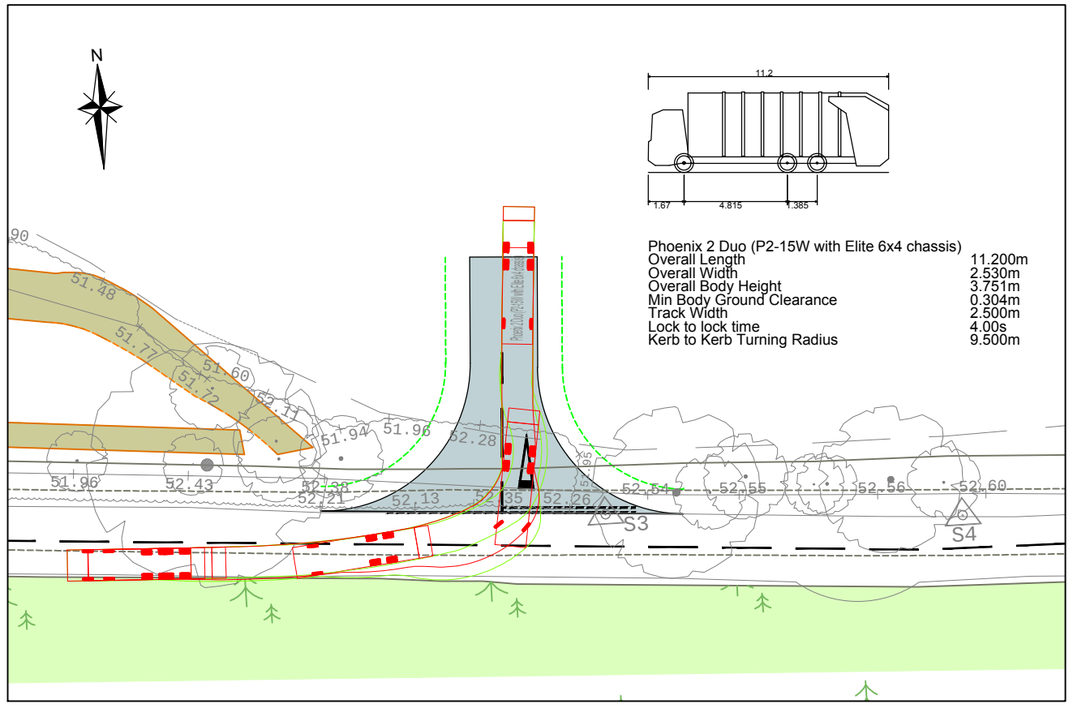
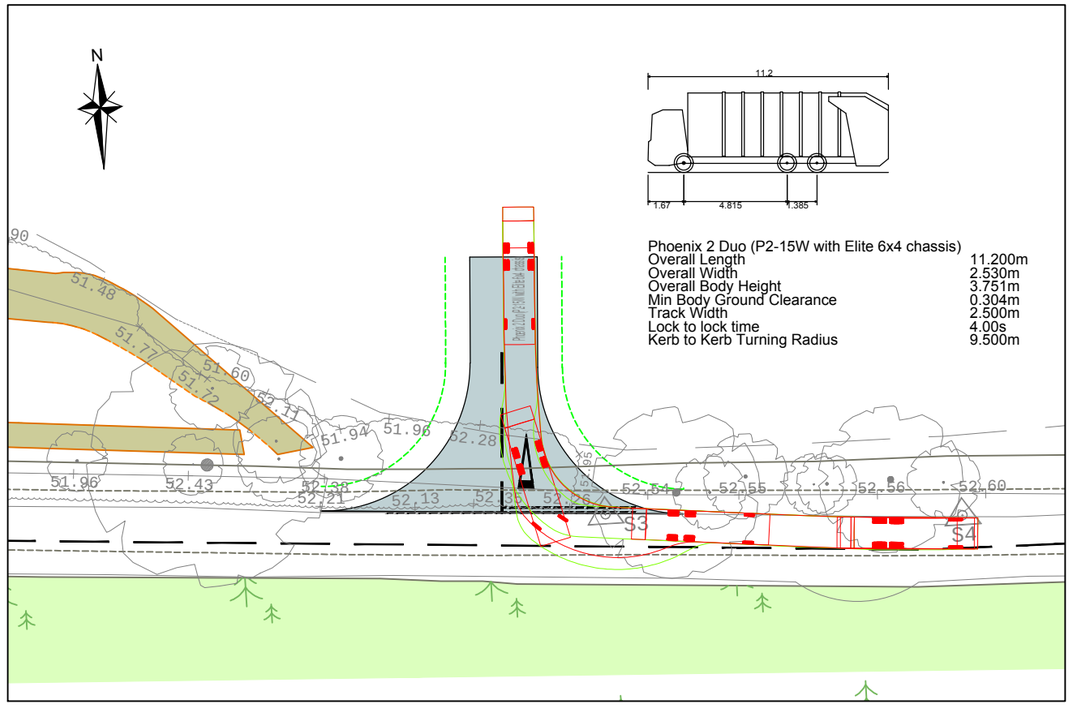
FIGURE NUMBER
X601_PL_216

PROJECT NO.
X601









M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\X601_217 tracking

DATE	11/9/18
DRAWN BY	DWR
SCALE @ A3 SIZE	NTS

PROJECT TITLE

BEYTON ROAD, THURSTON, SUFFOLK

FIGURE TITLE

PROPOSED SOUTHERN ACCESS VEHICLE SWEPT PATH

CANNON CONSULTING ENGINEERS
Highways, Transport & Infrastructure Planning

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Tel: 01638 555107
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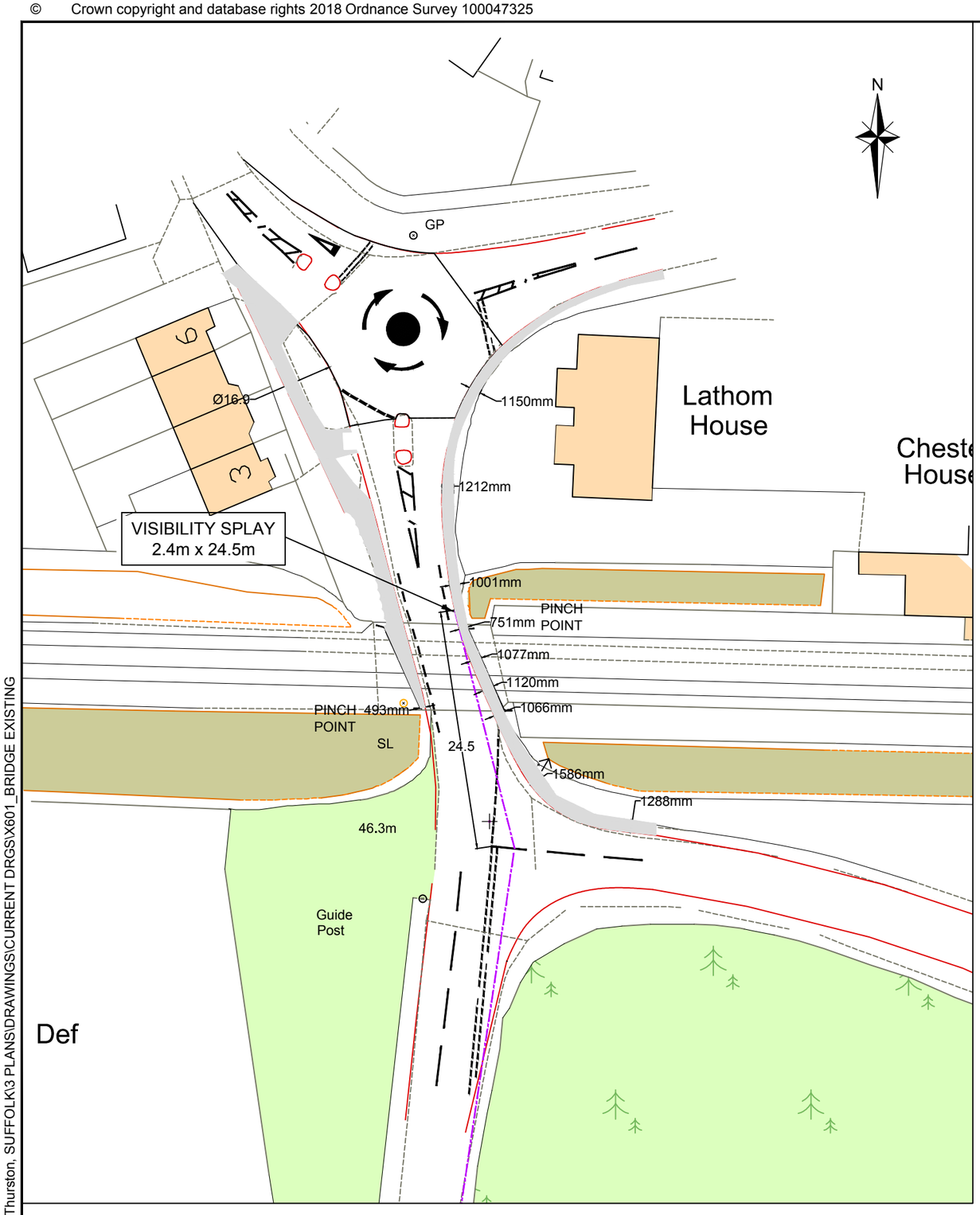
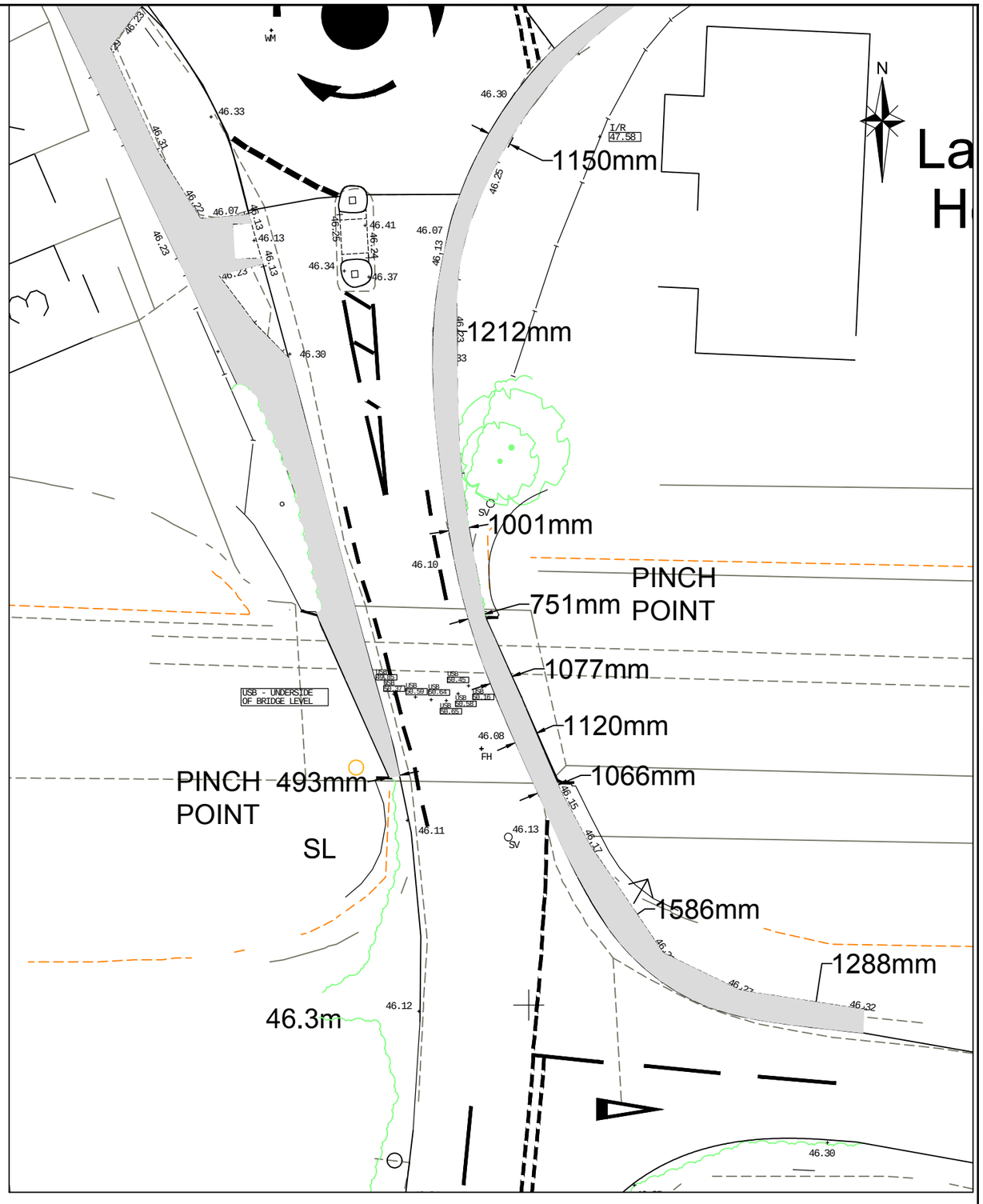
FIGURE NUMBER	X601_PL_217
PROJECT NO.	X601





