



ETHOS

STRADBROKE VILLAGE ROAD SAFETY ASSESSMENT

FOR STRADBROKE PARISH COUNCIL

DECEMBER 2023



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1.0 INTRODUCTION

Ethos Consultants Ltd (hereby referred to as Ethos) have been commissioned by Stradbroke Parish Council to undertake a road safety assessment and preparation of a feasibility study to establish the current traffic issues with road safety. This will then enable the identification of the most suitable interventions that will be effective at reducing traffic speed and volume, along with improving road safety within the village of Stradbroke, located in Mid Suffolk.

For the purpose of this project, the study area has been defined from the B1118 Battersea Hill that leads into Queen Street from the north, the B1117 Laxfield Road that leads into Church Street to the east, Wilby Road to the south, and New Street to the west. Figure 1 below illustrates the study area and includes the following key roads:

- B1117;
- Battersea Hill;
- Church Street;
- Laxfield Road;
- Neaves Lane;
- New Street;
- Queen Street;
- Wilby Road.

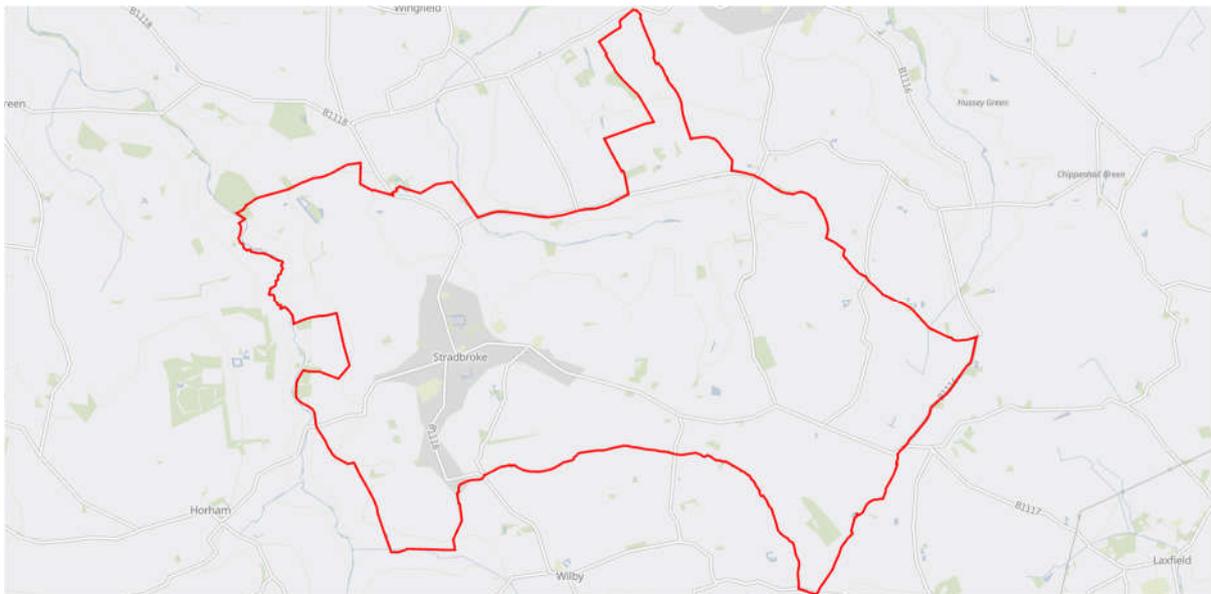


Figure 1 – Road safety assessment study extents Stradbroke

This project has been commissioned through the Safer Roads Stronger Communities initiative that Ethos have developed. Although the primary objective of the initiative is to identify and mitigate against road safety issues, it's considered essential that this is achieved using the most appropriate methods. To support this, the aim is to identify road safety interventions that fit within the environment and landscape of rural Suffolk. In some instances it may not be possible to achieve this. Where this cannot be achieved, more intrusive traffic calming measures may be suggested, although this will likely require further engagement with stakeholders.

Examples of traffic calming measures that can be considered more intrusive include speed ramps, speed tables, and copious amounts of coloured surfacing. Some types of traffic calming may involve more engineering infrastructure, but can be used effectively in a more rural environment. An example of this is a priority give-way system. This road safety intervention can be used for green infrastructure as well as for traffic calming.



Upon completion of the feasibility study, this report will be shared with Suffolk County Council as the Local Highway Authority (LHA) for viewing and comment. A meeting between Suffolk County Council, Stradbroke Parish Council, and Ethos will be held to discuss the road safety issues and potential interventions in greater detail. This will allow a final list of interventions to be developed and progressed to the delivery stage. It's expected that Suffolk County Council will contribute towards the cost of these interventions. Following this meeting, a community consultation exercise will be undertaken on the scheme that Stradbroke Parish would like to see implemented.

1.2 REPORT STRUCTURE

This road safety report presents both an assessment of the existing situation and the feasibility study for the viability of the proposals and includes the following elements:

- Assessment of existing situation;
- Feasibility design and evaluation;
- Recommendations on the next steps to implement the scheme.

After undertaking a detailed assessment within Stradbroke village, and understanding the main traffic and road safety issues, the following road safety interventions have been considered suitable for implementation. Chapter 5 of this study provides further details on the interventions, whereas chapter 8 considers the inclusion of as a works package. This includes how effective interventions can be when grouped together, based on the availability of budget (both with and without LHA contribution).



Gateway treatments at 30mph terminals on approaches to Stradbroke



Improvement to traffic signage



Implementation of new 40mph speed limit on the approaches to the village



Implementation of 20mph limit within village centre



20mph zone along Queen Street



Installation of Speed Indicator Devices (SIDs)



Remove centre line along the B1117 and the B1118



Accessibility improvements throughout village



Pedestrian crossing along Queen Street near primary school



Pedestrian crossing Church Street & Queen Street junction



Continuous footway along Queen Street for access into industrial site



Priority give way along New Street and Laxfield Road



Road narrowing outside Pool and Fitness Centre Wilby Road



Road enhancements along Church Street



Junction improvements Church Street / Queen Street

2.0 BACKGROUND

2.1 BACKGROUND TO SAFER ROADS STRONGER COMMUNITIES

Ethos are a transport consultancy that specialise in road safety, having worked across the country for a variety of clients that range from central government agencies through to Parish Councils, and resident groups. This range of experience is vital when determining the most appropriate intervention for locations that can vary from densely populated urban city centres to rural villages.

Road safety is and always will be the most important consideration within the transport industry. Failure to provide safe infrastructure will increase the likelihood of serious collisions and potentially fatalities occurring. Whilst it isn't possible to remove all safety concerns from the public highway, in the majority of cases, there is often the opportunity to make road safety improvements. This is a responsibility of the LHA who will employ a range of transport professionals that will include road safety engineers and highway inspectors.

In years gone by, a Town or Parish Council would be able to request road safety assessments by contacting the LHA. An Engineer would undertake the assessment and provide feedback on any concerns and opportunities for road safety intervention. However, this task is a revenue funded process until reaching the stage where a "scheme" can be delivered. More recently, the time previously allocated to investigating transport and road safety concerns within rural villages has become almost impossible to accommodate. This is due to LHA staff needing to allocate their revenue resource on business cases and funding applications for external funding, which is becoming increasingly the more common route to gaining access to larger financial allocations that can address key transport projects.

