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EYE TOWN
HGV THROUGH TRAFFIC

FEASIBILITY STUDY
PROPOSED
TOWN TRAFFIC IMPROVEMENTS

Document Control

Issue	Date	Change Summary	Author	Checker	Approver
Rev A	23/04/21	**Incomplete** report issued for comment	JMc		
Rev B	28/05/21	**Completed** report other than SCC comments on P39	JMc		
Rev C	07/07/21	SCC S.Buck's changes completed.	JMc		

Contents

Introduction

Suffolk Highways has produced this report at the request of David Chenery
Safety and Speed Management Engineer following the report drafted by MLM consultants on behalf or Eye Town Council. The report follows consultation with the residents and businesses of Eye Town raising concerns over increasing number of large vehicles striking buildings in the town, large vehicles mounting footways to pass each other in the narrow streets, increasing noise, vibration and adverse air quality and the feeling of vulnerability of pedestrians and cyclists in the town. The aim of this study is to provide the Safety & Speed Management Team with an overview of the different types of measures available and the effectiveness of these together with the budget implications for each type.

The area to be investigated is Castle Street from the junction with Hoxne Road to the junction with Magdalen Street, an estimated distance of 400m on the southern side of Eye Town.

Castle Street B1117 with an average width of 5.5m along with the alignment of the carriageway is deceiving for large vehicles as from east to west to road is relatively straight until the junction with Buckshorn Lane where is takes a turn northward. The turn restricts forward visibility for drivers causing issues when confronted by other large vehicles travelling in the opposing direction. Existing footways are approx 1m wide and so when passing vehicles inevitably mount the footways to pass each other building strikes are likely and pedestrians put at risk.

Large vehicles turning from Magdalen Street to Castle Street B117 and vice versa also cause safety concerns as the turn is approx 100 degrees. With the carriageway width of approx. 7m and footway width approx. 1.5m large vehicles find this turn very difficult and building strikes and footway overruns are not uncommon. The turn from Magdalen Street left into Broad Street is a gentler turn at approx. 125 degrees but is restricted by the existing 7.5t weight limit. Problems occur when large vehicle meet opposing traffic and are forced to alter their chosen path which can often result in building strikes.

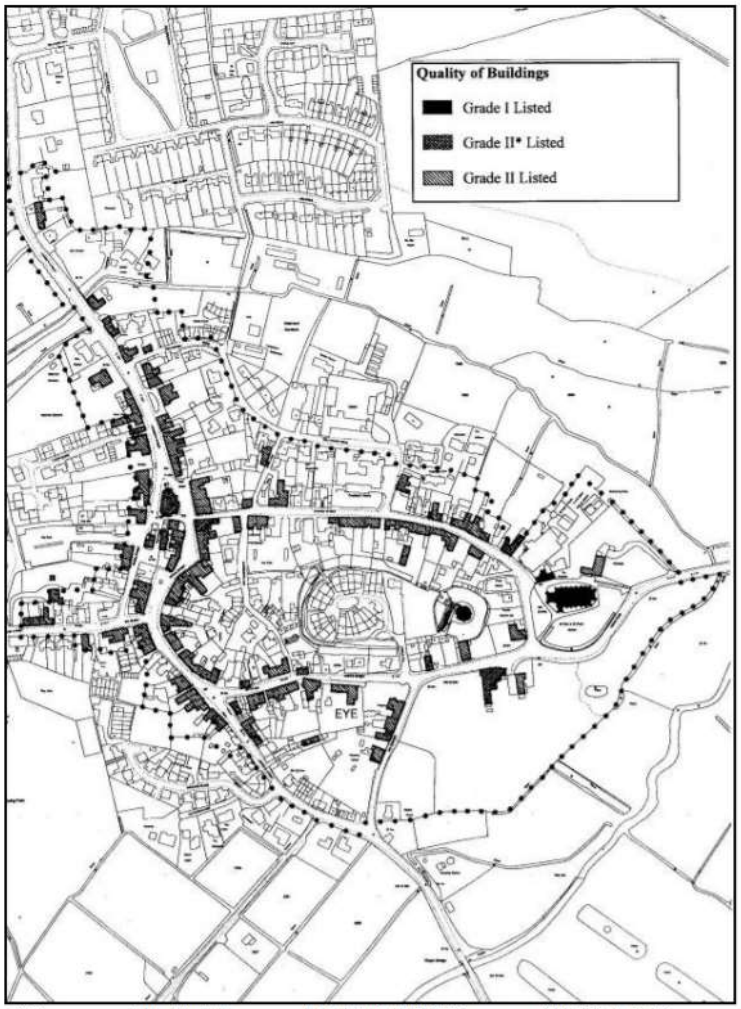
The area is within Eye Conservation Area and 20mph speed limit and consists mainly of residential and independent businesses of Victorian design. These properties are located on both sides of the carriageway, of which almost all buildings are built to the rear of the footway giving no buffer between highway and buildings.

Design Considerations

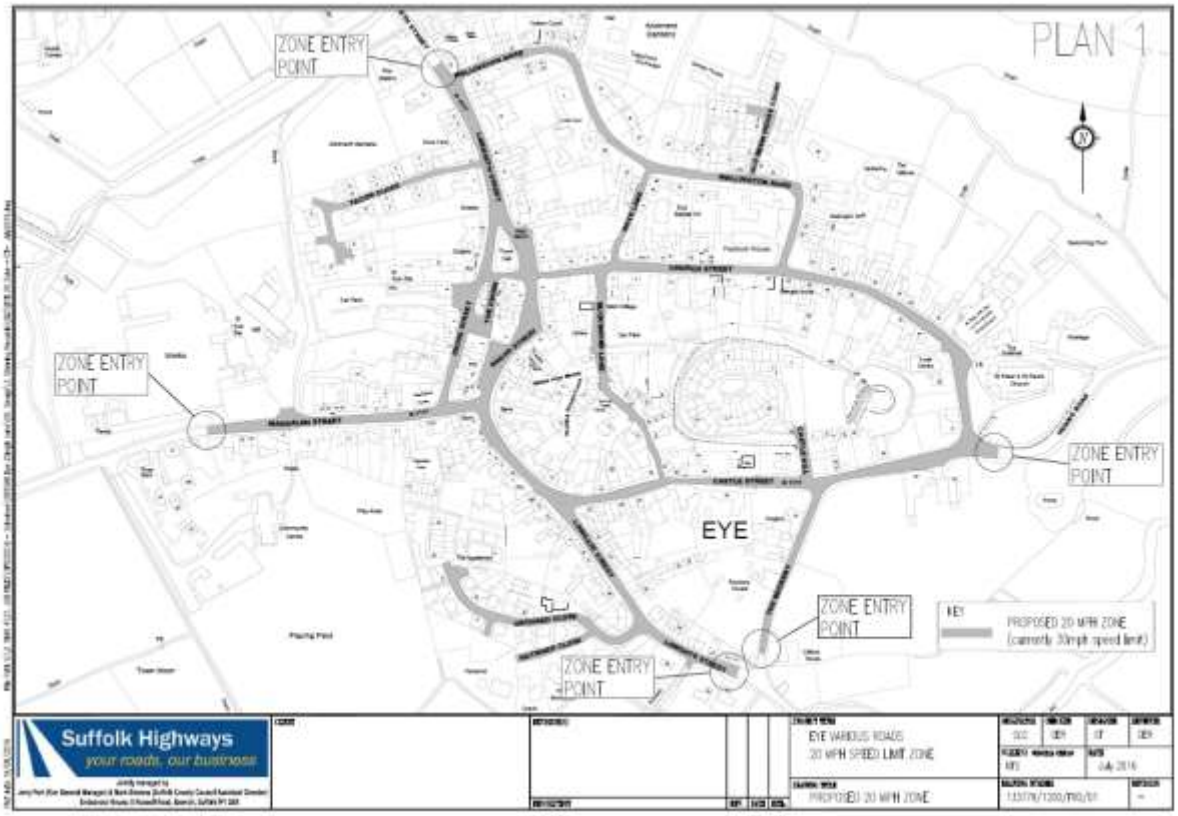
Eye Conservation Area

Eye Town centre falls within the 'Eye Conservation Area' with many Listed buildings. Therefore, any changes to the area need to be sympathetic to the surroundings and assist the protection of these buildings. Consideration also needs to be given to the impact pf any measures on the wider network and surrounding communities. Once a proposal is agreed upon views should be sort of the Mid Suffolk Conservation Officer:

Conservation & Listed Buildings
Mid Suffolk District Council
131 High Street
Needham Market
Ipswich. IP6 8DL
For the attention of Paul Harrison
(01449 724529)
paul.harrison@midsuffolk.gov.uk



Eye Town 20mph Zone



The existing Eye Town 20mph Zone was proposed August 2016 and implemented shortly after. Traffic calming measures were considered as part of this scheme, but it was decided that due to the geometry and width of the streets any physical measures would be too intrusive, cause noise and vibration issues and were not required.

Eye Town approach – Bridges Condition Surveys

Eye Town is surrounded by water and as such access in and out of the town is limited to 4 roads Lowgate St, Hoxne Rd, Lambeth St and Magdalen St. Being an old town of architectural importance, the road bridges provided and are also of period construction.

There are a total of four structures on the roads in Eye, as noted below; all currently have structural capacities in excess of the current C&U regulations (normal highway traffic) their last general inspection took place in March 2020 and no defects that raised concerns were noted. Next inspected due in 2022.

With the increase in vehicle weights over the years condition monitoring of these bridges is very important and could influence any potential weight restriction for the town in the future if their conditions were to change.

Unit No.	Location	Easting	Northing	Address	Road
1165	KINGS BRIDGE	614788	273445	CRANLEY ROAD	B1077
1886	LITTLE BRIDGE	614748	273523	CRANLEY ROAD	B1077
1380	ABBEY BRIDGE	615122	273842	HOXNE ROAD	B1117
2145	LAMBSETH STREET	614430	274076	LAMBSETH STREET	B1077

There are also four structures on the B1117 from the A140 to Stradbroke and twelve on the B1077 from the A140 to the A1120, all are currently capable of carrying normal highway traffic and are not considered substandard.

Bus Routes

Bus routes are an important part of any integrated transport system. It is important that consideration is given to the type of traffic calming features if proposed, as many traffic calming measures will influence the maintenance requirements of the vehicle and the comfort of the passengers and driver.