M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\X601_BRIDGE EXISTING

DATE	11/9/18
DRAWN BY	DWR
SCALE @ A3 SIZE	NTS
PROJECT TITLE	THURSTON
FIGURE TITLE	EXISITING RAILWAY BRIDGE

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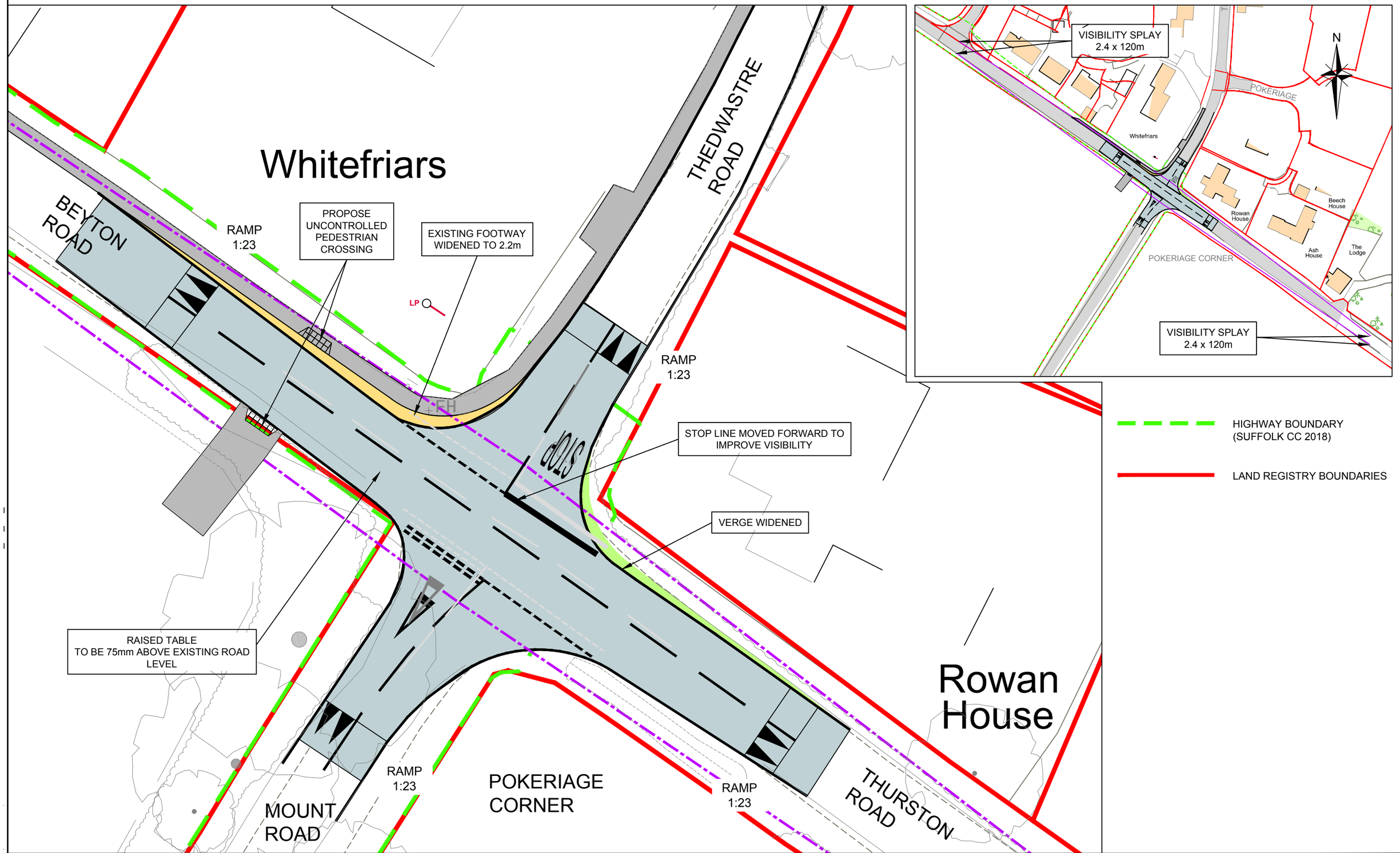
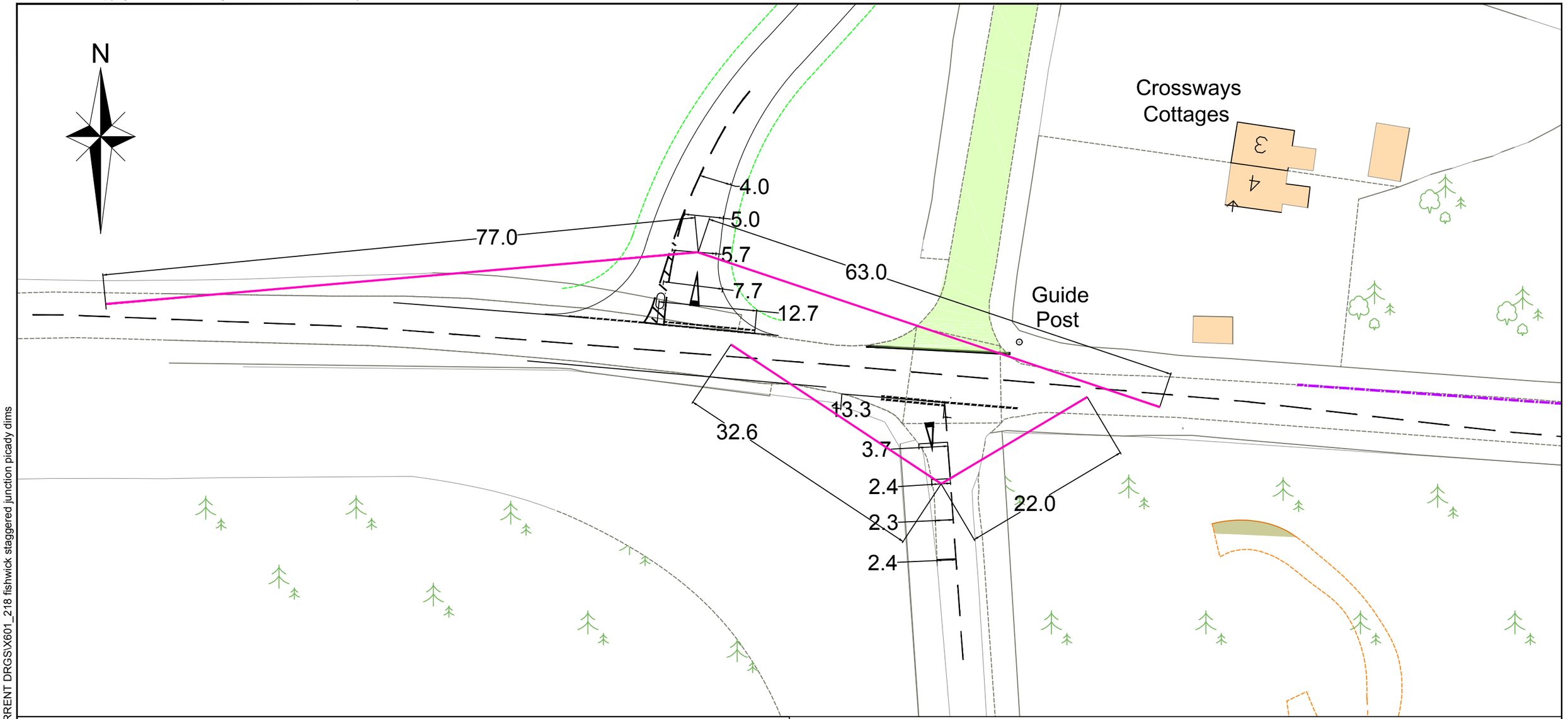
FIGURE NUMBER	X601_PL_223
PROJECT NO.	X601



DATE 11/9/18	PROJECT TITLE THURSTON	CANNON CONSULTING ENGINEERS Highways, Transport & Infrastructure Planning	Peekhouse, 20 Eastcheap, London, EC3M 1EB, Tel: 020 7717 5870, info@cannonce.co.uk Cambridge House, Lanwades Business Park, Kentford, Newmarket, CB8 7PN, Tel: 01638 555107, www.cannonce.co.uk
DRAWN BY DWR	FIGURE TITLE POKERIAGE CORNER JUNCTION IMPROVEMENT		FIGURE NUMBER X601_PL_213 / PROJECT NO. X601
SCALE @ A3 SIZE 1:250			



Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - Mount Road West	6.00			250.0	✓	0.00
C - Mount Road East (unnamed road)	6.00			130.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Barton Road North	One lane plus flare		10.00	7.70	5.70	5.00	4.00		1.00	63	77
D - Roughham road South ("New Road")	One lane	5.00								31	22

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\X601_218 fishwick staggered junction picady dims

DATE 11/9/18

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SCALE @ A3 SIZE DWR

PROJECT TITLE

THURSTON

FIGURE TITLE

FISHWICK CORNER
PROPOSED STAGGERED JUNCTION DIMENSIONS (PICADY)

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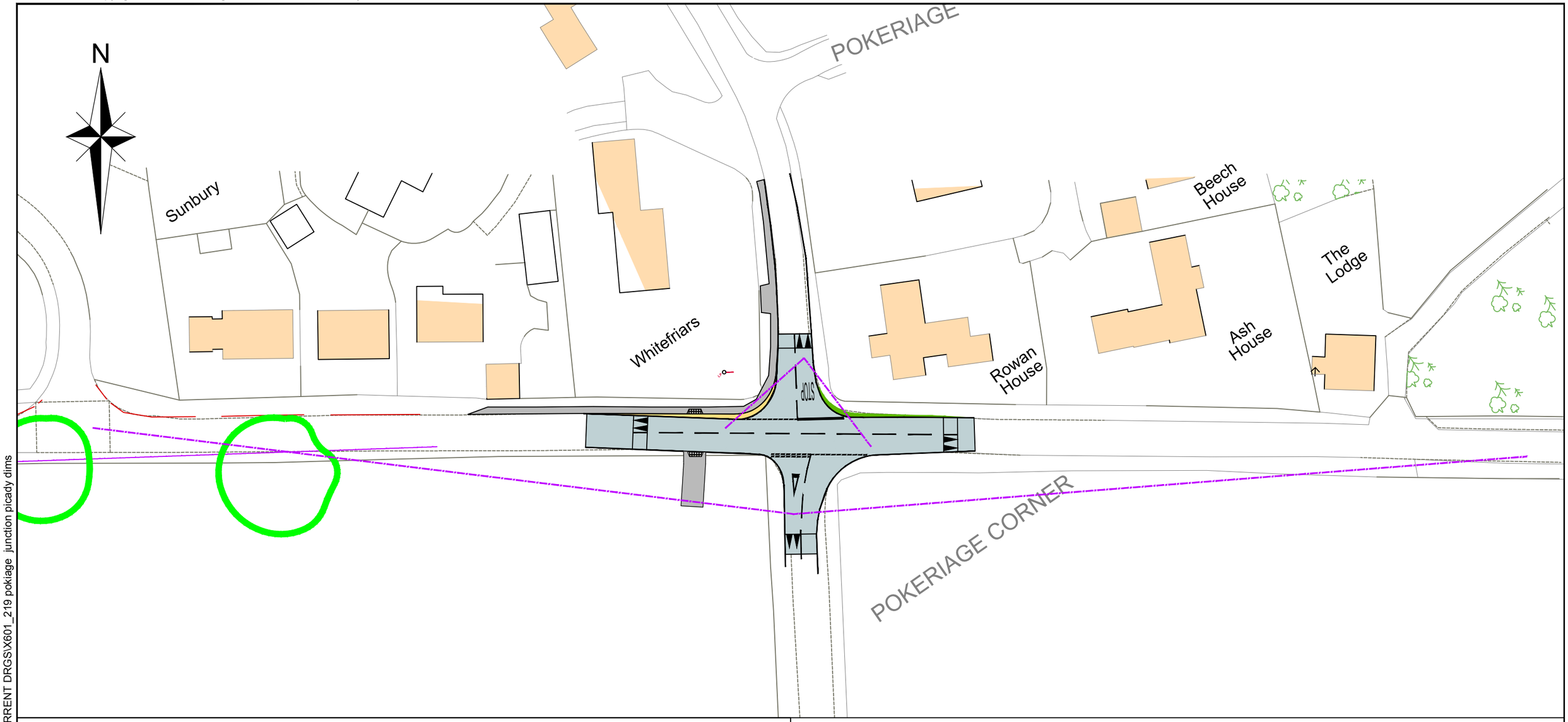
FIGURE NUMBER X601_PL_218

PROJECT NO. X601



Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - Beyton Road Northwest	6.12			213.7	✓	0.00
C - Thurston Road South East	6.12			210.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - Thedwastre Road North West	One lane	4.48	120	120
D - Unnamed Road Southwest	One lane	5.00	18	17

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\X601_219 pokiage_junction picady dims

DATE
11/9/18

DRAWN BY
DWR

SCALE @ A3 SIZE
DWR

PROJECT TITLE
THURSTON

FIGURE TITLE
POKERIAGE CORNER
PROPOSED JUNCTION IMPROVEMENTS (PICADY)

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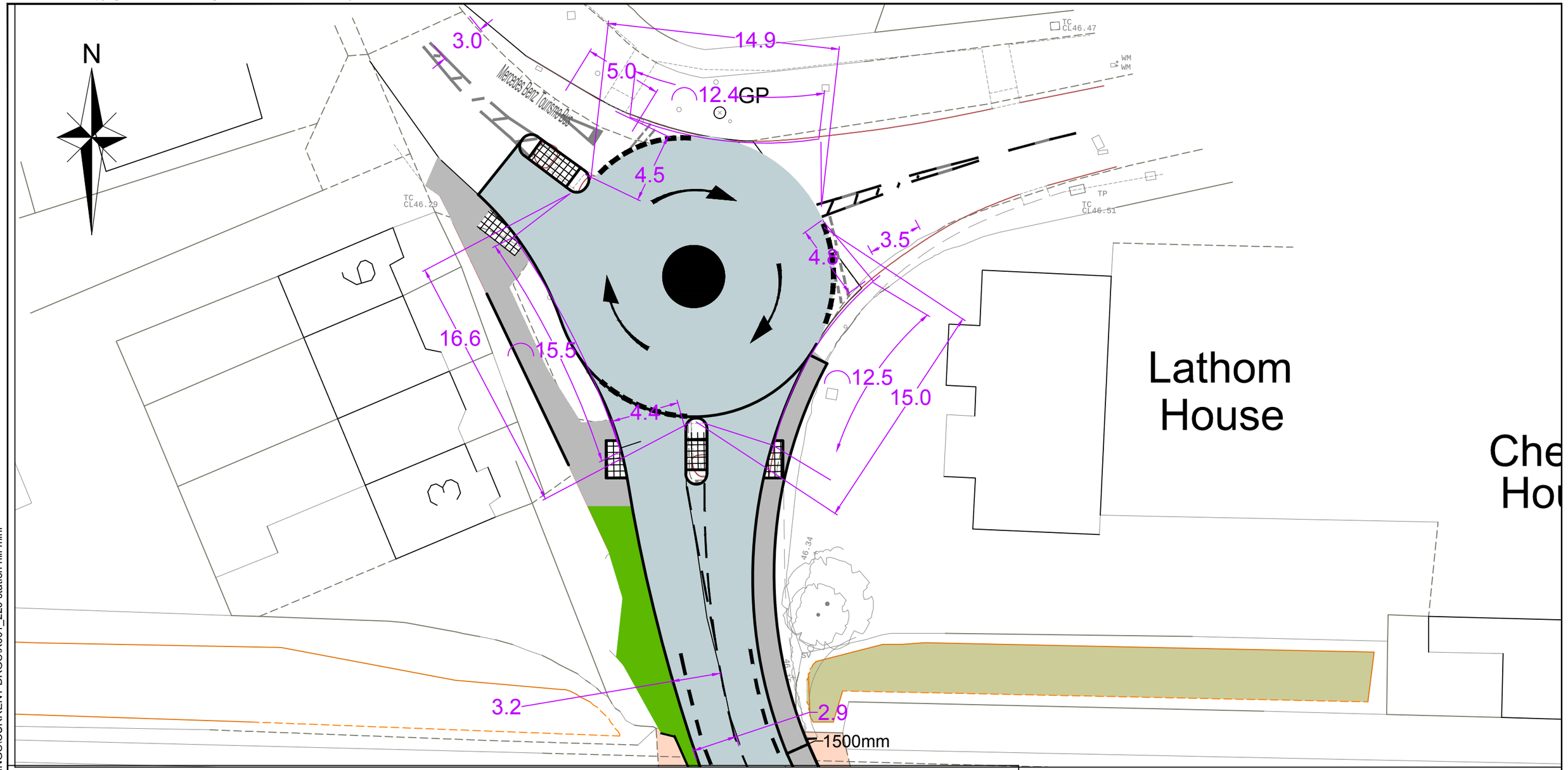
FIGURE NUMBER
X601_PL_219

PROJECT NO.
X601



Arms

Arm	Name	Description
1	Barton Road North West	
2	Station Hill	
3	New Road South	

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1 - Barton Road North West	3.05	3.05	4.51	5.3	14.89	12.42	0.0	✓
2 - Station Hill	2.80	2.80	4.62	3.5	14.99	12.59	0.0	
3 - New Road South	3.15	2.90	4.40	10.0	16.60	16.05	0.0	✓

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\X601_220 station hill mini

DATE 11/9/18	PROJECT TITLE THURSTON	
DRAWN BY DWR	FIGURE TITLE STATION HILL MINI ROUNDABOUT PROPOSED JUNCTION DIMENSIONS (ARCADY)	
SCALE @ A3 SIZE DWR		