This is an issue that has begun to create disconnects between LHAs and Town / Parish Councils. An LHA are very unlikely to allocate funding to a capital project without an evidence base to confirm an issue exists, which can be only confirmed through the revenue funded assessments. The result of this is a lack of investment into local road safety projects within the area. Town and Parish Councils will suffer the negative impacts of this most as the closest level of government to local communities.

Ethos have decided to proactively fill the disconnect between LHAs and Town & Parish Councils. Our approach to achieving this is the introduction of the Safer Roads Stronger Communities initiative. The Safer Roads Stronger Communities initiative is designed to be a partnership that brings together Town and Parish Councils across the country into a central hub that Ethos will manager. This stronger in numbers approach is likely to gain better traction that individual Town or Parish Councils could gain on their own.

By undertaking the road safety assessment, Ethos can provide the evidence base to the LHA that there are safety concerns within a town or village. Although the LHA can dispute this, they should be able to provide sufficient evidence to justify their argument. Without this, the LHA risk a dereliction of duty if a serious incident occurs on the public highway that could have been avoided with intervention. In certain circumstances, this could lead to manslaughter charges in the cases of fatalities.

2.2 BACKGROUND TO STRADBROKE VILLAGE

Stradbroke is a village in Mid Suffolk, and is located east of Eye, which is the closet town within Mid Suffolk. The population of the village is 1,478 based on the 2021 Census, which is an increase of approximately 70 from the 2011 Census data (5% increase), and 257 from the 2001 Census data (17% increase). Stradbroke is located approximately 23 miles north of Ipswich, and 28 miles south of Norwich, which are the two largest settlements in the region.

The village is focused on two primary roads that broadly meet within the centre. The B1117 runs as a east-west road route through the village, whereas the B1118 runs as a north-south route. There are numerous smaller roads that feed into these two primary roads at various points across the village. Despite the village being relatively small in geographic coverage and population, there a number of trip generators located at various points. These include:

- Primary school;
- Secondary school;
- Community Centre;
- Swimming pool and fitness centre;
- Convenience store (Spar);

- Post Office;
- Church;
- Cemetery;
- Public House;
- Various shops and amenities including a bakery, butchers, and hairdressers;
- Industrial units.

As it would be expected, the trip generators are focused in specific areas of the village. The majority of the trip generators outlined above are located within the centre of the village where the east-road and north-south primary roads meet. The industrial units are located on the outskirts of the village such as to the north and east.

Stradbroke village isn't located within a close proximity to the Strategic Road Network (SRN). The A12 is approximately 12 miles east of the village. The A140 is approximately 9 miles west of the village, although this road is not part of the SRN. The nearest motorway (M11) is some 60 miles west of the village. This means that local residents and businesses rely upon the local road network to move around the area. This should in theory reduce the likelihood of traffic using the village as a cut-through, although Stradbroke does form a link between the A12 and A140.

There is no railway station within Stradbroke. The nearest station is located in Diss, which is approximately 10 miles north-west of the village. There is a local bus network that serves the village, with Queen Street, New Street, Church Street, and Wilby Road some of the key roads that have bus stops provided. This generally provides adequate coverage through the village, although some locations are more impacted, such as the residential properties along Laxfield Road near the junction with Mill Lane.

The Parish Council has had discussions with Suffolk County Council over traffic speed within Stradbroke, in particular, but not restricted to a 20mph speed limit along Queen Street outside the Primary School. There is belief that this request may be supported by Suffolk County Council as the LHA, which would compliment many of the interventions contained in this study. There is a need for this proposal to be supported with supplementary measures such as intermediate speed limits, which will require further engagement with Suffolk County Council.

After reviewing the village in detail, eight key areas have been identified, which are likely to be areas that are frequented by various transport modes, due to the key trip generators and positioning of the road. These locations are shown below in figure 2. It should also be acknowledged that there may be additional locations that generate footfall, such as local retail shops i.e. hairdressers along New Street, and the butchers, and bakery along Queen Street. These locations have not been highlighted as potential areas of concern due to the site observations, and lower footfall expected.

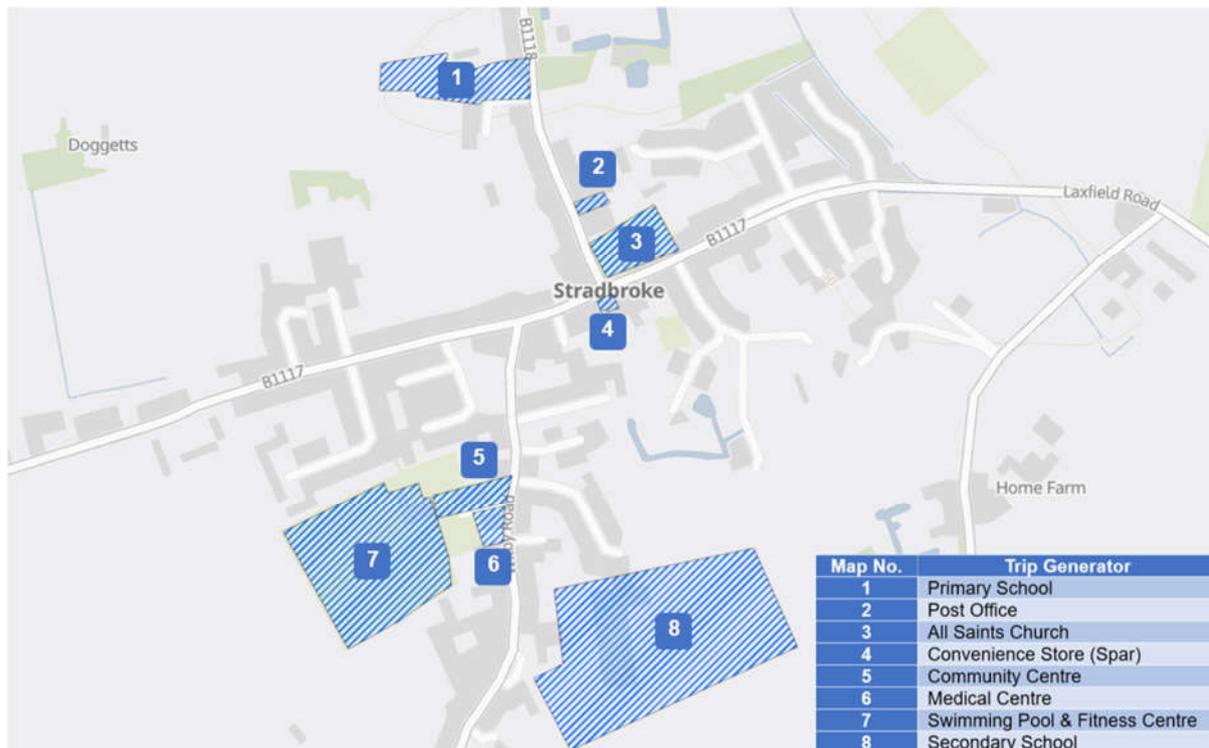


Figure 2 - Key trip generators within Stradbroke village

2.3 NEIGHBOURHOOD PLAN

One of the potential funding streams for Parish Councils is Community Infrastructure Levy (CIL), which can be used to carry out highways improvements such as the proposed measures detailed within this report. Town and parish councils can receive 15% of the CIL receipt. If the town or parish council has a 'made' Neighbourhood Plan they are eligible to receive 25% of the CIL receipt. Stradbroke Parish has a Neighbourhood Plan (adopted on 18th March 2019), meaning there is a higher likelihood of funding being made available, and a higher proportion of funding.