Several routes pass through Eye Town and are listed below. Of these route 320 passes down Magdalen Street and therefore has potential for conflict at the junction with Broad Street.

Bus Routes serving Eye Town: 320, 110, 112, 113, 114, 319, 475

Emergency Vehicles

Any proposals to install traffic calming features will influence the overall services that all emergency service provide. Traffic calming measures may unwillingly lead to increased patient discomfort, slower response times and may cause damage to equipment in ambulances and fire appliances.

It is estimated that each traffic calming feature proposed within a scheme will increase the response time on average by 1.4 seconds per feature.

The grouping of these features will have to be in such a way that the proposed scheme will minimise the disruption to the emergency services response times.

Consultation should be made with the emergency services to ascertain if this route has been classified as a known strategic route.

Refuse collections

Rubbish collections are important, and the size of these vehicles must be considered when looking at any traffic calming features. As an example, Ipswich Borough Council state on their website;

'the fleet of vehicles used by the Borough are 32 tonnes gross vehicle weight. Consideration should also be given to the access and egress for vehicles used within the fleet, construction should allow for a vehicle length of 11600mm, a width of 2500mm and a minimum operating height of 5638mm.'

Traditionally traffic calming width restrictions are falling out of favour as these are installed at 6 foot 6 (198cm) making them impossible to pass by refuse vehicles and modern SUV type vehicles. The current trend has seen SUVs soar in popularity and grow in size with the popular Land Rover Discovery Sport being 6 feet 9.

Vulnerable Road Users

Government bodies encourage Highway Authorities to improve the environment for pedestrians and cyclists. One way to improve the environment is to reduce vehicle speeds and volumes adjacent to pedestrian and cycle routes. Speed reduction adjacent to these areas will likely reduce the number and the severity of any injuries sustained.

'Providing for movement along a street is vital, but it should not be considered independently of the street's other functions. The need to cater for motor vehicles is well understood by transport planners, but the passage of people on foot and cycle has often been neglected. Walking and cycling are important modes of travel, offering a more sustainable alternative to the car, making a positive contribution to the overall character of a place, public health and to tackling climate change through reductions in carbon emissions.'
- Manual for Streets

Any proposed scheme will have to ensure that the traffic calming features do not create an unsafe environment where pedestrians, especially mobility impaired are likely to cross or install features which have an unsympathetic gradient for cyclists or motorcyclist to travel over. Being in a conservation area concerns will be raised about the visibility of associated signage and road markings of roads humps / cushions, especially encountering the first feature within a series of traffic calming features.

Street Lighting

Street lighting can reduce accidents up to 30%, during the hours of darkness.

Road hump regulations requires lighting to extend over the full extent of the feature. There should be a minimum of three street lighting columns placed no more than 38m apart.

Chicanes and narrowing's should be conspicuous both during the day and at night-time. There should also be adequate street lighting within the vicinity of the chicanes.

Regular checks must be undertaken to ensure that damage has not occurred, and any damage rectified in an appropriate time scale.

Street lighting engineers will need be consulted to ensure all regulations have been complied with although upgrading lighting in a conservation area may bring about issues.

Most street lights found in residential areas of Suffolk, are turned off between 11.30pm and 6:00am in accordance with Suffolk County Council Part Night Lighting Policy.

Monitoring

Vehicle Surveys

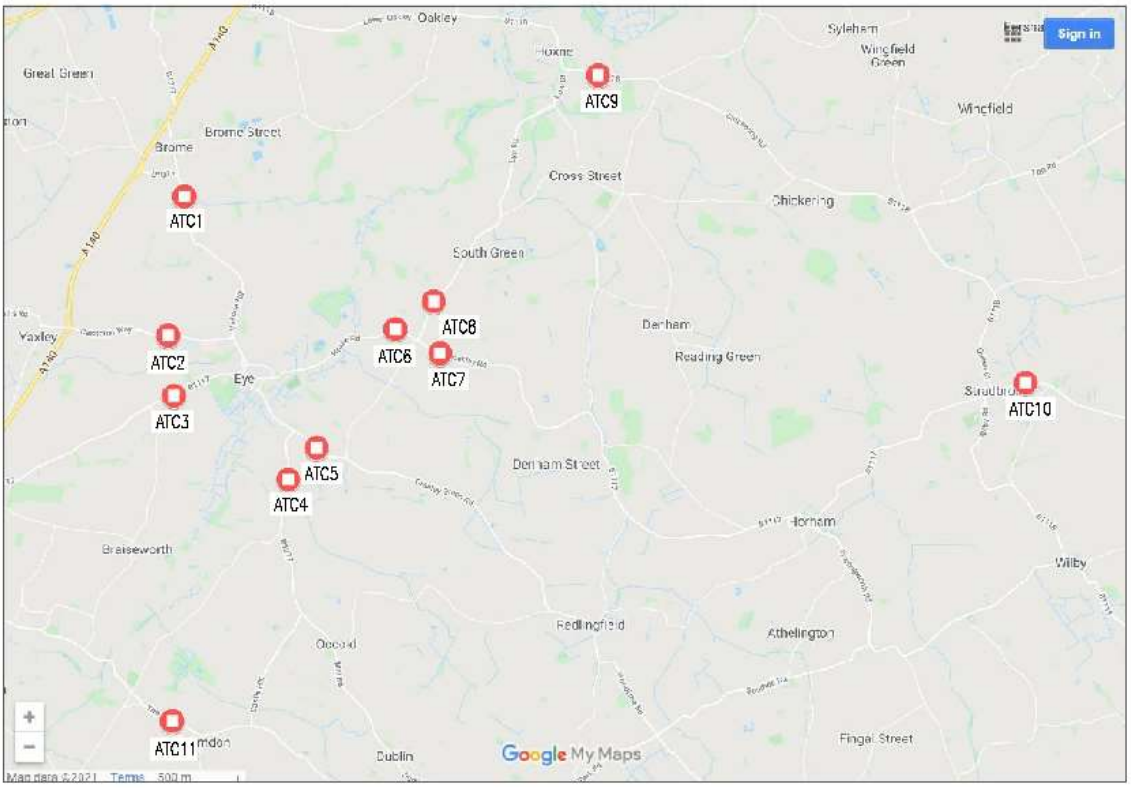
Prior to any scheme being proposed, it is essential to collect as much data as possible, for example speed data, vehicle classification & volume data, and accident data.

The information collected can be used to assess the most appropriate traffic calming features for the location and the desired sites for installation.

Vehicle classification & volume data was collected at 11 locations for 2 weeks from week commencing 19April2021 and consisted of x2 seven-day survey periods. The equipment at ATC1 + ATC9 had technical problems are so survey periods were delayed until 27April21 and 21April21. A plan showing these survey points is provide below:

Survey locations

ATC1 Eye Road – Brome	Daily average HGV = **452 + 530**
ATC2 Castleton Way	Daily average HGV = **117 + 92**
ATC3 Yaxley Road	Daily average HGV = **204 + 233**
ATC4 B1077	Daily average HGV = **221 + 200**
ATC5 Cranley Green Road	Daily average HGV = **92 + 111**
ATC6 Hoxne Road	Daily average HGV = **147 + 182**
ATC7 Cookley Road	Daily average HGV = **124 + 114**
ATC8 Unnamed Road – South Green	Daily average HGV = **73 + 82**
ATC9 Green Street – Hoxne	Daily average HGV = **302 + 335**
ATC10 Laxfield Road – Stradbroke	Daily average HGV = **229 + 225**
ATC11 The Street – Thorndon	Daily average HGV = **112 + 107**



ATC1 Eye Road, Brome Northbound 27/04/21 – 03/5/21

1. Average daily night (7pm till 7am) HGV movements = 47
2. Average daily daytime (7am till 7pm) HGV movements = 405

Tues 27 = 682HGV
Weds 28 = 673HGV
Thurs 29 = 527HGV
Fri 30 = 583HGV
Sat 01 = 279HGV
Sun 02 = 175HGV
Mon 03 = 246HGV
Daily Average = 452HGV

ATC1 Eye Road, Brome Southbound 27/04/21 – 02/5/21

1. Average daily night (7pm till 7am) HGV movements = 72
2. Average daily daytime (7am till 7pm) HGV movements = 458

Tues 27 = 796HGV
Weds 28 = 757HGV
Thurs 29 = 764HGV
Fri 30 = 739HGV
Sat 01 = 280HGV
Sun 02 = 130HGV
Mon 03 = 246HGV
Daily Average = 530HGV

ATC2 Eastbound 19/04/21 – 25/04/21

1. Average daily night (7pm till 7am) HGV movements = 9
2. Average daily daytime (7am till 7pm) HGV movements = 106

Mon 19 = 126HGV
Tues 20 = 123HGV
Weds 21 = 133HGV
Thurs 22 = 139HGV
Fri 23 = 149HGV
Sat 24 = 90HGV
Sun 25 = 61HGV
Daily Average = 117HGV

ATC2 Westbound 19/04/21 – 25/04/21

1. Average daily night (7pm till 7am) HGV movements = 8
2. Average daily daytime (7am till 7pm) HGV movements = 112

Mon 19 = 123HGV
Tues 20 = 155HGV
Weds 21 = 116HGV
Thurs 22 = 113HGV
Fri 23 = 90HGV
Sat 24 = 27HGV
Sun 25 = 20HGV
Daily Average = 92HGV

ATC3 Eastbound 19/04/21 – 25/04/21

1. Average daily night (7pm till 7am) HGV movements = 30
2. Average daily daytime (7am till 7pm) HGV movements = 174

Mon 19 = 235HGV
Tues 20 = 219HGV
Weds 21 = 281HGV
Thurs 22 = 256HGV
Fri 23 = 249HGV
Sat 24 = 121HGV
Sun 25 = 62HGV
Daily Average = 204HGV

ATC3 Westbound 19/04/21 – 25/04/21

1. Average daily night (7pm till 7am) HGV movements = 32
2. Average daily daytime (7am till 7pm) HGV movements = 201

Mon 19 = 252HGV
Tues 20 = 297HGV
Weds 21 = 304HGV
Thurs 22 = 326HGV
Fri 23 = 266HGV
Sat 24 = 131HGV
Sun 25 = 59HGV