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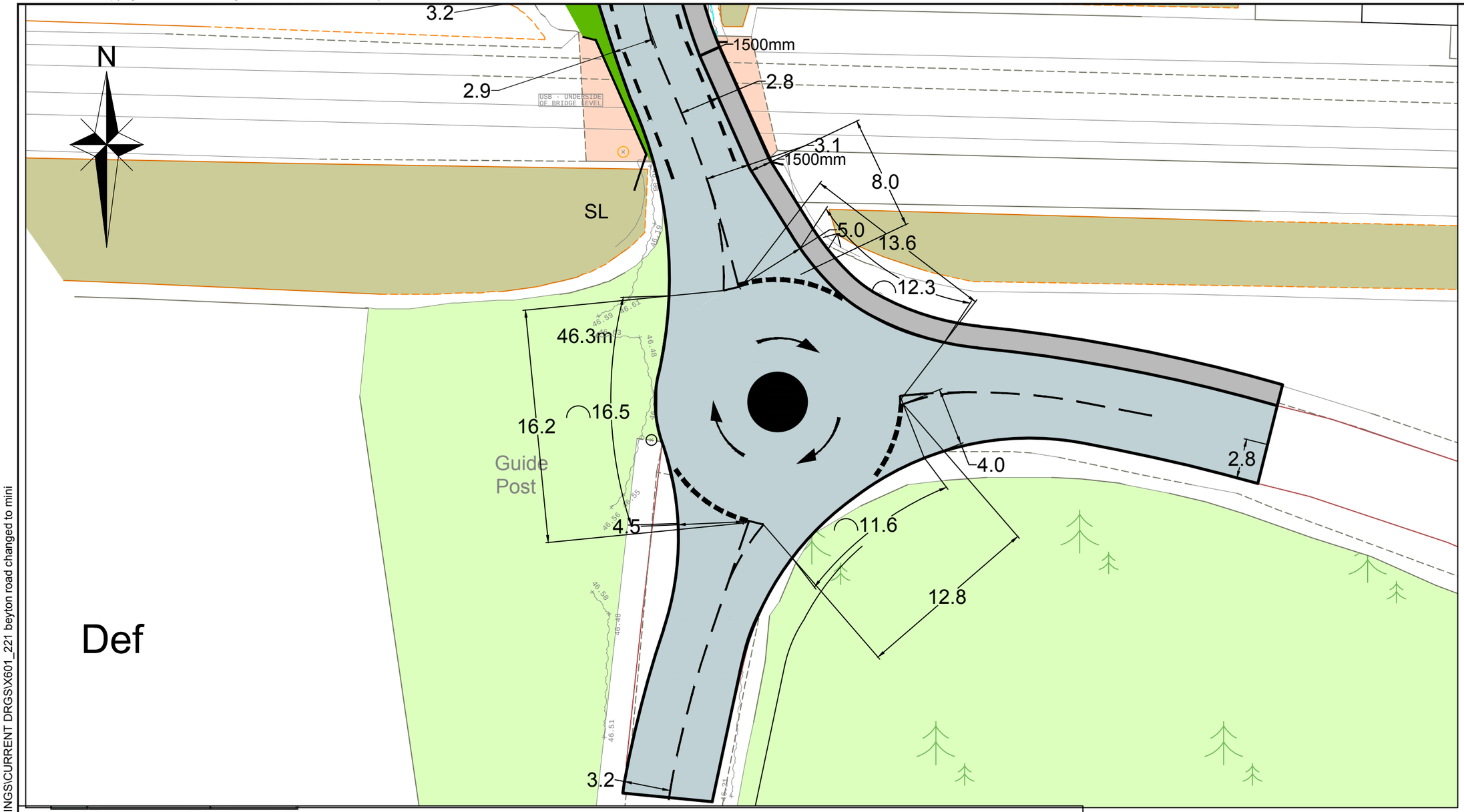
FIGURE NUMBER X601_PL_220

PROJECT NO. X601



Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
A - Barton Road North	3.00	2.80	5.00	8.0	13.60	12.30	0.0	
B - Beyton Road east	2.75	2.75	4.00	3.3	12.80	11.60	0.0	
C - Barton Road South	3.21	3.20	4.50	8.0	16.20	16.50	0.0	

DATE 11/9/18

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SCALE @ A3 SIZE DWR

PROJECT TITLE

THURSTON

FIGURE TITLE

BEYTON ROAD / BARTON ROAD JUNCTION
RE DESIGNED AS MINI ROUNDABOUT (ARCADY)

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FIGURE NUMBER X601_PL_221

PROJECT NO. X601

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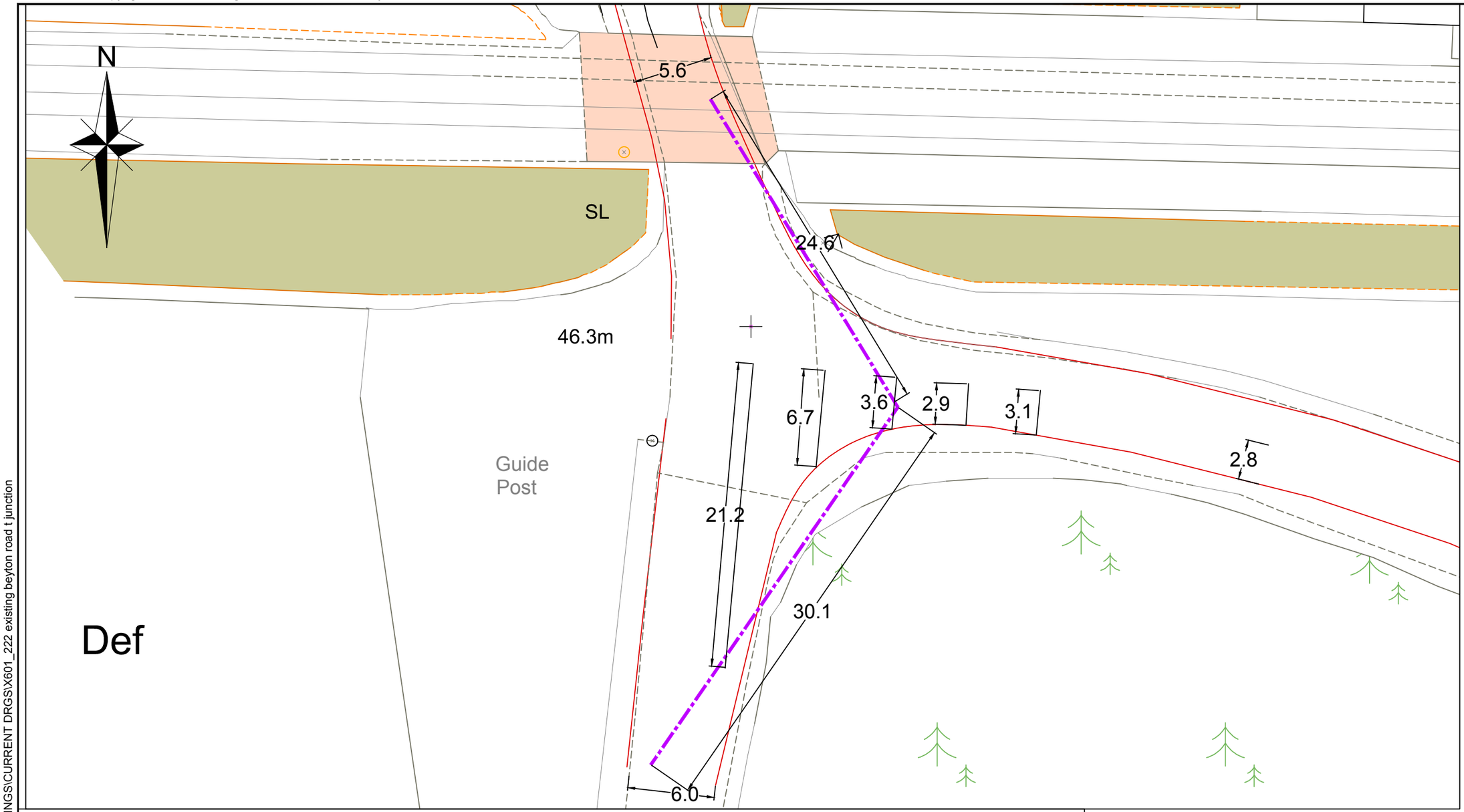

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Barton Road South	5.80			250.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Beyton Road east	One lane plus flare	10.00	6.70	3.60	3.00	3.00	✓	1.00	30	25

M:\X601 Beyton Road, Thurston, SUFFOLK\3 PLANS\DRAWINGS\CURRENT DRGS\X601_222 existing beyton road t junction

DATE
11/9/18

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SCALE @ A3 SIZE
DWR

PROJECT TITLE
THURSTON

FIGURE TITLE
EXISTING BEYTON ROAD / BARTON ROAD T JUNCTION

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FIGURE NUMBER
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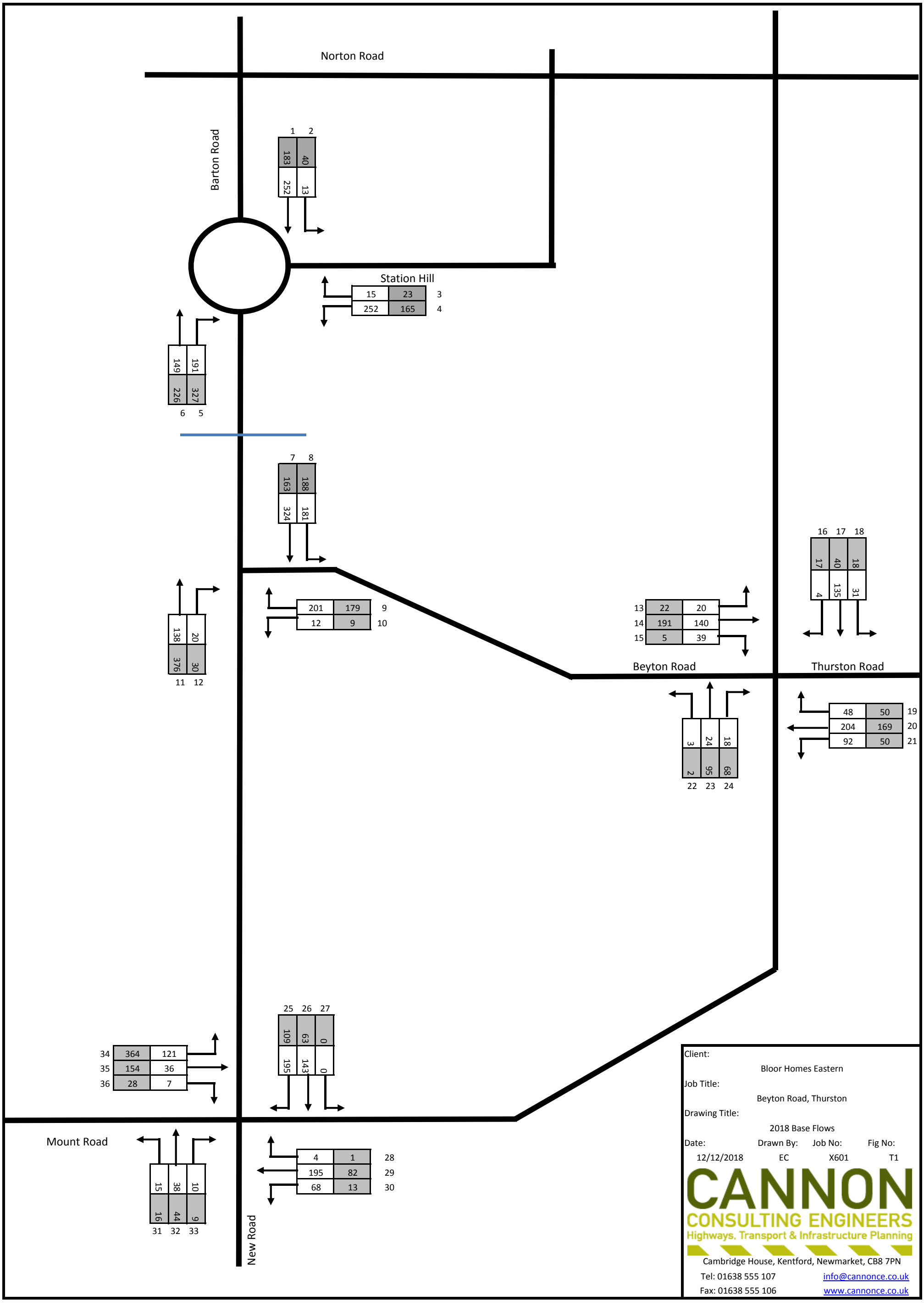
PROJECT NO.
X601