3.0 EXISTING SITUATION

This chapter identifies the road safety concerns that have been identified during the site assessments undertaken throughout the village. These only include issues where it's felt that road safety interventions are required. There may be additional sites that have a perceived safety issue. These have either been assessed and the outcome is that the road safety issue isn't at a threshold where intervention is required, or it's likely that there will be marginal improvements through other interventions that will mitigate against the issue, or reduce the issue to a point where intervention isn't required.

3.1 TRAFFIC SPEED INTO AND THROUGH STRADBROKE VILLAGE

There is an existing national 60mph speed limit as you approach the village from all directions before the 30mph speed limit terminal signs. From the east, the 30mph speed limit terminal signs are located west of Prospect Farm, which is located along Laxfield Road. From the west, the 30mph speed limit terminal signs are located south-west of the entrance into Stradbroke Business Centre along New Street. From the north, the 30mph speed limit terminal signs are located north of the junction of Queen Street and Ash Plough. From the south, the 30mph speed limit terminal signs are located along Wilby Road, just south of the entrance into the industrial unit.



Broadly speaking, there doesn't appear to be an issue with the location of the 30mph speed limit terminals. There is an argument that due to the location of the new residential development site (All Saints Green), which is located to the west of the village along New Street, the 30mph speed limit could be extended slightly further

south-westwards to protect residents from higher traffic speed. However, this is considered a lower priority compared to other road safety interventions available.

In village environments, drivers are more inclined to start reducing their speed at the speed limit change whereas in more urban environments this change is often before the speed limit change. Based on the location of the 30mph terminal signs, traffic may be entering the village with excess speed, although by the time vehicles reach the village centre it's likely that they would have reduced their speed to as low as they will decide to travel through the village. This may be well over 30mph, but the location of the gateways is unlikely to contribute to this, as it will be partly behaviour based.

Within the centre of the village, there is a network of street lighting columns, which conform to the standards required in a conservation area. This means there are no requirements for 30mph repeater signs as the network of street lighting columns provides that confirmation that the speed limit is 30mph. However, outside the centre of the village, there isn't any lighting columns. As a result of this there are 30mph repeater signs in-situ, as without these the default speed limit is a national 60mph.



There are a number of differences between a speed limit terminal sign, and a speed limit repeater sign. The most obvious difference is size. Based on the Traffic Signs Regulations and General Directions (TSRGD) guidance, a terminal speed limit sign should be 600mm in diameter when travelling from a national 60mph to 30mph. A repeater sign is restricted to 300mm in diameter, which makes the signs far smaller. Both terminal signs and repeater signs can be obscured in rural locations due to overgrown vegetation and poor sight lines. Where visibility can become an issue, it is possible to erect the signs on a yellow backed board. This should be limited in use.

Where the 30mph speed limit repeater signs are located through Stradbroke, there are a number of examples where the signs are obscured, or have limited visibility due to the condition of the sign, or small sized posts. This is likely to contribute to higher traffic speeds. Improving the visibility of the repeater signs is likely to reduce traffic speed through the village. This is likely to be a limited , but in combination with various other road safety interventions, it will contribute to a higher speed reduction.



Based on the site visit observations throughout the day, it was apparent that traffic was frequently travelling well in excess of the 30mph speed limit. There are opportunities to reduce traffic speed through signage and road marking improvements, which are covered in chapter 5 of this study. Combining these with physical measures, a noticeable speed reduction can be achieved (upwards of 5-7mph through the village).

Due to concerns with traffic speed, Stradbroke Parish Council have previously requested Suffolk County Council to undertake traffic surveys in the village. These are designed to capture traffic volume, speed, and the classification of vehicle. Two traffic surveys have been shared with Ethos. One traffic survey was conducted in October 2023 along Laxfield Road approximately outside the cemetery. This survey was undertaken over a three-week period. The second traffic survey was conducted in January / February 2023 along Queen Street near the Primary School. This survey was undertaken over seven days. The results of these surveys are summarised below.

Site	Traffic Volume	85 th Percentile	Mean Traffic Speed
Laxfield Road – EB	7,345 (3 week ave)	41mph (3 week ave)	34mph (3 week ave)
Laxfield Road – WB	7,266 (3 week ave)	41mph (3 week ave)	34mph (3 week ave)
Queen Street – NB	10,032 (1 week ave)	29mph (1 week ave)	24mph (1 week ave)
Queen Street – SB	10,350 (1 week ave)	30mph (1 week ave)	26mph (1 week ave)

Table 1 – Summary of ATC surveys undertaken in Stradbroke village (2023)

The results of table 1 demonstrate that there appears to be greater traffic flow travelling along Queen Street compared to Laxfield Road. As there are only two sets of data available, which were undertaken at different times of the year, there is limited effect of comparing the data. It's not possible to determine the origin and destination of traffic flow through the village without having further data along New Street to the west, and Wilby Road to the south.

Although both surveys were undertaken in the extents of the 30mph speed limit within the village, there is a noticeable difference between the 85th percentile speed and mean traffic speed. To provide confirmation, the 85th percentile speed demonstrates the speed of traffic based on 85% of the traffic flow. The purpose of this is to remove the 15% of traffic speed at the high and low ends to provide a more accurate reflection on the traffic speed for the majority of the traffic.

A key difference between the two sites is the immediate surroundings. The Laxfield Road survey was undertaken away from the village centre and towards the terminal signs. The Queen Street survey was undertaken within close proximity to the Primary School, where it's hoped traffic speed will be at the lowest point due to the vulnerability of children attending the school, and walking to / from the school. This highlights the impact of the local environment can have on traffic speed, which should justify this as a consideration when considering the potential to change speed limits in the village.

The traffic surveys provide a breakdown of traffic speed within 5mph categories. This enables analysis to be undertaken to determine what type of speed traffic is doing in each direction through the survey. Reviewing the data for Laxfield Road highlights a number of concerns. Over two thirds of traffic travelling eastbound (away from the village centre) were travelling over the 30mph speed limit (68%). In contrast, 60% of traffic entering the village (westbound) were travelling over the 30mph speed limit.

In addition to this, 15% of traffic were exceeding 40mph, which includes 2% of traffic that were travelling above of 50mph. This highlights that there can be serious issues with traffic speed along Laxfield Road, and road safety interventions are needed.

Figure 3 provides a breakdown of traffic speed along Laxfield Road (both directions) to demonstrate the percentage of traffic that are within the speed limit and over the speed limit. This breakdown has grouped speed into groups of 10mph for the analysis.