Daily Average = 233HGV

ATC4 Northbound 19/04/21 – 25/04/21

1. Average daily night (7pm till 7am) HGV movements = 23
2. Average daily daytime (7am till 7pm) HGV movements = 198

Mon 19 = 247HGV
Tues 20 = 268HGV
Weds 21 = 278HGV
Thurs 22 = 278HGV
Fri 23 = 274HGV
Sat 24 = 115HGV
Sun 25 = 82HGV
Daily Average = 221HGV

ATC4 Southbound 19/04/21 – 25/04/21

1. Average daily night (7pm till 7am) HGV movements = 22
2. Average daily daytime (7am till 7pm) HGV movements = 178

Mon 19 = 206HGV
Tues 20 = 249HGV
Weds 21 = 252HGV
Thurs 22 = 250HGV
Fri 23 = 268HGV
Sat 24 = 104HGV
Sun 25 = 72HGV
Daily Average = HGV200

ATC5 Eastbound 19/04/21 – 25/04/21

1. Average daily night (7pm till 7am) HGV movements = 12
2. Average daily daytime (7am till 7pm) HGV movements = 80

Mon 19 = 100HGV
Tues 20 = 114HGV
Weds 21 = 114HGV
Thurs 22 = 117HGV
Fri 23 = 97HGV
Sat 24 = 51HGV
Sun 25 = 54HGV
Daily Average = HGV92

ATC5 Westbound 19/04/21 – 25/04/21

1. Average daily night (7pm till 7am) HGV movements = 12
2. Average daily daytime (7am till 7pm) HGV movements = 99

Mon 19 = 126HGV
Tues 20 = 141HGV
Weds 21 = 138HGV
Thurs 22 = 122HGV
Fri 23 = 113HGV

Sat 24 = 72HGV
Sun 25 = 65HGV
Daily Average = 111HGV

ATC6 Eastbound 19/04/21 – 25/04/21
1. Average daily night (7pm till 7am) HGV movements = 17
2. Average daily daytime (7am till 7pm) HGV movements = 130

Mon 19 = 171HGV
Tues 20 = 170HGV
Weds 21 = 199HGV
Thurs 22 = 166HGV
Fri 23 = 170HGV
Sat 24 = 100HGV
Sun 25 = 56HGV
Daily Average = 147HGV

ATC6 Westbound 19/04/21 – 25/04/21
1. Average daily night (7pm till 7am) HGV movements = 20
2. Average daily daytime (7am till 7pm) HGV movements = 162

Mon 19 = 210HGV
Tues 20 = 226HGV
Weds 21 = 210HGV
Thurs 22 = 214HGV
Fri 23 = 215HGV
Sat 24 = 123HGV
Sun 25 = 77HGV
Daily Average = 182HGV

ATC7 Eastbound 19/04/21 – 25/04/21
1. Average daily night (7pm till 7am) HGV movements = 13
2. Average daily daytime (7am till 7pm) HGV movements = 111

Mon 19 = 155HGV
Tues 20 = 137HGV
Weds 21 = 159HGV
Thurs 22 = 133HGV
Fri 23 = 154HGV
Sat 24 = 86HGV
Sun 25 = 47HGV
Daily Average = 124HGV

ATC7 Westbound 19/04/21 – 25/04/21
1. Average daily night (7pm till 7am) HGV movements = 13
2. Average daily daytime (7am till 7pm) HGV movements = 101

Mon 19 = 133HGV
Tues 20 = 140HGV
Weds 21 = 132HGV

Thurs 22 = 139HGV
Fri 23 = 150HGV
Sat 24 = 71HGV
Sun 25 = 38HGV
Daily Average = 114HGV

ATC8 Northbound 19/04/21 – 25/04/21
1. Average daily night (7pm till 7am) HGV movements = 8
2. Average daily daytime (7am till 7pm) HGV movements = 65

Mon 19 = 102HGV
Tues 20 = 81HGV
Weds 21 = 84HGV
Thurs 22 = 83HGV
Fri 23 = 89HGV
Sat 24 = 47HGV
Sun 25 = 24HGV
Daily Average = 73HGV

ATC8 Southbound 19/04/21 – 25/04/21
1. Average daily night (7pm till 7am) HGV movements = 10
2. Average daily daytime (7am till 7pm) HGV movements = 72

Mon 19 = 91HGV
Tues 20 = 96HGV
Weds 21 = 102HGV
Thurs 22 = 108HGV
Fri 23 = 87HGV
Sat 24 = 57HGV
Sun 25 = 30HGV
Daily Average = 82HGV

ATC9 Eastbound 21/04/21 – 27/04/21
1. Average daily night (7pm till 7am) HGV movements = 34
2. Average daily daytime (7am till 7pm) HGV movements = 268

Weds 21 = 410HGV
Thurs 22 = 370HGV
Fri 23 = 397HGV
Sat 24 = 151HGV
Sun 25 = 90HGV
Mon 26 = 338HGV
Tues 27 = 354HGV
Daily Average = 302HGV

ATC9 Westbound 21/04/21 – 27/04/21
1. Average daily night (7pm till 7am) HGV movements = 49
2. Average daily daytime (7am till 7pm) HGV movements = 286

Weds 21 = 423HGV

Thurs 22 = 419HGV
Fri 23 = 409HGV
Sat 24 = 193HGV
Sun 25 = 121HGV
Mon 26 = 367HGV
Tues 27 = 419HGV
Daily Average = 335HGV

ATC10 Eastbound 19/04/21 – 25/04/21

1. Average daily night (7pm till 7am) HGV movements = 28
2. Average daily daytime (7am till 7pm) HGV movements = 201

Mon 19 = 283HGV
Tues 20 = 293HGV
Weds 21 = 260HGV
Thurs 22 = 269HGV
Fri 23 = 279HGV
Sat 24 = 137HGV
Sun 25 = 82HGV
Daily Average = 229HGV

ATC10 Westbound 19/04/21 – 25/04/21

1. Average daily night (7pm till 7am) HGV movements = 24
2. Average daily daytime (7am till 7pm) HGV movements = 201

Mon 19 = 281HGV
Tues 20 = 272HGV
Weds 21 = 306HGV
Thurs 22 = 254HGV
Fri 23 = 268HGV
Sat 24 = 114HGV
Sun 25 = 79HGV
Daily Average = 225HGV

ATC11 Eastbound 19/04/21 – 25/04/21

1. Average daily night (7pm till 7am) HGV movements = 11
2. Average daily daytime (7am till 7pm) HGV movements = 101

Mon 19 = 122HGV
Tues 20 = 131HGV
Weds 21 = 148HGV
Thurs 22 = 138HGV
Fri 23 = 137HGV
Sat 24 = 68HGV
Sun 25 = 42HGV
Daily Average = 112HGV

ATC11 Westbound 19/04/21 – 25/04/21

1. Average daily night (7pm till 7am) HGV movements = 10
2. Average daily daytime (7am till 7pm) HGV movements = 97

Mon 19 = 136HGV
Tues 20 = 133HGV
Weds 21 = 134HGV
Thurs 22 = 133HGV
Fri 23 = 124HGV
Sat 24 = 53HGV
Sun 25 = 38HGV
Daily Average = 107HGV

Summary

Unsurprisingly ATC1 Eye Road, Brome shows significantly more HGV traffic than any of the other survey points due to its location close to Eye industrial area. ATC2 shows much less traffic that is perhaps due to the existing 7.5t restriction and signing in the north of Eye. ATC3 Yaxley Road has almost equal numbers of HGV traffic in both directions suggesting lorries are possibly coming to the edge of Eye (possibly to Eye Poultry) making deliveries or pick-ups and returning the same route therefore not proceeding through Eye Town.

ATC9 Green Street, Hoxne has significant numbers of HGV traffic which is possibly due to its location so close to the A140 and A143 any possible traffic restrictions in Eye would unlikely effect this. The survey figures for the ATC8 in South Green suggest that vehicles passing ATC9 most likely continued or came from Stradbroke rather than Eye Town.

Stradbroke council have expressed concerns regarding possible restrictions in Eye having a detrimental effect on Stradbroke. Looking at the survey data this is not evident as the average daily number of HGV passing ATC10 (Stradbroke) is 229 + 225 whereas the total number of HGV passing ATC7 in the same time period is only 124 + 114 meaning there are almost twice as many HGV in the Stradbroke area as Eye. This would suggest that the high numbers of HGV in Stradbroke are not travelling east to west on the B1117 and are more likely travelling north to south on the B1118.

Interestingly ATC11 The Street, Thorndon already has a 7.5t restriction (Except for loading) and still showed a daily average of 112 + 107 HGV in the survey period. This is also similar to ATC2 Castleton Way (117 + 92) and the existing 7.5t restriction to the north of Eye Town. We must then assume these vehicles were accessing the area legitimately and therefore take these numbers as an expected HGV volume if any restrictions were to be applied to Eye Town South.

The aim of the Town Council is that any future measures in Eye Town keep large vehicles on the A140 to reach their destinations rather than picking their way through the small towns and villages and prevent traffic travelling east to west through the town to access the A140. This report considers the options to remove and reduce HGV traffic flows through Eye.

Accident Record

Accident data has been reviewed along this section of carriageway during the period 01/01/2016 to 31/12/2020. Ten incidents were identified during this time period.

Two of these incidents were classed as serious and eight were classed as slight. Of these incidents one was involving an HGV reversing and striking a pedestrian.

Details of accidents and locations can be found in Appendix A.

Building strikes by large vehicles are more regular and increasing in frequency; details of these can be supplied by the Town Council.

Although the number of personal injuries is low the fear of injury within the town is high and increases as the number of large vehicles in the town increases year on year.

Monitoring of a scheme after it has been implemented, is just as important as gaining data prior to the scheme design. This information will tell us what effect the proposals have made and any amendments that may be required at a future date.

Traffic Calming Features

There are a variety of different methods of traffic calming which highway designers can consider for the environment in which they are to be placed. This section considers the different methods and the types of traffic calming which can be implemented. The study will assess each method and produce a recommendation of whether these are suitable for implementation for this specific site location.

Basic costs have been provided within this section. These costs are for standalone features only and do not include for traffic management, such as road closures, temporary traffic control and other elements that may be required for the construction of the scheme on site. A budget cost of a proposed scheme will be given within the "Suffolk Highways Scheme Suggestions" chapter of this document but a detailed estimate of costs can only be given after a detailed design has been completed.