Traffic Flow Diagrams



Client:
Bloor Homes Eastern

Job Title:
Beyton Road, Thurston

Drawing Title:
2018 Base Flows

Date:	Drawn By:	Job No:	Fig No:
12/12/2018	EC	X601	T1

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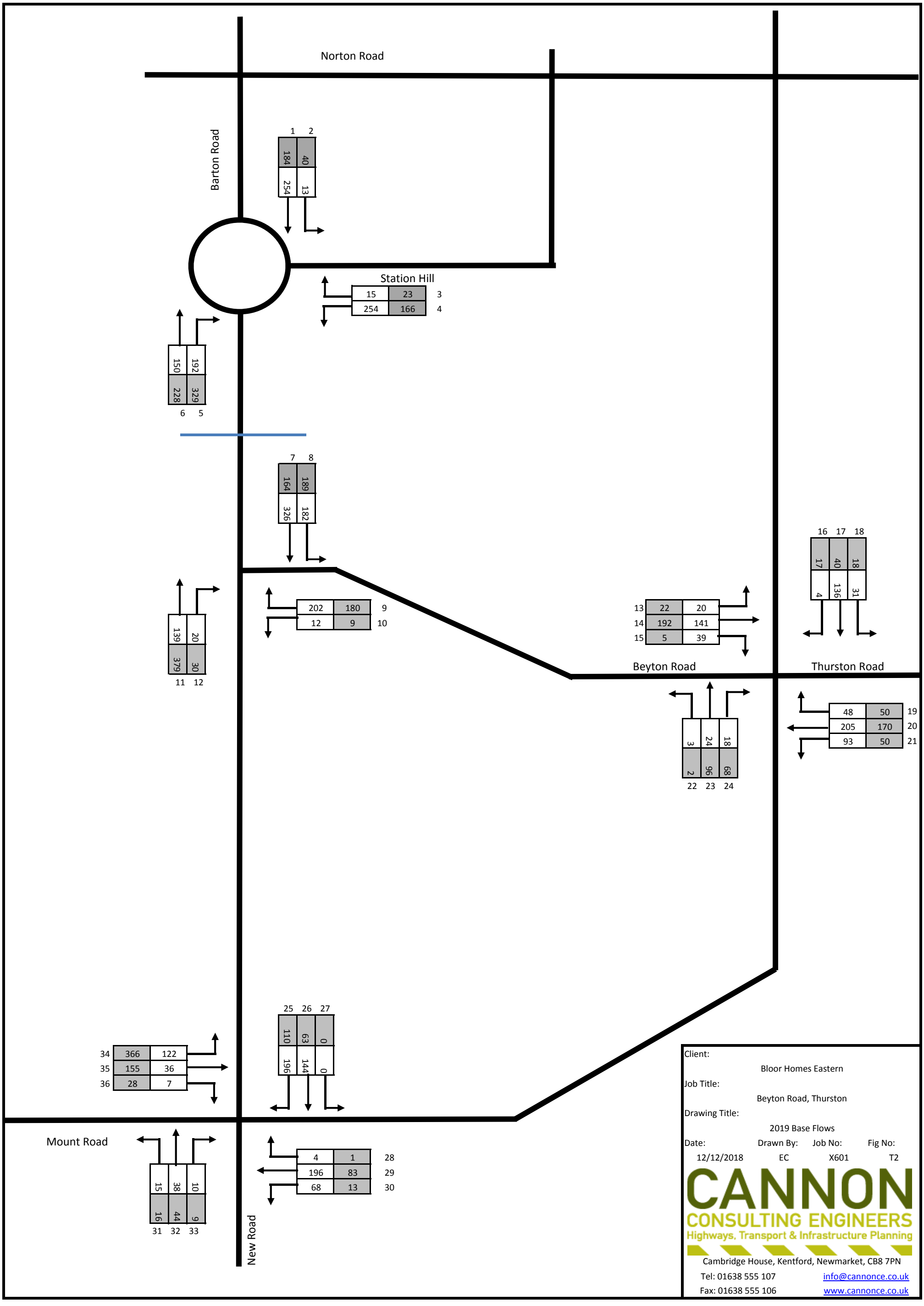
Norton Road
Barton Road
1 2
184 40
254 13
Station Hill
15 23 3
254 166 4
150 192
228 329
6 5
7 8
164 189
326 182
202 180 9
12 9 10
139 20
379 30
11 12
13 22 20
14 192 141
15 5 39
Beyton Road
16 17 18
17 40 18
4 136 31
Thurston Road
3 24 18
2 96 68
22 23 24
48 50 19
205 170 20
93 50 21
34 366 122
35 155 36
36 28 7
25 26 27
110 63 0
196 144 0
Mount Road
15 38 10
16 44 9
31 32 33
4 1 28
196 83 29
68 13 30
New Road
Client:
Bloor Homes Eastern
Job Title:
Beyton Road, Thurston
Drawing Title:
2019 Base Flows
Date: Drawn By: Job No: Fig No:
12/12/2018 EC X601 T2
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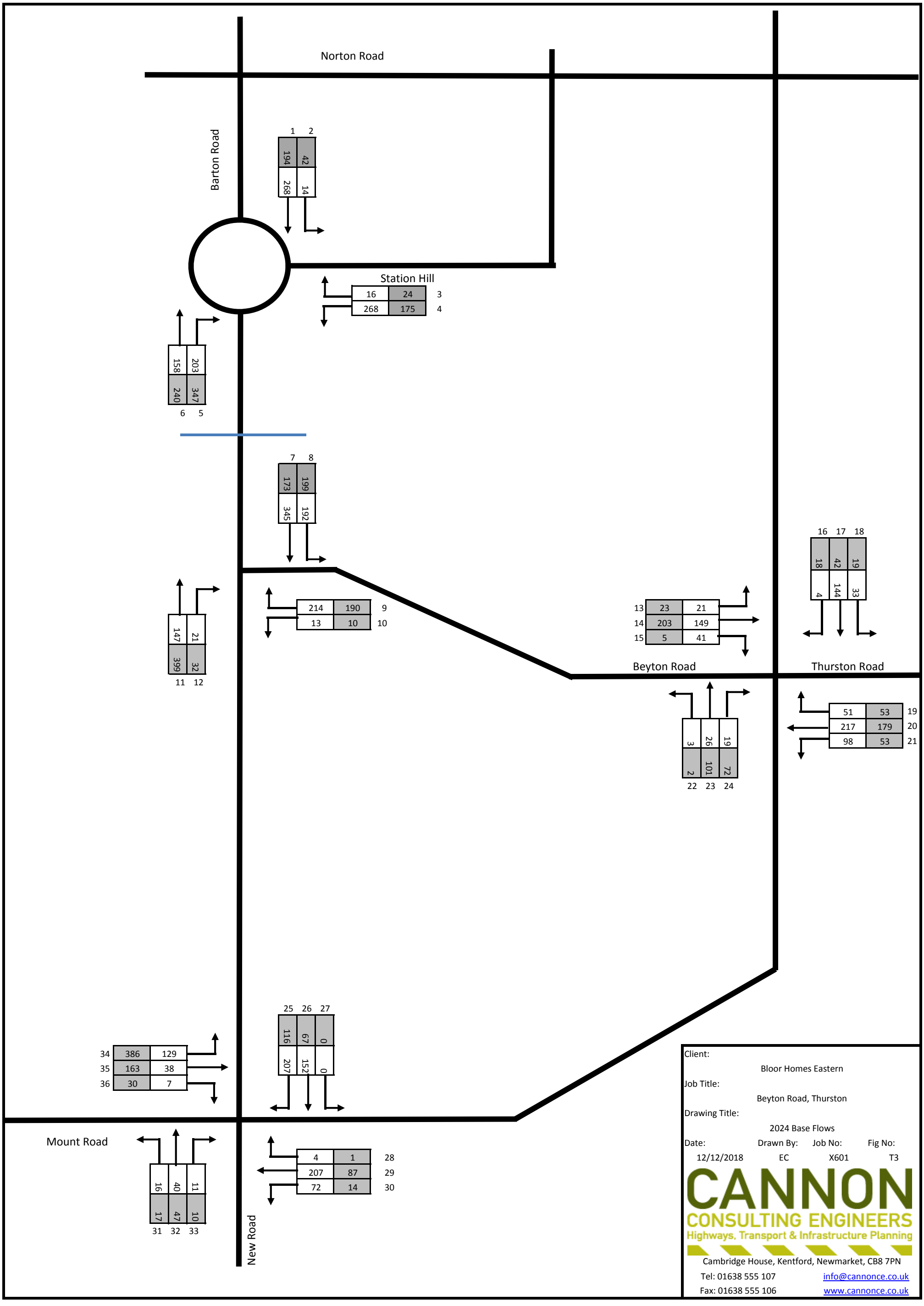
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Barton Road
1 2
194 42
268 14
Station Hill
16 24 3
268 175 4
158 203
240 347
6 5
7 8
173 199
345 192
214 190 9
13 10 10
147 21
399 32
11 12
13 23 21
14 203 149
15 5 41
Beyton Road
16 17 18
18 42 19
4 144 33
Thurston Road
3 26 19
2 101 72
22 23 24
51 53 19
217 179 20
98 53 21
34 386 129
35 163 38
36 30 7
25 26 27
116 67 0
207 152 0
Mount Road
16 40 11
17 47 10
31 32 33
4 1 28
207 87 29
72 14 30
New Road
Client:
Bloor Homes Eastern
Job Title:
Beyton Road, Thurston
Drawing Title:
2024 Base Flows
Date: Drawn By: Job No: Fig No:
12/12/2018 EC X601 T3
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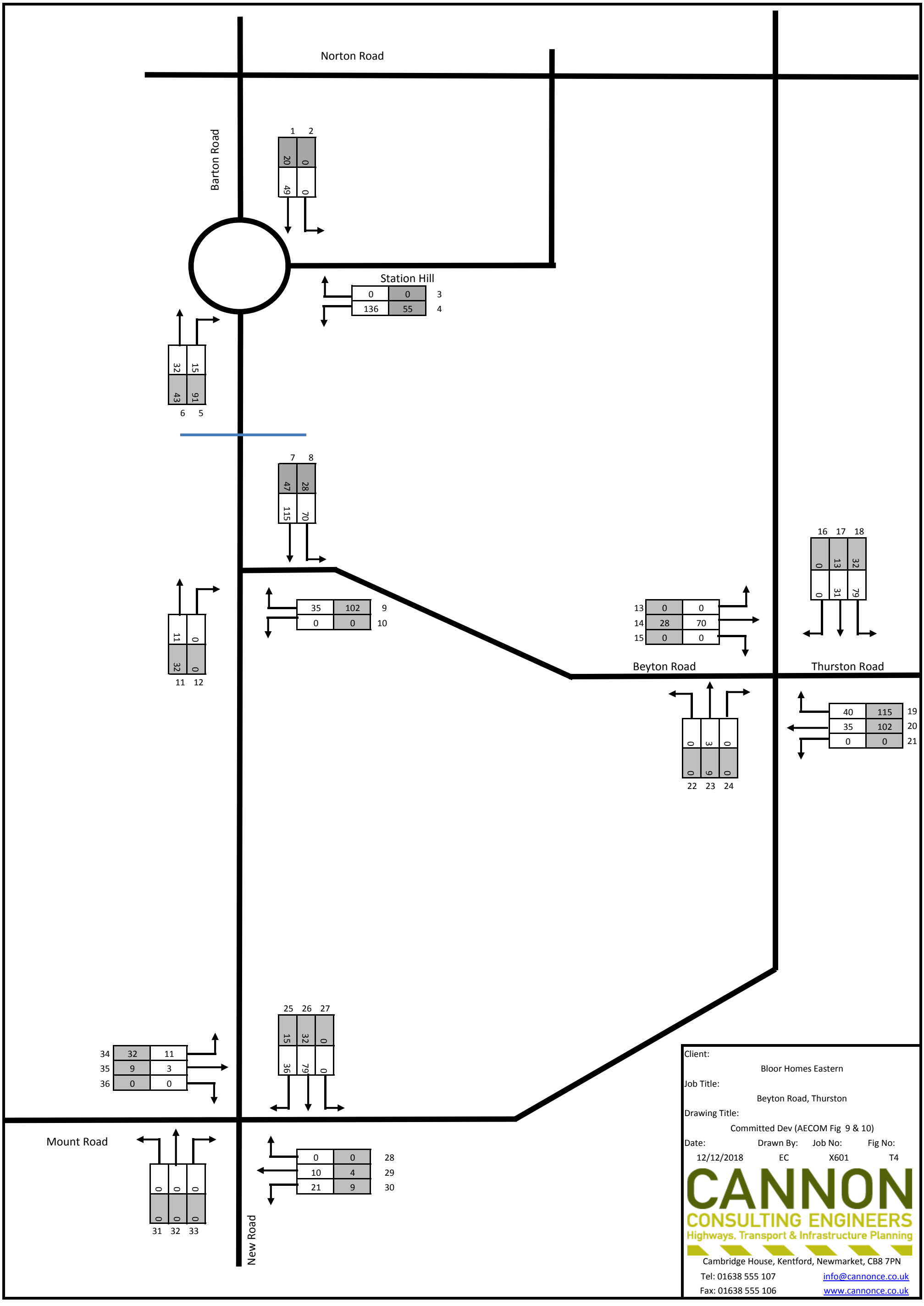