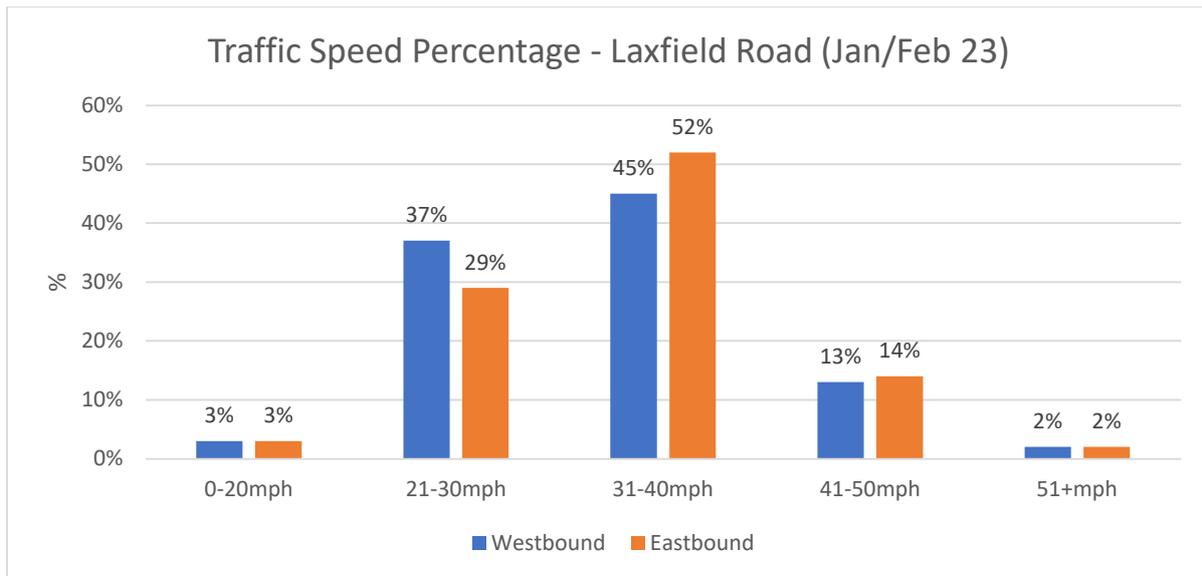


Figure 3 – Breakdown of traffic speed from ATC survey along Laxfield Road Jan/Feb 23

Reviewing the data for Queen Street demonstrates much better compliance with the speed limit. Only 9% of traffic travelling northbound (approaching the Primary School from the village centre) were recorded in excess of the 30mph speed limit. In comparison, 16% of traffic travelling south (approaching the Primary School and the village centre) were recorded in excess of the 30mph speed limit. This is something that can be addressed with road safety intervention. It’s also likely that a speed reduction will occur with traffic not exceeding the 30mph speed limit.

Figure 4 provides a breakdown of traffic speed along Queen Street (both directions) to demonstrate the percentage of traffic that are within the speed limit and over the speed limit. This breakdown has grouped speed into groups of 10mph for the analysis.

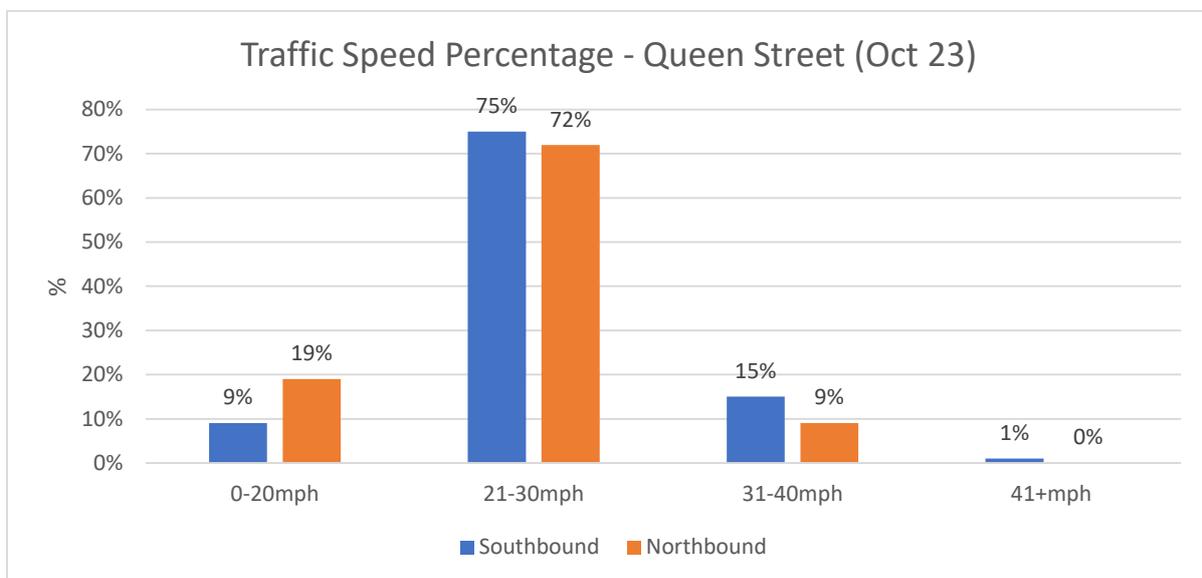


Figure 4 – Breakdown of traffic speed from ATC survey along Queen Street Oct 23

The Parish Council have aspirations to introduce a 20mph speed limit along Queen Street. There is scope for a 20mph speed limit along both Queen Street and the centre of the village (section of New Street and Church Street). However, the mean traffic speed will have an impact on this. The mean traffic speed along Queen Street is right on the threshold of whether a 20mph speed limit could be implemented. This may or may not be objected to. However, with the introduction of additional road safety measures, or if a 20mph zone is considered along Queen Street, this will reduce traffic speed accordingly. This is discussed in greater detail in chapter 5 of this report.

There may be justification to consider undertaking further traffic speeds to analyse traffic behaviour in different parts of the village. If this is agreed, it is recommended that four traffic surveys are undertaken, covering the four directions into and out of the village. This will enable us to determine the origin and destination of traffic flow, which can support the prioritisation of interventions. For example, if 50% of traffic flow through the village used New Street, / Queen Street, and 25% of traffic flow used Laxfield Road / Wilby Road, intervention priority should be New Street & Queen Street.

3.2 RESTRICTED FOOTWAYS

Related to concerns on traffic speed is restrictions with footways through the village. There are several locations within Stradbroke where there is either no footway in place, or there is a provision in place but there is limited width. This creates a safety risk for pedestrians. The faster the traffic flow, the greater the concern for pedestrians.

There are restrictions with footways across all parts of the village. The most obvious mitigation would be to construct footways in areas with missing links, and widen existing footways that are narrow. Whilst this would be the most effective solution to the issue, it's not practical or even achievable in certain locations. The costs of constructing a new footway would vary considerably based on the existing surface, and what is located underground. However, as a broad estimate, 100 metres of new footway is likely to cost in the region of £80,000-£100,000 (based on surface used).

Due to the costs involved in new footway construction, this should be an intervention that Suffolk County Council should take ownership for. It's felt that separate

investigations should be undertaken to build up an inventory of all missing links, to allow a priority list to be developed, which can be addressed over a longer term.

Examples in the village where there are missing footway links include New Street on the southern side from Wilby Road to a point just west of the junction with Queen Street, Laxfield Road in the eastern extents of the village, and along Queen Street along the eastern side of the carriageway. Examples of these sites are shown below.



There are also examples of locations within Stradbroke where there is a footway provision but insufficient in width to be accessible to all users. An example of this is along New Street near the junction with New Street Close. The footway is approximately 0.8m wide in places, which wouldn't be useable for pedestrians in wheelchairs, or those with pushchairs without using the grass verge.



It's acknowledged that in some locations there is insufficient space to construct a new footway. In other locations it may be possible to construct a footway, but this would require a loss of parking, which shouldn't be discounted, but would almost certainly result in opposition from local residents.