Road Humps

There are different types of road humps which can be used within traffic calming schemes, some are based on a profile of a segment of a circle (round top), a sine wave (sinusoidal hump) or have features as straight ramps and a flat plateau (flat top). These features are generally installed with a maximin height if 100mm, but a preferred height of 75mm is recommended. The transverse profile is not prescribed, but recommendations are that tapered humps (which do not span the full width of the carriageway) should not have a channel greater then 200mm and taper with the width of the side ramps should be between 200 – 300mm, gradients for ramps are recommended to be no greater then 1:10 for a 75mm profile, although gradients of

1:15 have been found to be the best compromise between speed reduction and passenger comfort.

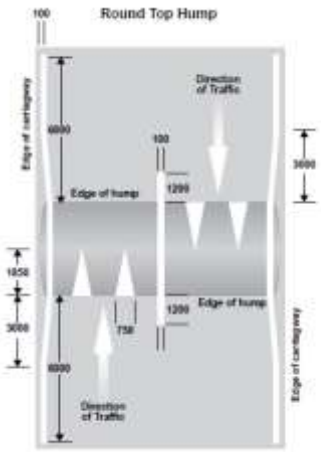
Due to the proximity of the buildings in relation to the carriageway humps are not recommended as a solution to the issues as these features will increase the noise and vibration experienced inside the buildings. Eye Town is within a conservation area with narrow streets and a 20mph zone and so it is unlikely that humps would reduce speeds any more than they are already.

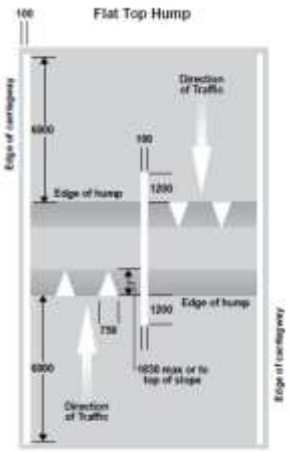
Accidents

Results are very hard to quantify; it is possible any reduction in accidents is due to the reduction in vehicle speeds or the reduction in traffic for the area. However, other factors may have an impact like a change in working patterns, weather changes encouraging more people to walk or cycle or safety improvements in vehicles reducing the severity of the injuries or avoiding the accident altogether.

Round-Top and Flat–Top Humps

Round top humps are generally 3.70m long. Where flat top humps are recommended, they have a minimum plateau of 2.50m and a 600mm ramp each side, which will give the width of 3.70m, the same as a round – top hump. The main advantage between these two is that the flat – top hump can be used as a pedestrian crossing point when constructed kerb to kerb, but this will increase the cost as additional drainage will be required either side of the hump.





The maximum spacing for these types of features is 150m when used in a series, but at this spacing there may be more braking and acceleration than if the spacing was below 100m.

Cost

An indicative cost has been provided, this will be dependent on several factors on site, such as the materials used to construct the hump, if services are available to connect to for drainage / electrical supply and the condition of the ground / surface etc.

The construction cost for a standard round top hump, with a maximum height of 75mm and a length of 3.700m is estimated at £3000 each.

The construction cost for a standard flat-top hump, with a maximum height of 75mm and a plateau length of 2.50m with an overall length of 3.70m is estimated at £5000 each.

Additional costs in association with these measures are:

Design Cost = Estimated £10,000 - £15,000
Legal Costs = Estimated £1,000
Safety Check = Estimated £3,000

Maintenance

Limited maintenance is required for both the round top and flat top humps, these will form part of the main maintenance regime as the general carriageway surface. Road markings to the face of the ramp will have to be checked on a regular basis as this marking informs the driver of the vertical change in levels.

Consultation with the road networks managers, especially the winter maintenance team are required to make them aware of new schemes being implemented on their network. This will reduce the possibility of both the hump and maintenance equipment being damaged unnecessarily during inclement weather when the feature is covered by snow, as the humps are not individually signed.

Vehicle Speeds

Vehicle speeds at road humps are determined by the height and the spacing between each traffic calming feature and vehicle speeds before the implementation of the scheme. Results from surveys undertaken have shown that a mean speed reduction of between 14.7mph for a 75mm high round top road hump and 12.8 mph for a 75mm flat top hump is to be expected.

The target speed for a scheme is governed by the spacing of the traffic calming features. It is recommended that for a target 85%tile speed of 30mph to be achieved, the spacing of the humps is to be no greater than 140m apart. Spacing further apart increases the likelihood of traffic racing between humps and braking heavily.

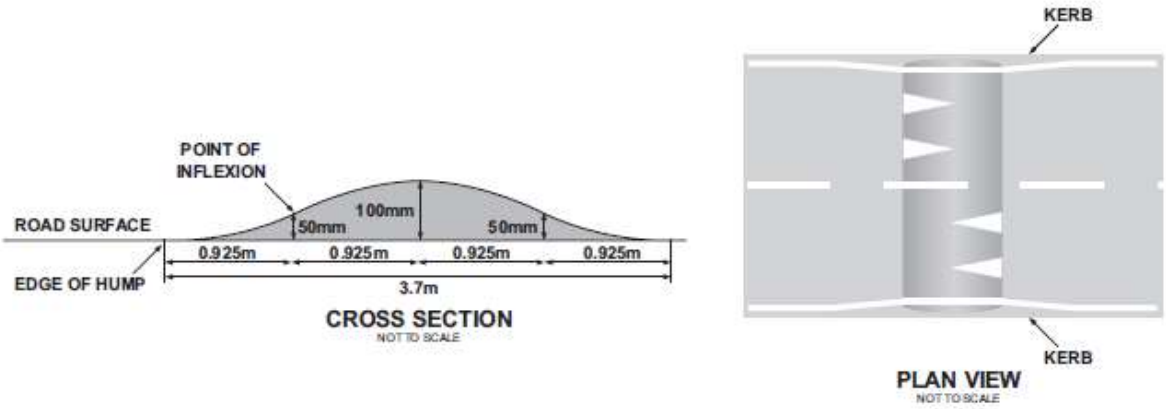
Vehicle Flows

Changes in traffic flow are often difficult to predict, studies have been carried out to predict the reduction of traffic flows after the implementation of a scheme. From these studies predicted average reduction of 20% are thought to be achievable for round top and flat top speed humps. This is of course only if alternative non-traffic calmed routes are available for drivers to take.

Sinusoidal Profile Road Humps

Sinusoidal profile speed humps have not been used in great numbers with the U.K. The main difference between the round top and a sinusoidal profile is the initial rise is much less than the round top.

Research commissioned by the DfT has found that due to this profile there is a greater vertical acceleration then that of a round top speed hump, which in turn causes greater discomfort for the occupants.



Typical design – Sinusoidal hump

Cost

This type of traffic calming feature is more labour intensive, as additional monitoring whilst construction is being undertaken is required to ensure that the specific profile is achieved, as variations to the profile during construction will result in the required effect failing to be achieved.

The construction cost for a sinusoidal speed hump, with a maximum height of 75mm and a length of 3.700m is estimated at £5000 each.

Additional costs in association with these types of traffic calming features:

Design Cost = Estimated £10,000 - £15,000
Legal Costs = Estimated £1,000
Safety Check = Estimated £3,000

Maintenance

As with the round-top hump and the flat-top hump, maintenance is very similar, although due to the profile of the hump they require additional monitoring to ensure that no deterioration of the profile has occurred.

Vehicle Speeds

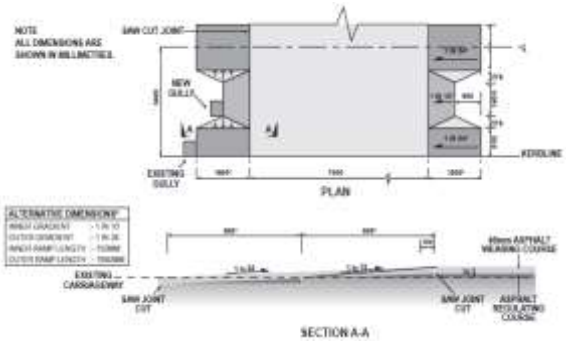
Vehicle speed reduction is similar to that of the round-top and flat-top speed humps, the only additional effect is that discomfort levels had reduce slightly for the car passenger and cyclists.

Vehicle Flows

Like the round-top and flat-top speed humps, schemes which have been undertaken in Edinburgh have shown that a reduction of 23% is achievable for sinusoidal speed humps, but these had been installed at 100mm high. Additional studies are required to find the true effect of these features.

“H” Road Humps

“H” hump, also known as a combi-hump was designed for buses and cars to travel over the traffic calming features at the same speed. This was achieved by constructing two types of ramps, the outer ramps for the wider tracked vehicles has a gradient of 1:24, while the inner ramps for the narrow-track vehicles had a steeper gradient of 1:12. Although this had been successful for the larger type bus and fire tender, minimal improvements had been seen with vehicles such a mini-buses and ambulances.



The typical design will consist of an outer ramp length of 1.800m and an inner ramp length of 0.900m with the overall height of 75mm and plateau length of 7.000m.

Typical design of an “H” hump.

Cost

Due to the specific design of the traffic calming feature, this creates additional requirements for a drainage system to be implemented, this will increase the cost of installation and maintenance, it is also complex to construct the transition ramps between the two different ramps to ensure that no difficulties are encountered by cyclists or motorcyclists.

To implement this type of design, it would be expected that the feature construction cost would be approximately £8,000.

Additional costs in association with these types of traffic calming features are:

Design Cost = Estimated £10,000 - £15,000
Legal Costs = Estimated £1,000
Safety Check = Estimated £3,000

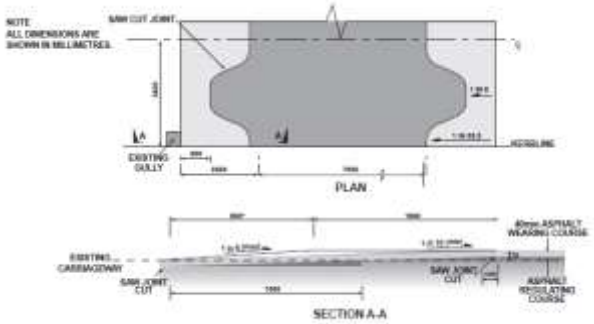
Maintenance

Maintenance costs would be higher than that of a standard traffic calming feature. This is due to the need for an additional drainage system which will need to be maintained to ensure that water does not pond within the indentation formed by the different ramp gradients of the feature. Due to the location of the central gully pot, additional traffic management will be needed. This could include a road closure, to ensure the safety of the operator whilst carrying out their duties or temporary traffic management every time it was needed to clear / maintain the central gully pot.