Client:

Bloor Homes Eastern

Job Title:

Beyton Road, Thurston

Drawing Title:

Committed Dev (AECOM Fig 9 & 10)

Date:	Drawn By:	Job No:	Fig No:
12/12/2018	EC	X601	T4

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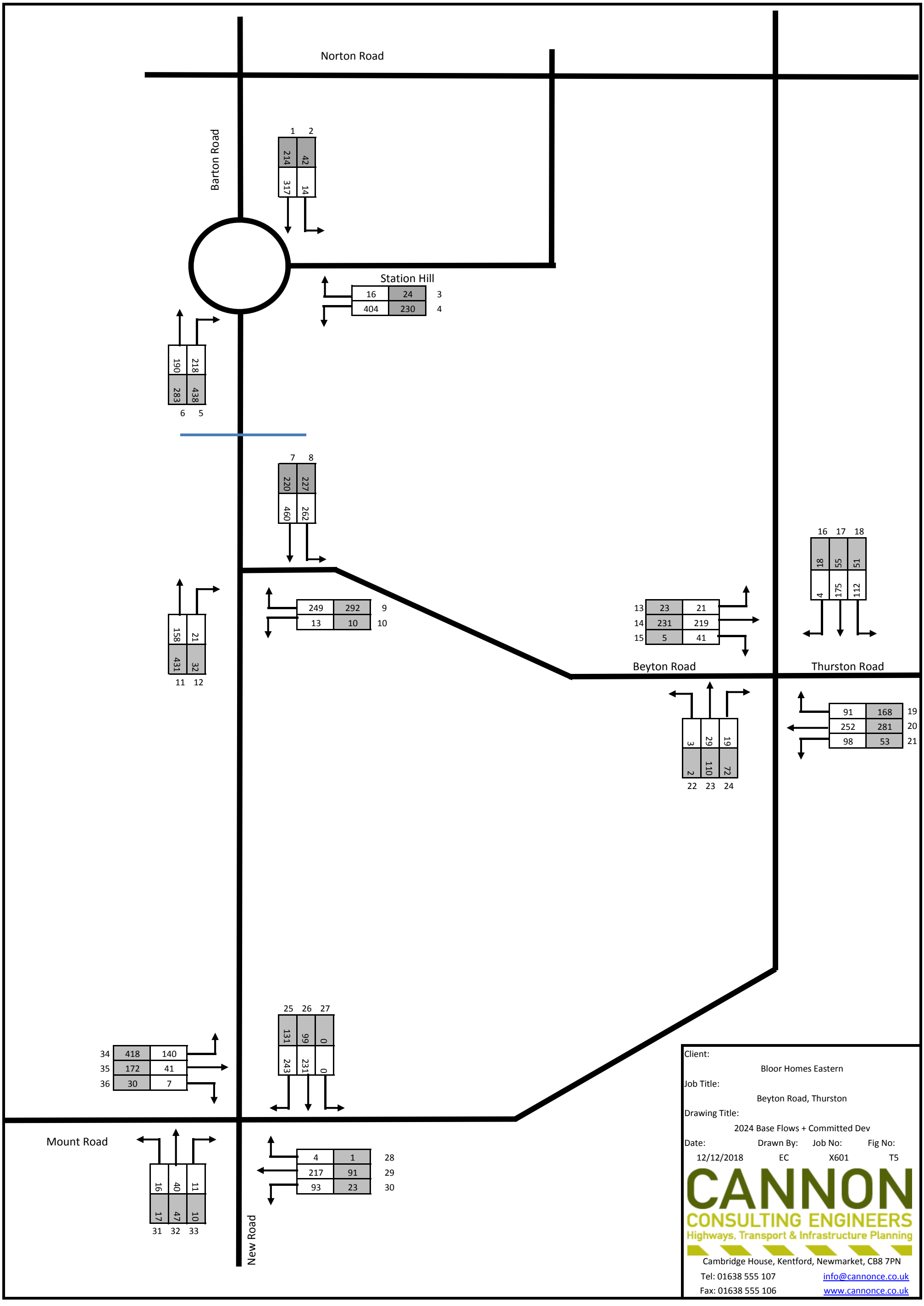

Client:

Bloor Homes Eastern

Job Title:

Beyton Road, Thurston

Drawing Title:

2024 Base Flows + Committed Dev

Date:	Drawn By:	Job No:	Fig No:
12/12/2018	EC	X601	T5

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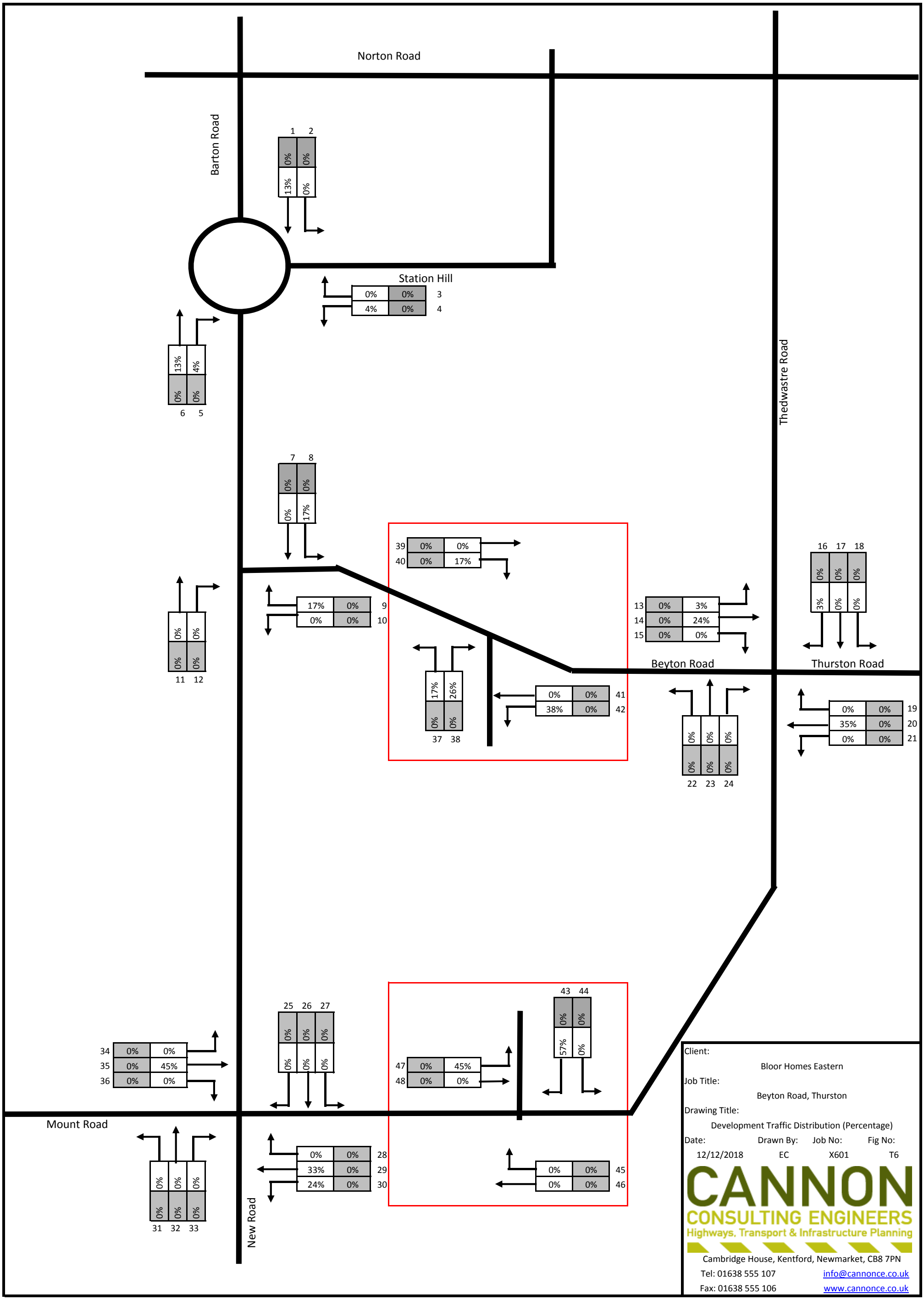