Having undertaken the site assessment, and viewed pedestrian flows throughout the village, it's felt that the highest priority site is along Queen Street within the vicinity of the Primary School. There is a sizeable collection of residential properties located in Westhall, which is located off Queen Street. There appears to be a number of children walking from this street to the Primary School. As there isn't a footway, or a pedestrian crossing point, the crossing movements are sporadic, and uncontrolled. This increases the risk of personal injury collisions with pedestrians and vehicles along Queen Street.

Due to limited space within the public highway, it will be challenging to construct a footway along the eastern side of Queen Street. In addition to this, there would still be a requirement for pedestrians to cross Queen Street to access the Primary School. Therefore, a controlled pedestrian crossing would be effective in this location. This intervention is discussed in greater detail within chapter 5.10 of this study report.



3.3 EXISTING TRAFFIC SIGNAGE AND ROAD MARKINGS

The signage through the village is adequate but could be improved, which could decrease the levels of speeding throughout the village. Along both New Street and Laxfield Road before entering the centre of the village where street lighting is present, there are several 30mph repeater signs located in strategic points through the village. However, a number of these have visibility issues due to poor positioning.





Whilst a number of the signs are in poor condition there are also locations where there is no signage, where there could be a benefit, such as advance warning signage. Positioning these signs in appropriate locations may assist in the control of speed on the approach to the centre of the village.

There are key lines on the road surface located around junction areas that would benefit from being refreshed. Due to the condition of these road markings there is a risk they could contribute towards vehicular collisions. For example, a driver unfamiliar with the road network, may not be aware to give-way at a junction due to faded give-way markings. This should be treated as a priority, and a matter that should be raised through Suffolk County Council as the highway authority responsible for maintenance.



There are small areas that would benefit from the implementation of road markings and jointly, there are areas that would benefit from the removal of road markings. The introduction of edge of carriageway lines or the improvement to existing edge of carriageway lines would act as a means to reduce the perception of carriageway

space. This intervention alone would only produce marginal gains but included in a package of interventions would contribute to producing an adequate speed reduction.

3.4 CROSSING FACILITIES

There are no existing controlled crossing facilities within Stradbroke village. There are no designated uncontrolled crossing facilities either, with the only provision being some junctions that have both dropped kerbs and tactile paving in place to allow pedestrians with accessibility and visibility issues to cross. This creates a safety risk, as pedestrians cross the road at various places through the village. Although the traffic volume isn't substantial, there is a regular flow of traffic, especially at peak times. The greater concern is traffic speed, which without controlled crossing facilities is unlikely to be considerate to pedestrians waiting to cross the carriageway in various locations.

There is a need for pedestrian crossing facilities within the village. However, this should be proportionate to the size of the village, and the demand for crossing the carriageway. Based on this, priority should be given to the most appropriate locations to consider pedestrian crossings. This can include both controlled crossings and uncontrolled crossings. For controlled crossings, there is a process involved in assessing the suitability of crossings. This is covered in chapter 5.10 of this report, as pedestrian crossings are an intervention Ethos recommends for consideration.

Based on the site assessments and investigations undertaken, there are two locations that should be prioritised over other locations in the village. The junction of Church Street and Queen Street is large, and wide. Whilst this makes it easy for vehicles to manoeuvre through the junction, it increases the time pedestrians are crossing the carriageway. This in turn increases the likelihood of collisions with vehicular traffic. There appears to be a lot of pedestrian crossing movement across all arms of the junction. Having a designated point to cross will control this movement, which will improve safety. There is scope to deliver this in conjunction with engineering works.



As stated above, there is a requirement to introduce a controlled pedestrian crossing point within the vicinity of the primary school and the junction of Queen Street and Westhall. This is due to a number of children from the residential properties within Westhall attending the school. There is no footway along the eastern side of Queen Street and no obvious crossing location. Similar to the concerns raised at the junction of Church Street and Queen Street, as there is no crossing point, pedestrians cross in numerous locations to access the school, increasing the safety risk. It's highly likely that a suitably well-located crossing point will be well used.



3.5 PEDESTRIAN ACCESSIBILITY

There are a number of locations throughout the village that may be difficult for pedestrians with mobility issues to navigate through. Examples of these accessibility issues include footways without dropped kerbs, footways without tactile paving, stretches of carriageway without footway, and sections of existing footway that is very narrow in places. Pedestrians that rely upon wheels i.e. wheelchairs, and pushchairs

may struggle to use the facilities in place. This risks alternative uses such as using the carriageway, which may increase the risk of collisions with vehicular traffic.

Making accessibility improvements through the village may not be considered a road safety intervention, although it will contribute positively to the road safety improvements through the village. Therefore, it is an intervention that should be considered as part of this study. One of the benefits of accessibility improvements are the relatively low cost. In most instances, introducing dropped kerbs and/or tactile paving may be sufficient to resolve the issues. As highlighted above, implementing new footways, and widening existing narrow footways will also be considered.



3.6 ON-STREET PARKING

On-street parking occurs frequently within the village, due to the limited number of properties that have off-street parking available, and there being no village centre car park for the shops and amenities (outside of car parks for specific uses i.e. the fitness and leisure centre). On-street parking can have a positive impact on road safety. Along roads with good forward visibility, on-street parking can provide the same benefits as traffic calming measures, as vehicles will be required to give-way to oncoming traffic.

Whilst this can provide a positive impact on road safety, it can also provide a negative impact. An example of this is vehicles parking at inappropriate locations, such as near junctions, and around bends. This can restrict visibility, resulting in a risk of collisions.

Ethos were previously commissioned by Babergh and Mid Suffolk District Council to produce the districts first parking strategy. A copy of the strategy can be viewed using this link. One of the interventions incorporated in the parking strategy is for Babergh and Mid Suffolk District Council to collate requests for parking restrictions. On a regular

basis (perhaps annually), a parking review programme should be undertaken, with an aim to install new road markings where there is a requirement. The cost of introducing parking restrictions is low. The main element of the cost is involved in the statutory process of advertising and making a legal Traffic Regulation Order (TRO). Grouping a series of sites together, results in a very low cost, which can be covered through the revenue the authority generates through parking charges and Penalty Charge Notices.

Based on this, Stradbroke Parish Council should collate a list of sites within the village where parking restrictions could be installed, and pass this onto the Babergh and Mid Suffolk District Council Parking Service Manager. This could include no waiting at any time restrictions (double yellow lines), no waiting at specific times (single yellow lines), and limited waiting parking bays. An expectation should be that Babergh and Mid Suffolk District Council will deliver these parking restrictions within a 12-month period.



4.0 COLLISION DATA

Collision data has been investigated as part of this feasibility study. Reviewing the *Crashmap* website for a period of five years from 2018 to 2022 has demonstrated that there have been two reported collisions within the village extents. This does not mean there haven't been more collisions, but these are the collisions that have involved the callout of the emergency services. There is no way of tracking the smaller "prangs" that are dealt with at the scene with the parties involved as no records are kept.

Between 2018 and 2022 there have been one serious collision, which is represented by the red icon on the map shown in figure 5. The serious collision occurred along the B1117 Laxfield Road, involving one vehicle, and one casualty. The incident occurred in July 2020. The second collision that has occurred within the extents of the village was classified as a slight collision (amber icon). This collision was located along Queen Street towards the north of the village, and involved one vehicle, and one casualty. This incident occurred in November 2020.