Vehicle Speeds

A study has been carried out using "H" humps spaced at 100m apart, this revealed that the 85%tile speed reduced by 7mph from 36.5mph to 29.50mph and the mean vehicle speeds from 26mph to 22mph for cars and buses respectively.

"S" Road Humps



The design of the "S" hump is to use similar principles as the "H" hump. The design of this feature is to use an outer ramp of 1:33 and an inner ramp of 1:8. Similar to the "H" hump, this was effective on the larger buses and fire tenders, but not the smaller mini-buses or ambulance. A Typical design "S" hump is shown to the left.

The typical design consisted of 2.50m outer ramps and an inner ramp length of 0.800m with an overall height of 75mm and a plateau length of 7.00m.

Cost

Due to the specific design of the traffic calming feature, this creates additional requirements for drainage to be installed either side of the feature, this will have an ongoing maintenance cost so that ponding does not occur either side of the feature. Additional labour costs will be encountered to achieve a suitable transition between the different gradients of the ramps to ensure that no difficulties are encountered by cyclists or motorcyclists.

To implement this type of design, it would be expected that the feature construction cost would be approximately £10,000.

Additional costs in association with these types of traffic calming features:

Design Cost = Estimated £10,000 - £15,000
Legal Costs = Estimated £1,000
Safety Check = Estimated £3,000

Vehicle Speeds

Are identical to that of the "H" humps.

Thermoplastic Humps (Thumps)

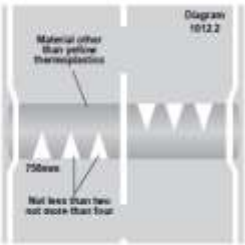
Thermoplastic humps or "thumps", are generally 900mm wide by 40mm high with a rounded profile. These have been used as a low-cost alternative to the traditional round-top speed hump.

Assessment of their effectiveness has been carried out and a spacing of 70m is recommended, but it was found that this type of traffic calming feature is not suitable

with high speeds, such as speed limits greater than 40mph. This is because at higher speeds, the features do not give increased discomfort whilst travelling over the thump and are therefore ineffective.

Typical layout– speed thump, see below

Thumps



As with all road humps, thumps need to be signed, but the standard signs cannot be used without the white triangle road marking. A special authorisation from the DfT is required to use these without the warning triangles. If the thumps are constructed using yellow thermoplastic screed, an alternative sign could be used where the requirement for white triangles are not needed.

Cost

The installation of thumps a low-cost option compared with other traffic calming features; two types of construction methods are available. First is thermoplastic screed, generally coloured yellow and the other is a feature constructed in asphalt material. Costings are provided below for both options.

Thermoplastic Screed £750
Asphalt construction £2,500
Additional costs in association with these types of traffic calming features are:
Design Cost = Estimated £10,000 - £15,000
Legal Costs = Estimated £1,000
Safety Check = Estimated £3,000

Maintenance

The two different types of construction encounter different issues, due to the different type of materials used.

Track and road trials have been carried out by TRL (Transport Research Laboratory). Within studies it was reported that the edges of the thermoplastic thumps began to flatten out with the continuous vehicle movements. It was also reported that the thump had deteriorated during the summer months, as the thermoplastic began to melt. This will result in periodic repairs to the thump to maintain the heights. Other issues such as providing and maintaining skid resistance levels was difficult due to the smooth texture of the screed.

No road markings are proposed to be used with the thump, if highlighted by the yellow thermoplastic screed.

Asphalt constructed thumps are more resilient than those constructed with thermoplastic screed and do not deteriorate due to vehicle movements or normal summer temperatures to the extent that the thermoplastic screed ones do. Due to the

colour of the material (black), it is required that road markings are provided to the vertical face and edges of the feature, as with the standard round-top and flat-top humps.

This will need to be monitored under standard routine maintenance.

Vehicle Speeds

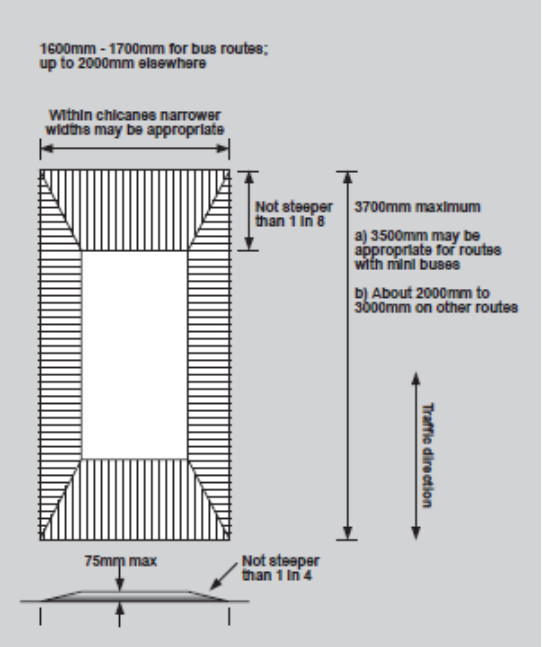
Speed survey results from previous trials around the country using the thumps spaced between 35m and 75m apart, showed a decrease in speed was achieved, the mean speed in a 30mph area was reduced by 7mph and the 85%tile speed reduced by 5mph.

Speed Cushions

Speed cushions are narrow rectangle humps, these allow large tracked vehicles, such as buses and large emergency vehicles to straddle the cushion. This type of feature minimises the discomfort for passengers and speed of large emergency vehicles are less compromised then that of round top or flat top speed humps.

Speed cushions can be designed to various sizes to accommodate various vehicles routes, such as bus routes, HGV routes and designated emergency routes. Careful design considerations are required to ensure that grounding issues are not caused to smaller vehicles. The speed cushions are constructed usually in pairs as a minimum but positioning of the features must not have a detrimental effect on other road users such as cyclists, as some vehicles may “cut in” to the arterial channel or encourage drives to straddle both lanes to miss the cushions. To deter vehicles from such movements, speed cushions can be used with a combination of other features such as build outs or central island.

The layout of this type of feature will not cause two-wheel vehicles to reduce their speed as they will be able to travel between the features.



The position of the of speed cushion must not be placed within an area that pedestrians are likely to cross, as there is a possibility of pedestrians, especially partially sighted people to trip over the features.

Typical layout – speed cushions, see detail

Cost

There are two methods which can be used to construct speed cushions. Each method has their advantages and disadvantages. The first method would be to use preformed units, which tend to be made from recycled plastic. They are a modular construction and provide a quick method of installation. Reducing the time required on site. The other option is to

construct the feature using bituminous materials. This is a time-consuming method and increases the time required on site to construct.

Cost for each of the different options are provided below, this cost does not include traffic management costs.

Modular Construction = £2500
Insitu Construction = £1500
Additional costs in association with these types of traffic calming features:
Design Cost = Estimated £10,000 - £15,000
Legal Costs = Estimated £1,000
Safety Check = Estimated £3,000

Maintenance

The different methods of construction require different maintenance programmes. Modular type construction will require more frequent inspections as it has been reported that bolt fixings for the preformed humps have become loose and caused the modular parts to raise upwards, any vertical height greater than 6mm will no longer meet the requirements under the Road Hump Regulations and any defect needs to be rectified quickly.

The Insitu method will require less frequent maintenance inspections. As with the round-top and flat-top humps, road markings are required to be installed and areas, such as the vertical faces, will need to be checked, to ensure that they are clearly visible by the approaching traffic.

Vehicle Speeds

The overall effect of vehicle speeds over speed cushions is dependent on a number of factors such as width, length, height, and positioning of the cushions.

It is envisaged from previous schemes that a reduction of the mean speed from 30mph to 19.5mph and 15.5mph can be achieved with a 1600mm and 1900mm wide humps. The average speed hump width of 1700mm spaced between 60m and 100m could give a mean speed of 20.5mph and 24.5mph.

Improvements can be made to increase the effectiveness of these traffic calming features. This can be achieved by construction the speed cushion in a contrasting colour, such as red, but this will increase the initial construction and maintenance cost.

Emergency vehicles, such as fire appliance, ambulances and HGVs are not affected by such features and as such can travel 10 to 20mph higher then travelling over a standard full width traffic calming feature.

Rumble Devices and Overrun Areas

Rumble devices can take two different forms, one method is to install rumble strips and the other are rumble areas.

Rumble strip are usually installed in a single group of strips or a series of groups. The standard installation method is to install a series of about 50 strips divided in to

two or four groups. The strips are laid in thermoplastic screed to a width of 100mm and spaced approximately 300 – 500mm apart. The maximum height of the raised strips is 15mm, with no vertical face greater then 6mm, as this causes difficulties for two-wheel vehicles. The colour of the strips is mainly coloured yellow, this is to provide the visual effects and not to confuse the driver into think these are alternative road markings.

Rumble areas are constructed to either half or full width of the carriageway, but the most effective is when constructed to the full width of the carriageway. This will deter vehicles from crossing the centre lane to miss the rumble device. These can be constructed solitary or installed as a series. The construction profile is generally a sinusoidal profile with a wave height of 6 – 7mm and a wave length of 350mm. These features are constructed of a bituminous material to achieve the desired skid resistance for that location. To improve the visual effect, the area can be constructed in a contrasting colour to the surroundings.

These are generally used in rural areas and provide a warning of an approaching hazard, such as a bend or a junction. Other uses have been when placed in conjunction with a gateway feature, where there is a speed change on approach to a village etc.

These devices should be used in conjunction with another traffic calming feature to reduce speeds.

Cost

The installation cost of these feature has been provided below:

Rumble Strips = £1500 (50 No. strips) Design cost = Estimated £10,000
Rumble Areas = £15,000 (per area) Safety check = Estimated £3,000

Maintenance

Depending the number and frequency of vehicles travelling over the devices, this would affect the deterioration rate. Locations which have had these types of devices installed have found that the thermoplastic strips lasted between 17 months to 4 years before becoming ineffective and requiring works to replace the strips.

Rumble areas which have been constructed in a bituminous material have an estimated life span of 3 years, before needing to be replaced. Any maintenance patching required within these areas will dramatically reduce the effectiveness of the audio and vibratory affect.

This option would increase the demand on the limited maintenance budget available to the County Council and could result in the scheme slowly deteriorating to an ineffective level.