Client:

Bloor Homes Eastern

Job Title:

Beyton Road, Thurston

Drawing Title:

Development Traffic Distribution (Percentage)

Date:	Drawn By:	Job No:	Fig No:
12/12/2018	EC	X601	T6

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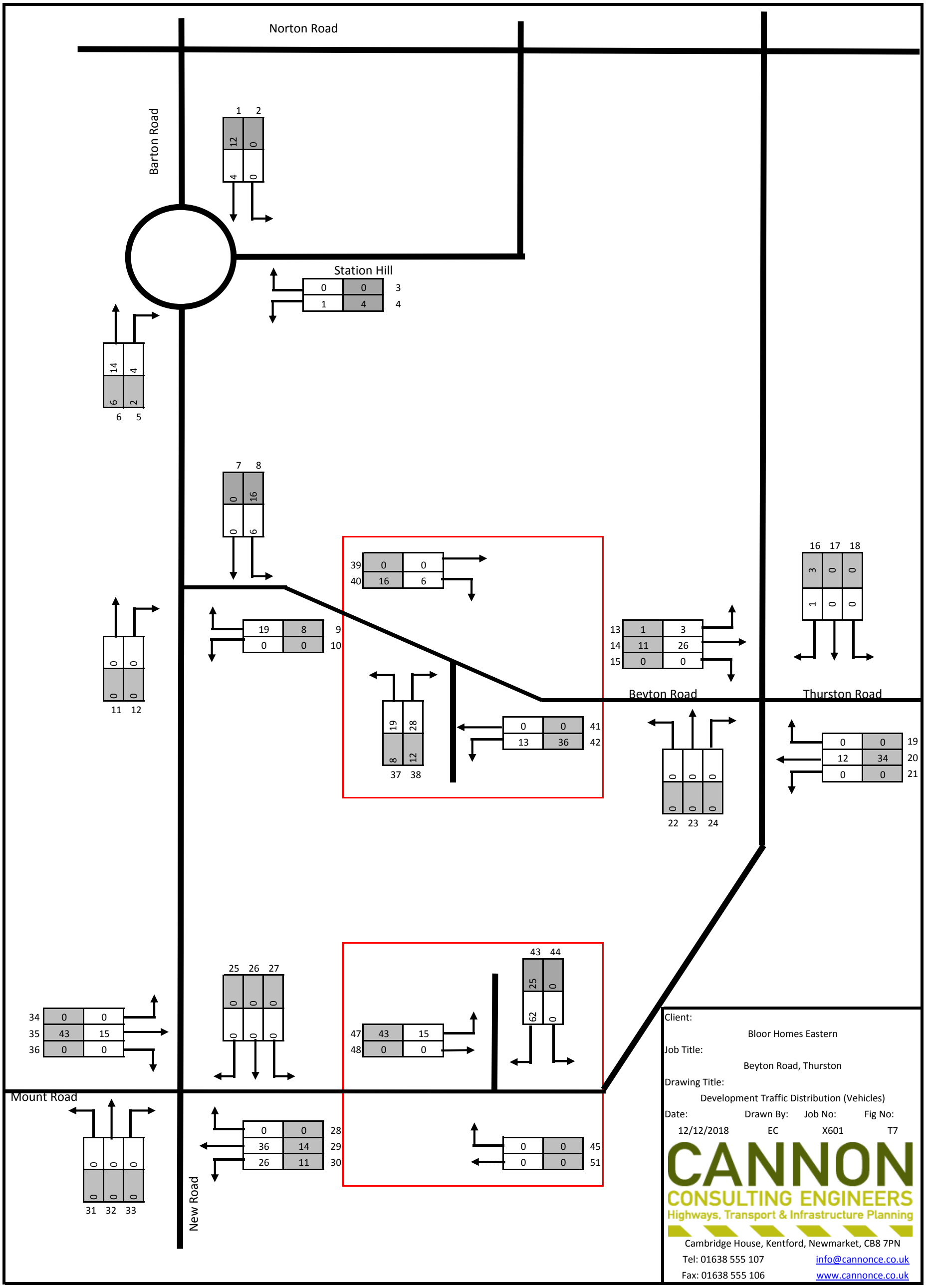

Client:
Bloor Homes Eastern

Job Title:
Beyton Road, Thurston

Drawing Title:
Development Traffic Distribution (Vehicles)

Date:	Drawn By:	Job No:	Fig No:
12/12/2018	EC	X601	T7

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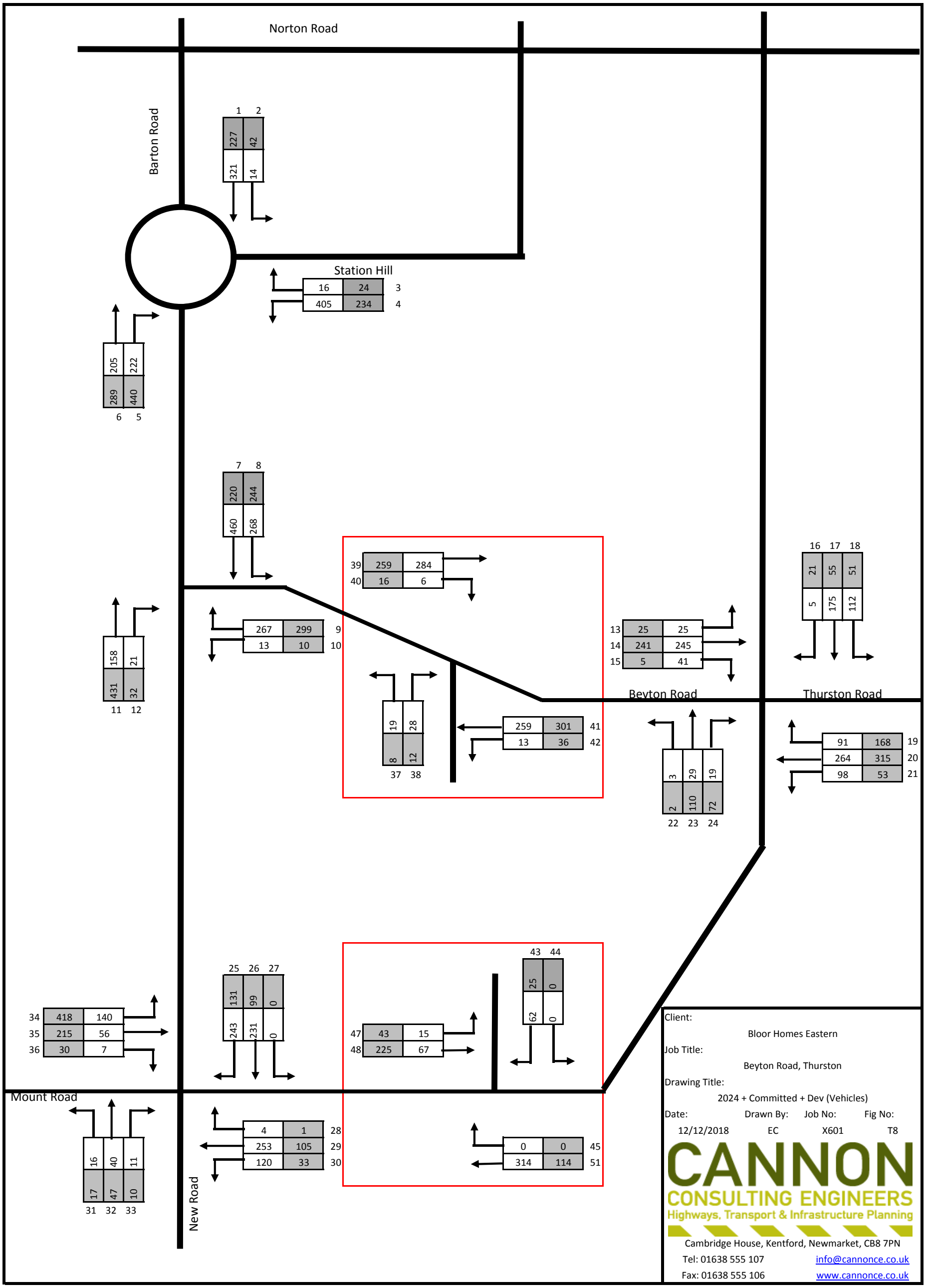

Client: Bloor Homes Eastern

Job Title: Beyton Road, Thurston

Drawing Title: 2024 + Committed + Dev (Vehicles)