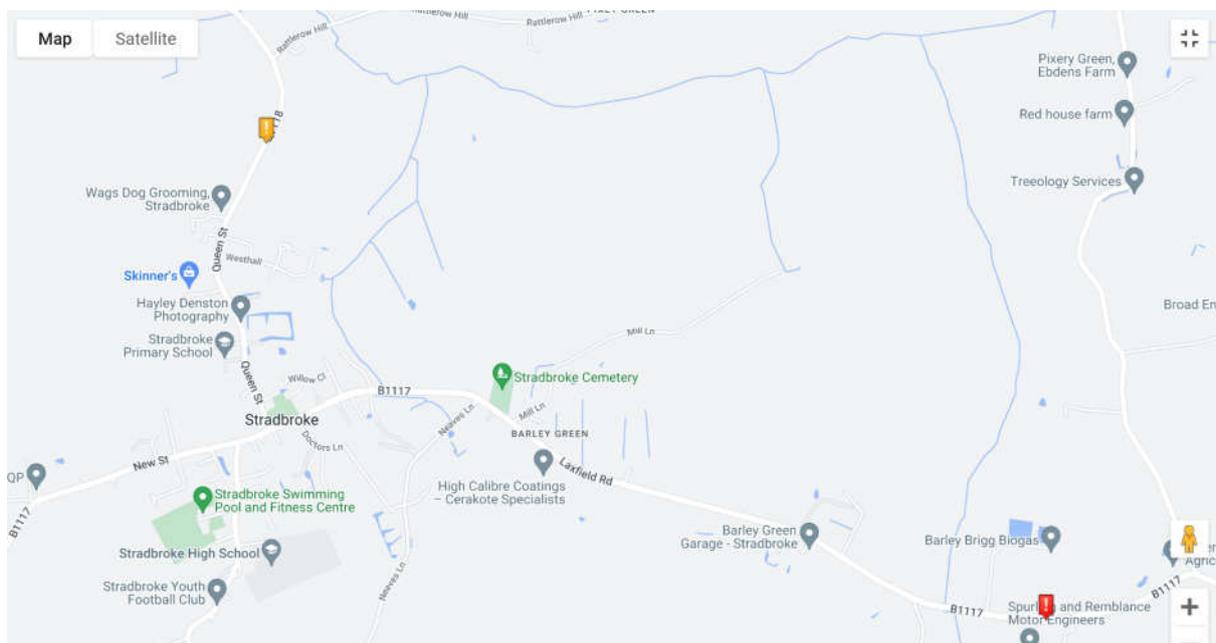


Figure 5 – Image detailing collisions that have occurred in Stradbroke village

Encouragingly, there have been no reported collisions within the extents of the village centre. This would suggest that pedestrian safety is fairly well contained within the village, as any collision involving a pedestrian is likely to require emergency service attention. Based on this, it's more likely that the collisions that have happened in the village centre, are more minor, which were dealt with at the scene without the need for

the emergency services to attend. It should be noted that this doesn't mean that road safety interventions are not required, but it provides confirmation that smaller cost, less engineering focused interventions are likely to be effective in the village.

A summary of the collisions is shown below:

SERIOUS COLLISIONS

Date: 05/07/20

Location: B1117 Laxfield Road, east of Barley Brigg Farm

Number of vehicles involved: 1; **Number of casualties involved:** 1.

SLIGHT COLLISIONS

Date: 23/11/20

Location: Queen Street, north of 30mph/60mph gateway signs

Number of vehicles involved: 1; **Number of casualties involved:** 1.

There are a number of reported collisions that have been recorded along the road network within the vicinity of Stradbroke village. Serious collisions have occurred in Ashfield Green, Wilby, and Chickering. Slight collisions have been recorded in similar locations, as well as around Horham, and Pixey Green. Whilst these collisions should be acknowledged, as they are outside the extents of the village, they haven't been considered when identifying road safety interventions.

Including these satellite villages, means that within the period 2018-2022, there have been 17 collisions. Seven of these were classified as serious, and 10 were classified as slight. It is recommended that Suffolk County Council as the highway authority undertake a more detailed review of this collision data, including accessing the Stat 19 forms to determine if speed is likely to be a contributory factor in the incidents.

Although the collision data would suggest there isn't a severe road safety risk within the village, this shouldn't discourage Suffolk County Council from considering the interventions that are put forward in section 4 of this feasibility report. The interventions have been developed to be proactive in reducing the likelihood of collisions occurring, as opposed to reacting to dangerous sites.

5.0 FEASIBILITY DESIGN

5.1 INTRODUCTION

This section outlines the interventions that have been assessed by Ethos for consideration with Stradbroke village and details the potential impact as well as providing an effectiveness score out of 10 and an appropriate cost. The effectiveness considers the likely reduction on traffic speed and improvements to road safety, and compares this against the potential cost. For instance, if a potential intervention is low cost and very effective it will score high. If a proposal is high cost and is unlikely to impact road safety and/or traffic speed, it will score low.

The score supplied with each intervention has been tabulated based on four specific criterion, which contribute to give an overall score.

The criterion is as follows.

- Road safety;
- Traffic speed
- Traffic volume
- Impact on the road network.

The criterion for road safety includes all modes of transport such as vehicular traffic, pedestrians, and cyclists. For the intervention to score highly, it is expected to deliver substantial road safety benefits at either a specific site or a wider area. The intervention will score low if there are minor or no road safety benefits. Poorly designed or located road safety interventions can actually create additional safety concerns in an area. Any interventions where a wider safety concern may arise results in no score.

In most villages, traffic speed is likely to be a concern, especially along the key roads. In Stradbroke, the key roads are likely to be New Street (B1117), Laxfield Road (B1117), Queen Street (B1118), and Wilby Road (B1118). Road safety interventions should always be seeking to reduce traffic speed when the primary focus is on vehicular traffic. The criterion for traffic speed has been separated into five categories based on the likely traffic speed reduction achieved. If an intervention can achieve an average speed reduction of 6mph this will score high. The other categories include a

speed reduction of 3-5mph, 1-2mph, and no speed reduction. If the intervention may encourage speed, this would result in no score.

Achieving a reduction in non-residential traffic within a village is the most difficult outcome from the criteria. Road safety, and traffic speed can be reduced with relatively low cost intervention. Often, the most effective method of reducing traffic in villages is through significant investment on the Strategic Road Network. This can involve hundreds of millions. Therefore, achieving a high score for the traffic volume criterion is unlikely. Higher cost interventions may discourage traffic from certain routes within the village, but they are likely to use another route. Based on this, any reduction in traffic volume on the road network will result in a positive score for this criterion.

The final criterion focuses on the impact of the intervention. If the intervention is likely to result in a substantial positive impact on the site, the assessment score will be high. A noticeable or slight impact from the intervention will result in a positive score for the intervention. Minor or no impacts will result in a low score, and a negative impact on the site will result in no score. This criterion will be influenced by the other criterion.

Table 2 summarises the scoring assessment used as part of this study to determine how effective the intervention will be within Stradbroke as described above.