Vehicle Speeds

Rumble devices have been used on some occasions as a speed reduction measure, but evidence of this indicates that any reduction in speed will be minimal. Results from a study recorded an average 85%tile speed reduction of 3mph.

There are incidents where drivers over time will accelerate over this device to lessen the vibration effect.

Narrowing's and Chicanes

Road Narrowing

Road narrowing can be achieved by various methods, such as build–outs, traffic / pedestrian islands, relocation of road space (implementation of cycle lanes and/or footways), road markings (central hatching), pinch points, sheltered parking or a combination of all of these. To ensure that the feature is effective in reducing speeds, there must be a balanced traffic flow from both directions, although in some instances one approach is less likely to give way than the other.

Various design considerations must be considered, this is to ensure that several issues can be avoided which affects all users and the residents. The road narrowing feature must accommodate vehicles that are frequently using the route, such as farm vehicles, buses, or highway maintenance vehicles, such as gritters / snow ploughs and refuge vehicles. The layout must ensure that the width of the running lane does not create a detrimental effect to the safety of other users of the highway, such as cyclists.

The location of the feature is also important as the location must not impede the access to the frontage of the adjacent properties.

Any features that have a vertical or horizontal deflection must have associated warning signs and road markings which will increase the cost and positioning of the features.

Chicanes

Chicanes can be of various designs, but most of the designs fall within two categories. These are single lane working and two-way working. A description of these types is provided below:

Single lane working, is designed by creating staggered build outs or widening the footways to reduce the carriageway to a single running lane. This allows the traffic from both directions to use the reduced carriageway width. The chicane is controlled by creating a priority system, this forces the approaching traffic entering the traffic calmed area to give way to the vehicles exiting the scheme. This will result in the reduction of the vehicle speeds entering the area.

Two-way working is designed by creating build-outs on both approaches into the traffic calmed area, but still maintaining two running lanes through the traffic calming feature. The running lanes are generally separated by either road markings or central

islands. However, if a solid central divide has not been installed, vehicles could encroach into the opposing lane, resulting in increased speed and compromising road safety.

DfT commissioned track trials to ascertain the most appropriate design for horizontal deflection to achieve suitable reduction in speed. Speed reduction had been successful for cars and buses, but the design criteria had restricted articulated vehicles from using the feature if the entry and exit chicane tapers were too steep, due to this issue, it was advised that an additional traffic calming measure would have to be implemented prior to the chicane, such as a hump or increase the stagger within the area, or alternatively install over-runnable areas, so still visually maintaining a narrow section of carriageway for buses and cars.

Other design considerations must be made, to ensure that the chicane can accommodate all modes of transport which will be expected to use the route, such as cycles, motorcyclists, agricultural vehicles and horses. These could include additional design features, such as cycle lanes, clearly delineated routes both during day and night conditions and grassed areas to act as by-passes.

Cost

Cost of both chicanes and build-outs can vary greatly, depending upon whether road realignment is needed, the length of the feature, the necessary road markings, and signage for the scheme as well as street lighting to ensure the feature is conspicuous during reduced lighting.

An approximate cost for a single lane working scheme is provided below

Single lane working = £30,000 minimum depending on the works required.
Design Cost = Estimated £15,000
Legal Cost = Estimated £1,000
Safety Audit = Estimated £3,000

Maintenance

Minimal maintenance will be required for a standard feature, over and above the normal maintenance regime of the local authority. The design must ensure that winter maintenance vehicles, such as snow ploughs can access the facility as this will increase cost if manual clearing is required. An additional cost will have to be accounted for as the additional street lighting element will have an ongoing cost.

Additional costs will be encountered if by-passes are required, as sweeping will have to be carried out by hand, as neglection of the by-pass could result in the cyclist using the main running lane to the detriment of their safety.

Vehicle Speeds

Road reallocation (horizontal deflections) schemes have been carried out and results from these schemes achieved an overall reduction of 7mph in the 85%tile speed.

A study of 49 schemes using chicanes was carried out by the DfT. Data collected from these schemes showed that results had been dependent on the path angle

through the feature. Angles greater than 15 degrees, had produced a mean speed less then 20mph, a path with angle less than 10 degrees had resulted in a mean vehicle speeds of 25mph. Whereas a path angle of 10 degrees will result in the 85%tile speed of vehicles through the feature of 30mph+, but for angles between 15 – 20 degrees this speed reduces to between 20-25mph.

Vehicle Activated Devices

Vehicle activated signs (VAS), are illuminated signs that are placed where conventional signage has become ineffective. Standard warning signs become ineffective to local traffic as drivers become complacent and no longer notice them. The sign face of a VAS is blank, until a passing vehicle has triggered the signs to be illuminated at a pre-set speed. The signs faces can provide various information, such as “Slow Down”, a warning sign, travelling speed of vehicles or even smiley / unhappy faces.

VAS could be provided to warn opposing vehicles at points in Eye Town where forward visibility is limited that a large vehicle is approaching indicating that they should slow down. However, the architecture in the town does not lend itself to such large signs and the signs may become ineffective as drivers regularly pass them.

Cost

The cost can vary, dependent on how the power supply is gained. This can be by electrical connection, battery, solar panels, or a wind turbine.

An estimated cost for this feature is as follows:

VAS including installation = £15,000 - £20,000
Design Fee = £5,000
Safety Check = £1500

Maintenance

The maintenance of such features varies dependent upon the method of illumination. If the sign is connected to the main electrical supply, minimal additional costs will be incurred. If the energy supply is by batteries, solar panels or wind turbines, this will require constant maintenance, and in some cases, replacements are required.

Vehicle activated signs have been used to prevent structure damage to bridges. Vehicle Activated Hazard Warning Signs were installed on Swarkestone Bridge over the River Trent (see pic above) to encourage weight limit compliance and change driver behaviour. Any class of vehicles exceeding the weight limit threshold are specifically targeted by '7.5t 210 Yards Ahead' Warning Signs triggered by vehicle count and classification, which has been fine tuned to detect and allow buses across the bridge. The two hazard warning sign sites have no mains power so they are both solar powered. See Coeval's webpage for more details:

https://www.coeval.uk.com/case-studies/identifying-overweight-vehicles-to-protect-ancient-bridge/

7.5t Weight Restriction

Weight restrictions are generally imposed for one of two reasons, Environmental or Structural (for example a weak bridge). It is important that if a route is identified as unsuitable for large vehicles that there is a better and equally convenient alternative or drivers are likely to ignore the restriction. An environmental weight restriction of 7.5 tonnes applies to the vehicle's maximum gross weight this is the maximum permitted weight of the vehicle when fully loaded.

Environmental restrictions are useful in preventing heavy goods vehicles from using minor roads as inappropriate short-cuts between main routes.

Reasons to introduce a restriction of this nature include:

- to prevent damage to the highway infrastructure (carriageway, footways, street furniture) and buildings
- protect the character and environment of rural areas, villages and residential estates
- manage congestion on the roads

- reduce risks to vulnerable road users, including pedestrians and cyclists

When proposing a weight restriction for any route or area we must consider those vehicles that will be re-routed. In certain instances, a route may seem inappropriate for HGV use but there may be no other realistic alternatives. If there are no alternative routes, introducing a weight restriction will only displace problems on to similarly inappropriate roads. Where alternative routes are available, we must ensure wherever possible to positively sign these routes and give early warning of a weight restricted area to help the restriction to be self-enforcing.

It's important to note that environmental weight restrictions will nearly always include exemptions for:

- vehicles making deliveries or collections at premises within the restriction
- vehicles working on or near the roads in question, this can include agricultural vehicles
- emergency service and military vehicles
- buses, coaches and other public service vehicles

This means that vehicles requiring legitimate access within the area covered by the weight limit, such as to deliver to a shop or access an industrial unit, are permitted. It's not appropriate to impose weight restrictions on routes or areas where the majority of heavy goods vehicles using those roads are doing so to access premises. To introduce a restriction in such circumstances will have little or no effect.

Vehicles getting heavier

Something that needs to be considered in relation to weight limits is the current drive by governments to switch to electrically powered vehicles. Be this hybrid or fully electric this equipment including the batteries adds to the overall vehicle curb weight and takes up cabin space and therefore vehicle manufactures are increasing the size of the vehicles they are selling. An example of this weight gain is a comparison between the Ford Mondeo and the Tesla Model S which are both family saloons.

Ford Mondeo (2.0 Diesel) curb weight = 3.21 tonnes

Tesla Model S (fully Electric) curb weight = 4.96 tonnes

This weight gain does not only apply to cars; lorries are also getting larger as fuel prices go up and consumers demand lower prices so the amount of goods that needs to be carried by these lorries must increase to make financial sense.

Lorry weights

Under Directive 96/53/EC the UK has been obliged to allow 40-tonne, five-axle lorries on UK roads since 1 January 1999. Before this date the maximum weight for articulated heavy goods vehicles (on five or six axles) in the UK was 38 tonnes this was changed from the previous limit in 1982 which was 32.5 tonnes. The weight limit for drawbar trailer combinations (a rigid vehicle pulling a trailer) remained at 32.5 tonnes until 1 January 1993 when it was raised to 35 tonnes, and then to 38 tonnes in 1994.

To encourage hauliers to use six-axle vehicles, the Government announced that it would allow 41 tonne gross weight vehicles on six axles on UK roads from 1 January 1999. These vehicles would carry approximately the same load as a 40-tonne lorry on five axles but would cause less road and bridge wear because the maximum axle weight would be limited to 10.5 tonnes by regulation. The 1999 Budget introduced a higher rate of Vehicle Excise Duty (VED) for 40-tonne, five-axle vehicles on in order to discourage their use. However, this policy was overtaken by the announcement in Budget 2000 that the Government would allow 44-tonne, six-axle lorries for general use from 1 January 2001.

The Department for Transport consultation titled '48 tonne intermodal freight trial: consultation document' was published on 09November 2020 and ran till 04January 2021. A summary of responses, including the next steps, will be published within 3 months of the consultation closing date. With this in mind the size (weight and length) of vehicle on UK roads is very likely to increase in the future.

These increased vehicle curb weights will also have an effect on the current 7.5t vehicle used legitimately within a 7.5t limit. As these vehicles switch over to electric power their curb weight will increase, and limits will need to be re-assessed.

Cost

The cost can vary, dependent on how many signs are required, if they require in posts and the type of traffic management required.