Date:	Drawn By:	Job No:	Fig No:
12/12/2018	EC	X601	T8

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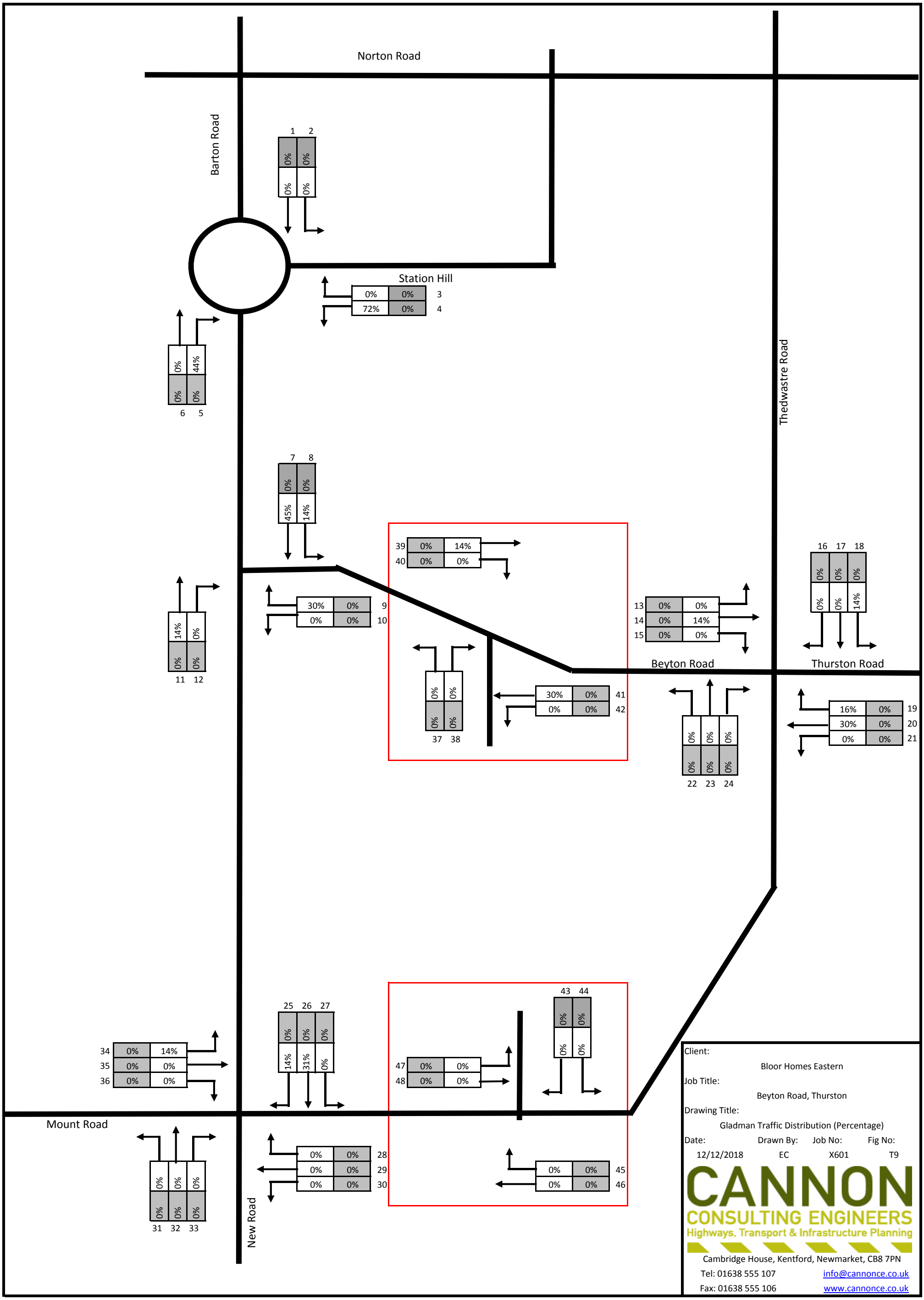

Client:

Bloor Homes Eastern

Job Title:

Beyton Road, Thurston

Drawing Title:

Gladman Traffic Distribution (Percentage)

Date:	Drawn By:	Job No:	Fig No:
12/12/2018	EC	X601	T9

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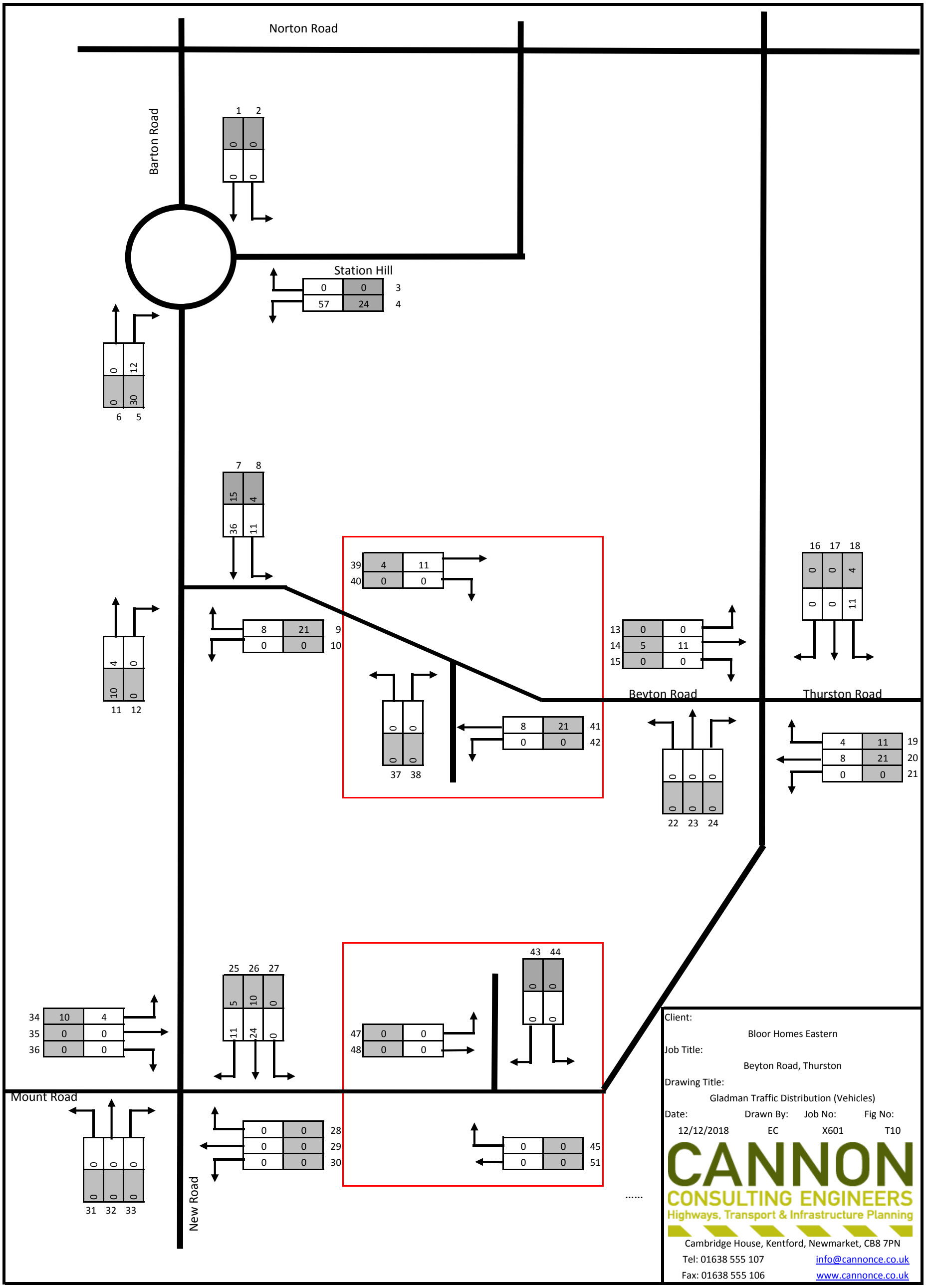

Client:
Bloor Homes Eastern

Job Title:
Beyton Road, Thurston

Drawing Title:
Gladman Traffic Distribution (Vehicles)

Date:	Drawn By:	Job No:	Fig No:
12/12/2018	EC	X601	T10

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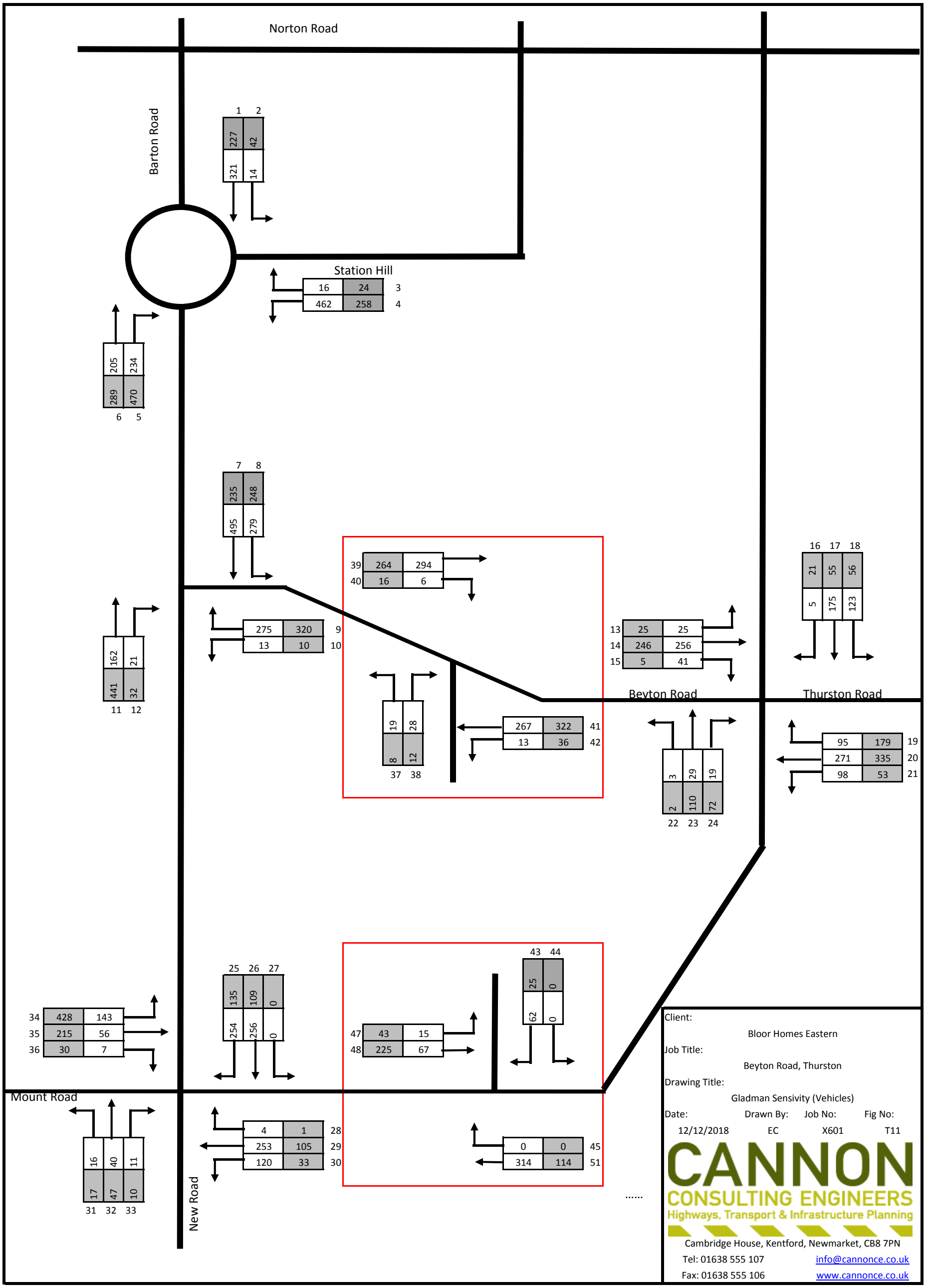

Client:
Bloor Homes Eastern

Job Title:
Beyton Road, Thurston

Drawing Title:
Gladman Sensivity (Vehicles)

Date:	Drawn By:	Job No:	Fig No:
12/12/2018	EC	X601	T11

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