Effectiveness				
Score	Safety	Speed	Volume	Impact
10	Substantial improvements to road safety	Average speed reduction over 6mph	Substantial reduction in non-residential traffic flow	Substantial impact at the site
9				
8	Noticeable safety improvements likely	Average speed reduction between 3-5mph	Noticeable reduction in non-residential traffic flow	Noticeable impact at the site
7				
6	Safety Improvements likely	Average speed reduction between 1-2mph	Reduction in non-residential traffic flow	Impact at the site
5				
4	Minor or no safety improvements likely	No speed reduction	Minor or no reduction in non-residential traffic flow	Minor or no impact at the site
3				
2	Intervention likely to cause additional safety concerns	Intervention may encourage excessive speed	Intervention may attract additional traffic	Intervention may cause negative impact at the site
1				

Table 2 – Intervention effectiveness assessment criteria

In addition to the effectiveness of the intervention, it’s important that consideration is given to the cost of the intervention. In most cases, the higher cost interventions will be the most effective. This assessment would be unproductive if no consideration was

given to the delivery costs as the higher cost interventions would be the highest scoring interventions. There would then be challenges for implementation due to the costs associated with the intervention. Therefore, the assessment criteria include the approximate cost of interventions, as well as additions such as statutory process costs.

Table 3 demonstrates the criteria used for determining the score based on the likely cost range of the intervention.

Score	Cost Range
10	£0 - £5,000
9	£5,000 - £10,000
8	£10,000 - £20,000
7	£20,000 - £40,000
6	£40,000 - £75,000
5	£75,000 - £100,000
4	£100,000 - £150,000
3	£150,000 - £200,000
2	£200,000 - £250,000
1	£250,000+

Table 3 – Cost Assessment for interventions

As part of this feasibility study, 15 interventions have been considered potentially suitable for Stradbroke and are outlined below. These interventions include measures that primarily focus on traffic i.e. speed limit extensions, and signage, and measures that primarily focus on pedestrians i.e. widened footpaths, and accessibility improvements. However, most interventions are linked. For example, widening a footpath may result in a narrowing of the carriageway, which will reduce traffic speed.

One intervention that hasn't been considered as part of this feasibility study is speed humps / cushions. The intervention wasn't progressed as there were a number of negative impacts including impact on local traffic and the decrease in village aesthetic. This type of intervention is also considered more urbanised and not in-keeping with the environment associated with Stradbroke.

5.2 GATEWAY TREATMENTS AT 30MPH TERMINALS

Speed entering Stradbroke particularly from the east and west (B1117) appears to be excessive, which isn't a surprise due to the nature of the road and volume of traffic passing through the village. This suggests that the existing 30mph speed limit terminal signs are being ignored. It is possible to redesign the current 30mph gateway terminal signs to create a more conspicuous gateway entry on the approach to the village in both directions.



A gateway that is formalised and informative can contribute to placemaking and safety. If a gateway with signage and speed limit indicators is present it can issue clear instruction to the driver that they are entering into a new area or settlement. A gateway can be made up of village name signs and speed roundels, coupled with surface treatment and slow carriageway markings. Combining these individual interventions will result in speed reduction, which will lead to an increase in overall safety.

A gateway treatment can vary in design, but average speeds can be reduced by approximately 3-4 miles per hour as vehicles enter the village. However, speed reductions of up to 5-6 miles per hour can occur within the first 20 metres of the gateway treatment which results in traffic speed being slower as vehicles enter the village rather than slowing down as they enter the village.

To illustrate this point, Ethos have previously undertaken a study investigating traffic speed through a rural village when starting from a stationary position compared to when travelling through a rural village without stopping. This was assessed by installing temporary traffic signals at the village entrance. Mean traffic speed through the village centre was 28mph when traffic was uninterrupted at the entrance. However,

mean traffic speed through the village centre was under 24mph when entering the village from a stationary position. For clarity, the traffic survey was positioned approximately 700 metres away from the temporary traffic signals to ensure traffic speed had reached a level that could be compared to the uninterrupted flow.

The purpose of the study was to demonstrate the importance of entry speed at the start of the village. Failure to have adequate measures in place at the start of the village increases the likelihood of higher speeds through the village centre. Although this illustration has bias as the slower traffic was entering the village from a stationary position, it demonstrates that once up to full speed, there is a noticeable difference between the sets of data. In theory, village gateway signs can have the same impact.

Figure 6 illustrates the mean traffic speed data captured as part of the study.

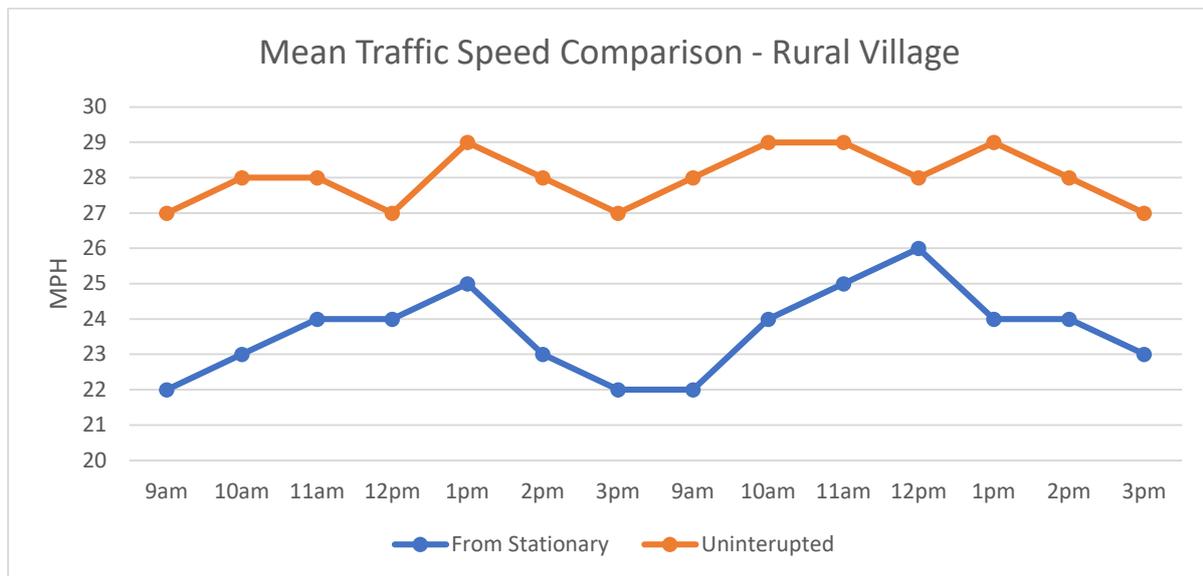


Figure 6 – Comparison of traffic speed through village based on entry speed

There are no specific design requirements of gateway treatments providing the 30mph signs are clear and the correct dimensions (600mm in size and at least 2.1 metres above the ground).

A village gateway will be one of the most effective interventions that do not involve physical traffic calming. Figure 7 provides an example of such a type of design.