An estimated cost for this feature is as follows:

Sign erection = £4,000
Design Fee = £10,000
Legal Cost = £1,000

CCTV Enforcement of Weight Limits

Videalert were contacted and very helpful in providing the following information. For more details on their service see the link below:

https://videalert.com/

Camera enforcement solution are available and deployed in many local authorities this is mainly inside London where the legislation allows cameras to enforce a range of moving traffic contraventions directly (issuing Penalty Charge Notices under the 'London Local Authorities and Transport for London Act 2003' (LLA) whereas outside of London no powers exist to allow this. However, Part 6 of the Traffic Management Act 2004 is to be amended which will then enable cameras to be used to enforce moving traffic offences and issue PCNs by Councils (expect legislation to be enacted later in 2021).

Currently, therefore, the only mechanism to enforce Weight Restrictions is by the Police and Trading Standards under the Road Traffic Regulation Act 1984 – see example

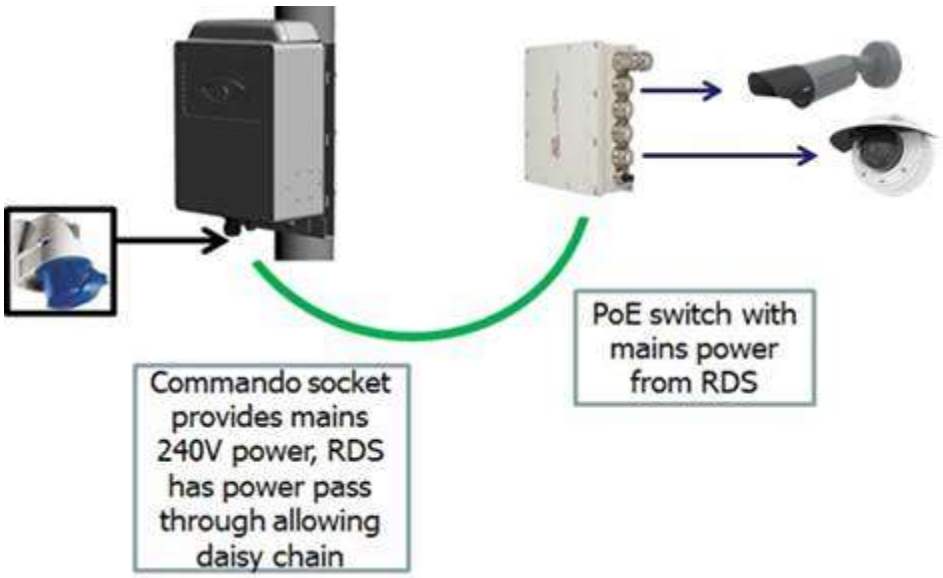
https://www.oxfordshire.gov.uk/business/trading-standards/weight-restriction-enforcement

CCTV solutions can be used in those scenarios, exporting reviewed and approved evidence packs to a nominated Police enforcement processing system.

To capture offences at those locations identified it is possible to use traffic volumes to monitor and enforce at some of those 4 entry/exit points depending on the traffic flow.

For each location the equipment would typically be as per below

Approved Device Make:	Videalert RDS Mk VI	AXIS P3375-VE	AXIS Q1700-LE	AXIS T8504-E
				
Approved Device Model Name:	Videalert Rapidly Deployable Server	Axis Fixed Dome Camera (Context View)	Axis Licence Plate Camera	AXIS T8504-E Outdoor PoE Switch
Dimensions	280mm(H) x 230mm(W) x 110mm(D)	178mm x 112mm	386mm(Length) x 147mm(W) Cylindrical bullet camera	240mm(h) x 166mm(W) x 72mm(D)
Approved Device Weight (kg):	7.5Kg	1.5Kg	2.4Kg	2.9Kg
Approved Device Wattage:	70W	Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 3 Typical: 3.1 W, Max 5.6 W	Power over Ethernet (PoE) IEEE 802.3af/802.3at Type 1 Class 3 Typical 7.7 W, max 12.95 W 20–28 V DC, typical 7.8 W, max 13.5 W 20–24 V AC, typical 12.4 V A, max 20 V A	Power over Ethernet Plus (PoE+) IEEE 802.3at Type 2 Class 4. Power Output - Port 1 and 2: Up to 60 W; Port 3 and 4: Up to 30 W; Power budget: 150 W
Elexon Charge Code:	835 0070 000 100			
Control: (usually continuous)	Continuous			
Minimum Mounting Height:	3 metres	3 metres	3 metres	3 metres
Maximum Mounting Height:	Up to 10 m (33 ft)	Up to 10 m (33 ft)	Up to 10 m (33 ft)	Up to 10 m (33 ft)
Type of Column required:	Tubular Column	Tubular Column	Tubular Column	Tubular Column
Column Material:	Galvanised Steel preferred	Galvanised Steel preferred	Galvanised Steel preferred	Galvanised Steel preferred
Column Diameter (mm):	76mm (but can fit to most sizes)	76mm (but can fit to most sizes)	76mm (but can fit to most sizes)	76mm (but can fit to most sizes)
Column Fixing: (Root Planted/Flange base)	140mm base with typical 1.7m Root Planted	140mm base with typical 1.7m Root Planted	140mm base with typical 1.7m Root Planted	140mm base with typical 1.7m Root Planted
Bracket arm Weight:	0.3Kg (Steel Bands)	0.3Kg (Steel Bands)	0.3Kg (Steel Bands)	0.3Kg (Steel Bands)



Standard CEaaS charges to the Council for this configuration of equipment are currently set at £900 per month (excl. VAT) per camera 'set' location. This includes the outstation equipment and software (including 4G SIM to provide secure wireless transfer of all evidence captured, remote management of the outstation kit – i.e. exemptions etc.) together with the Videalert Hosted Review/Management platform that allows remote access to all evidence packs captured, Review application and then export to a nominated back-office system for subsequent PCN creation and processing.

That configuration of equipment is fully re-deployable (simply requires 240V Commando Socket on existing Lighting columns – minimum 6M height) and hence can be repurposed for a wide range of enforcement activities such as Bus Lane Enforcement and other moving traffic offences once Part 6 of the TMA is enacted.

The Highway Authority would require additional funding for design, infrastructure and traffic management costs. It should be noted that there would be a significant cost to developing the "back office" capability or to reach agreement with an existing system from another authority. This approach may be considered by the Highway Authority once the changes to the Traffic Management Act have been implemented.

Town Council's Report by MLM

Recommendations from the MLM report commissioned by Eye Town council are as below:

9 Recommendations

It is recommended that the Hoxne Road/Magdalen Street and Cranley Green Road/Magdalen Street routes are included within the existing weight restriction for through traffic. Consideration will need to be given to where HGVs can turn should they arrive at the weight restricted area in error. It is anticipated that existing junctions on the route leading towards Eye could be used as potential turning points should these be required on the rare occasion, however this would need to be considered in more detail along with a signage strategy at appropriate points on the route and potential CCTV enforcement.

Signs should also be installed at the A140/Yaxley Road (leading to Magdalen Street) and A140/Castleton Way on this strategic route to warn HGV drivers of impending weight restrictions.

Suffolk Highways Scheme Suggestions

Please note that all scheme proposals detailed below and shown in the preliminary proposals and require detailed design and are subject to independent safety audit.

The town is already in a 20mph zone so vehicle speed reduction is not thought to be the issue. The town would benefit from a more regular parking restriction enforcement and a remarking of the existing restrictions to encourage more considerate parking in some areas but this alone would not solve the issue with large vehicles striking buildings and pedestrian concerns. The town has seen an increase of late in large vehicle traffic, this and the increase in vehicle size is thought to have exacerbated the problem.

Option "A" – Extend 7.5t weight restriction to include Broad St, Church St, Castle St, Lowgate St

The Town Council perceive the existing restriction in the north of the town as a success and as such this would be their preferred option for the south. The existing and any new restriction would be 'Except for loading' so large vehicles delivering or collecting from within the restricted area could do so legitimately but large vehicles travelling through the town should not. Additional signing would be required before the town with alternative routes signed well in advanced of the town centre to enable alternative routes to be taken.

Detailed design to confirm exact locations and illumination requirement of any new signs. Existing speed limit signs also to be checked.

Alternative routes for large vehicles approaching town would be:

- B1117 Magdalen St (west to east) – advanced signs on the A140 before B1117 junction warning of restriction. Vehicles on the B1117 approaching Eye would still legitimately be able to access Eye Poultry but would need to turn right when exiting Eye Poultry and proceed back to the A140 via B1117 rather than pass through Eye Town.

- Lambseth St (north to south) – this is already in the 7.5t restriction and vehicle are directed via Castleton Way.

- B1117 Hoxne Rd (east to west) – advanced warning signs are in place but are not very conspicuous. Warning signs would need to be erected at the junction of Hoxne Rd / Cock's Rd / Cookley Rd directing large vehicles to u-turn rather than proceed into Eye Town. Additional signs on the B1117 west of Stradbroke should give drivers plenty of warning. This is unlikely to be acceptable to the Highway Authority. This would result in traffic turning north and going through South Green and Hoxne resulting in increased HGV levels. The current daily average passing through ATC7 westbound is 114. To ensure large vehicles can u-turn a turning area would need to be constructed to ensure that this would be safe.

- B1077 Lowgate St (south to north) – warning signs to be placed on Cranley Green Rd junction with B1077. Advanced warning signs would be required at Thorndon and Occold to prevent large vehicles attempting to access the A140 via Eye. This would require HGV traffic to be directed east and south of Eye going through Hoxne or use other rural roads to head south to join the A140. Currently ATC5 sees an average of 111 HGVs daily moving west to east.

- A night-time HGV restriction could be considered to address environmental concerns, this would require early engagement with local businesses, including farms that may have requirements for early/late access. This may also result in increased HGVs through communities around Eye.

Comments from SCC Transport Strategy and Lorry Route team **********

Lorry Route map review completion date = *****

An estimated cost for this feature is as follows:

Sign erection = (depending on traffic management required) £4,000 - £10,000
Design Fee = £6,000 - £10,000
Legal Cost = £1,000

Option "B" - 3 way Traffic Signals at junction of B1117 Magdalen St, B1077 Broad St & Lowgate St.

Building strikes happen at this junction when two large vehicles try to pass each other in opposing directions. The lack of forward visibility means that large vehicles commit to the manoeuvre without seeing the opposing vehicle and need to make direction corrections at the last minute to allow vehicles to pass and this leads to building strikes. Traffic signals could eliminate the opposing traffic giving more carriageway space for turning vehicles and avoiding the need for last minute direction corrections. The Town Council have also expressed concerns regarding the available footway space outside 'The Bank Arts Centre'; an overrun area has previously been provided presumably to aid turning vehicles, but this has not helped the pedestrians. With the traffic signals installed this overrun area would not be required and footway could be made wider as the carriageway would only need to accommodate one vehicle at a time. Space is limited due to the building positions so careful consideration would need to be given as to the location of the signal heads so the footway is not obstructed.

The Bank Arts Centre shown on the left of the picture with overrun area.

An approximate cost for a single lane working scheme is provided below

Design Cost = Estimated £15,000 - £20,000
Legal Cost = Estimated £1,000
Signal and Civils Construction Costs = £100,000 - £200,000
Safety Audit = Estimated £3,000

Option "C" – 'Give and take priority system' to the pinch points within the town.

Building strikes are a major concern within the town. The narrow streets and design of the buildings mean that large vehicles come very close to the buildings within the narrowest parts of the Town. This option has been used in the Essex town of Coggeshall which is very similar in characteristic's to Eye and appears to work well without being too intrusive. The priority area becomes a single carriageway which can be road marked or the footways can be built out to direct vehicles away from the buildings and into the centre of the road.

The only disadvantage would be that if high volumes of traffic are present this could lead to queuing traffic with engines running on the yielding side. At the time of the site visit traffic volumes appeared low and the Town council could advise if this would likely to be an issue.

Coggeshall priority system in both directions.

An approximate cost for a single lane working scheme is provided below

Design Cost = Estimated £8,000 - £15,000
Legal Cost = Estimated £1,000
Construction costs (dependant on how much the footway is widened) = £30,000 - £100,000
Safety Audit = Estimated £3,000

Option "D" – Ban right turning vehicles out of Magdalen St into Lowgate St and remove 7.5t weight restriction.

Making vehicles turn left instead of right at this junction would eliminate the possibility of large vehicle striking the previously named Next Generation Hairdressing or mounting the footway here opposite the junction. To enable large vehicles to do this manoeuvre the existing 7.5t weight restriction would need to be removed. Presumably the existing weight limit was put in place due to issues with large vehicle in the north of the town so these issues would return is this was implemented.

Banning this turn would apply to all vehicle, resulting in increased use of Church St.

An estimated cost for this feature is as follows:

Sign erection = (depending on traffic management required) £10,000 - £15,000
Design Fee = £10,000 - £20,000
Legal Cost = £1,000
Safety Audit = Estimated £3,000

Option "E" – Make Lowgate St into Magdalen St 'No Entry'

Banning vehicles from turning into Magdalen St will remove the possibility of vehicles striking building from this manoeuvre and vastly increase the available road space reducing the possibility of vehicles striking buildings turning from Magdalen St to Castle St.

Advanced signing will be required as per the weight restriction option to prevent large vehicles having to turnaround at the junction. Large vehicle would likely have to pass through the existing 7.5t restriction at the north of the town.

This would lead to confusion at the start but would reduce the number of vehicles using the town as a through route although all vehicles will be able to use Castleton Way.

Vehicles under 7.5t would use Cross St as an alternative route and larger vehicle would be directed to Castleton Way and the A140. If this option is implemented removing the existing 7.5t restriction may need to be considered.

This option could result in an increase in non-HGVs using Church St to access Magdalen St from Broad St.

An estimated cost for this feature is as follows:

Sign erection = (depending on traffic management required) £10,000 - £15,000

Design Fee = £10,000 - £20,000
Legal Cost = £2,000
Safety Audit = Estimated £3,000

Option "F" – Make Broad St, Church St, Castle St, Lowgate St One Way to all traffic.

Making these roads 'one way' will enable vehicles to be positioned in the centre of the carriageway and allow the footways to be widened. The current carriageway width would allow large vehicle to make this turn and any footway widening would be following vehicle turning movement analyse.

Existing 7.5t weight restriction would need to be removed. Bringing back the issues which led to the implementation of this restriction. Also, without the fear of opposing traffic vehicle speeds may increase leading to a need for physical traffic calming measures.

This measure would result in increased traffic on Church St and potentially Castle St, but would address the issue of conflicting vehicles at the junction.

An estimated cost for this feature is as follows:

Sign erection = (depending on traffic management required) £10,000 - £15,000
Design Fee = £10,000 - £20,000
Legal Cost = £2,000
Safety Audit = Estimated £3,000

Appendix A – Accidents Location Plan & Summary

TRAFFMAP
AccsMap - Accident Analysis System

SELECTION RESULTS

Run on: 31/03/2021

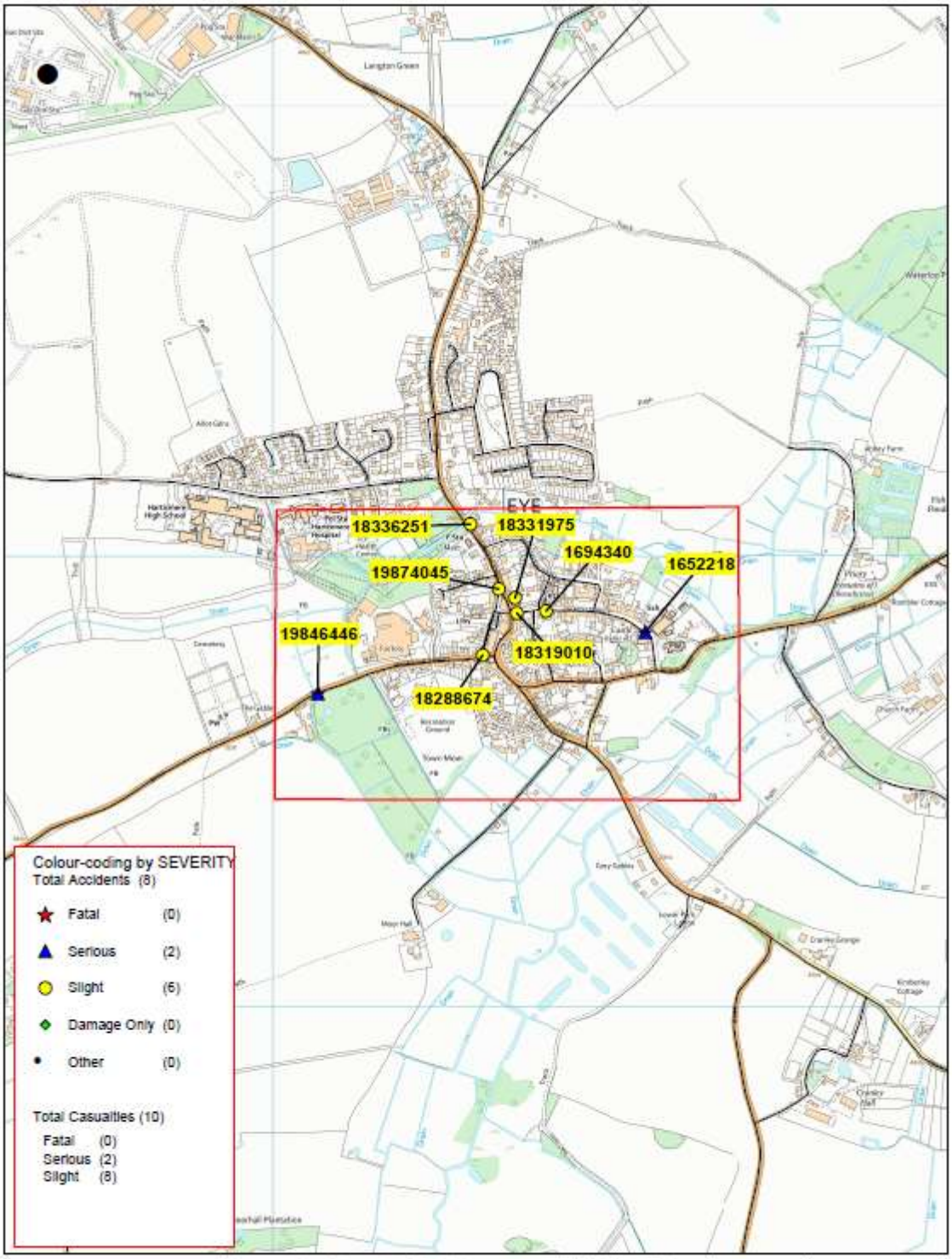
Accidents between dates 01/01/2016 and 31/12/2020 (60) months

Selection:

Notes:

Police Ref.	Date	Cas.	Sev.	P2W	Cycs	Peds	Ch	OAPs	Vis.	Manv.	Road Cond.	Time	Location
1652218	04/03/2016	1	Serious	0	0	1	1	0	Light	No turn	Dry	1024	CHURCH STREET
1694340	09/08/2016	1	Slight	0	0	1	0	1	Light	No turn	Dry	1639	SARAH'S HAIR DESIGNCHURCH STREET
18288674	23/04/2018	1	Slight	0	0	1	0	0	Light	No turn	Dry	1320	CROSS STREET
18319010	21/07/2018	1	Slight	0	1	0	0	1	Light	No turn	Dry	1304	TOWN HALL BROAD STREET
18331975	10/09/2018	2	Slight	1	0	0	0	0	Light	No turn	Dry	1750	LAMBSETH STREET B1077 AT JN WITH CROSS STREET
18336251	26/09/2018	1	Slight	0	0	0	0	1	Light	No turn	Dry	1414	24 LAMBSETH STREET B1077 NEAR JN WITH CASTLETON WAY
19846446	08/06/2019	2	Serious	0	0	0	0	0	Light	No turn	Wet/Damp	1315	YAXLEY ROAD (B1117) - 123 METRES FROM JUNCTION WITH
19874045	13/07/2019	1	Slight	0	1	0	0	0	Light	No turn	Dry	1655	LAMBSETH STREET (B1077) AT JUNCTION WITH CROSS STREET
Column Totals		10		1	2	3	1	3					
No. of Accidents				1	2	3	1	3					

Total number of accidents listed: 8



Suffolk County Council

JMcCloud_Eye_010116-311220_Location Plan

Selected Range of Accidents between dates 01/01/2016 and 31/12/2020

SCALE	1 : 11120
DATE	31/03/2021
DRAWING No.	
DRAWN BY	