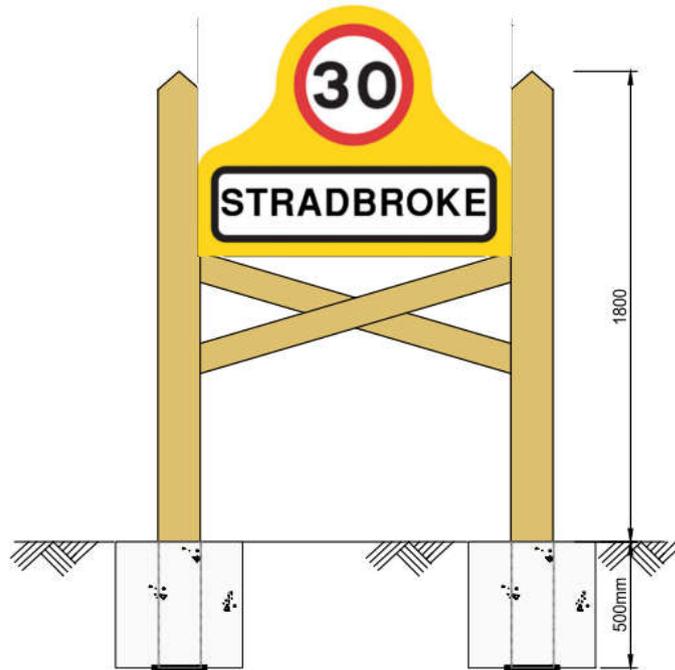


Figure 7 – Example of gateway with speed limit and name plate

The cost of gateway treatments can vary depending on the type of treatment implemented. The most common treatment is the construction of a gate arrangement which is usually in a white colour or natural to contrast against the grass verge. Each gate is likely to cost approximately £2,000. Therefore, four sites are likely to cost approximately **£16,000** as it's important to have the gateway on both sides of the carriageway. Costs can increase depending on the materials used, design used, and where the delivery is from. It is also possible to install road markings to support the introduction of the new speed limit.

Red coloured surfacing can cause the speed limit to be much more visible when overlaying white roundels on the road surface. White road markings can be used to create virtual narrowing, which will cause traffic to slow down as the road appears to be narrower than it is. This can add a further 1-3mph average speed reduction on top of what can be achieved using the gateway treatment on its own. Installing coloured road surfacing and road markings is likely to add an additional **£7,000** on top of the gateway treatment cost.

Implementing gateway treatments on all key approaches to Stradbroke village can be very effective in reducing traffic speed through the village, and it's expected to see a speed reduction of approximately 5-7 miles per hour on the approach to the village if the gateway treatment is combined with the road surfacing and road markings.

Intervention	Safety	Speed	Volume	Impact	Total	Cost
Gateway treatments at 30mph terminals on approaches to Stradbroke	6/10	7/10	3/10	8/10	24/40	9/10

Figure 8 below provides some examples of gateway treatments.



Figure 8 – Examples of speed limit gateway treatments

5.3 IMPROVEMENTS TO TRAFFIC SIGNAGE

Traffic signs are implemented to give road users information, instructions and direction. Traffic signs are normally erected along the carriageway and can range in purpose from speed information to leisure or tourism indicators. The position of the sign and the text included on the sign is of great importance as it needs to be in a clear and defined area and its proximity to the point or area of interest is important.

Throughout Stradbroke, there are a number of signs that are either worn or the sign has become inconspicuous due to overgrown vegetation or infrastructure obscuring the sign. This can create a safety risk, especially if the sign is providing key information such as bend ahead or a pedestrian focused area.



There are 300mm 30mph repeater at infrequent intervals throughout the village where there is no street lighting columns. Without regular repeater signs along a route the road is assumed to be the national speed limit for a single carriageway. However, some of the existing repeater signs are not conspicuous due to the size of the signs and their location. Vegetation obscures some of the signs and the condition is poor for several of the signs. As a result of this drivers do not have a regular reminder of the speed limit.



Undertaking a traffic signage improvement regime across the village would be a beneficial and low cost intervention. The responsibility of signage falls within the remit of Suffolk County Council (SCC) and therefore any intervention would be executed by SCC. Priority should be given to the most important signs, and those in the worst condition. The cost of traffic signage improvements is a low-cost measure. This intervention is likely to cost in the region of **£4,000-£5,000** for all signage across the village. This is a low-cost measure as the only cost is the manufacturing and installation of the signs.

There may be a slight speed reduction through the village as a result of increased visibility of warning signage. This is likely to be in the region of 1-2mph. However, the increase in signage is likely to reduce the possibility of collisions occurring at key points such as junctions and on bends. Further investigation of the Stats 19 form may support this assumption.

Intervention	Safety	Speed	Volume	Impact	Total	Cost
Improvements to traffic signage	4/10	5/10	3/10	5/10	17/40	9/10

5.4 IMPLEMENTATION OF NEW 40MPH SPEED LIMIT ON APPROACHES TO VILLAGE

On all approaches to Stradbroke, there is a national 60mph speed limit prior to the 30mph. There is a possibility that traffic will be travelling in excess of 30mph proceeding through the village. It is unrealistic to expect drivers to reduce speed from a 60mph to a 30mph limit through terminal signs alone, especially on the outskirts of the village, where it is less populated, and in some instances, better visibility.

Introducing a 30mph speed limit a long distance from a built-up environment will result in a lower compliance rate. This is because a lower speed limit will feel uncomfortable in a rural area. To further assist the speed reduction, it can be effective to introduce an intermediate speed limit. In this instance, a section of 40mph. The impact of this means drivers will slow down twice, once for the 40mph speed limit and again for the 30mph speed limit. This process has proven to work effectively for other rural villages.

Figure 9 below provides an example of how the speed limit network could be implemented on the approaches and through Stradbroke. This highlights the proposed intermediate 40mph speed limit sections, the new boundary with the national 60mph speed limits, and the extents of the 30mph, which remains in the existing position. Please note, this plan is based on the existing situation, and doesn't consider the potential intervention to introduce a 20mph speed limit or a 20mph zone as discussed in chapter 5.5, and chapter 5.6 below.



Figure 9 – Proposed intermediate 40mph speed limit on the approaches to the village

To design this intervention, measurements need to be taken to establish the most suitable location for the 40mph speed limit to commence. It is recommended to be at least 400-500 metres in length to have the desired effect, but preferably 700-800m. It is anticipated that this proposal would reduce traffic speed by approximately 4-6 miles per hour as vehicles enter the village. Drivers who are aware that the 40mph limit starts at the end of the village are likely to maintain a low speed throughout the village.

The cost of implementing a 40mph speed limit is low. There is very little cost involved in supplying terminal signs and repeater signs. The main part of the cost for this proposal is the design, consultation, and legal cost of advertising the new speed limit as part of a statutory process for a Traffic Regulation Order. To carry out the work from design through to implementation approximately **£8,000 - £10,000** is required.

Intervention	Safety	Speed	Volume	Impact	Total	Cost
Implementation of new 40mph speed limit on the approaches to the village	7/10	7/10	3/10	8/10	25/40	9/10

5.5 IMPLEMENTATION OF 20MPH LIMIT WITHIN VILLAGE CENTRE

A 20mph speed limit involves reducing the speed limit along a road(s) to 20mph through traffic signage and road markings only. 20mph speed limits are designed to be self-enforcing, which means the average speed along the road(s) should not be greater than 24mph. Average speed above this means it's unlikely reducing the speed limit through signage and road markings only will reduce the speed limit appropriately.

20mph speed limits are often appealing for villages as they can be an effective safety and speed reduction measure without physical traffic calming measures. Apart from the gateway signs at the start and end of the limit, the only infrastructure required are 300mm repeater signs. However, in villages it's often unlikely to see average speed within the 24mph threshold to consider 20mph speed limits, especially the main routes through the village. Some of the smaller residential roads may have sufficiently low enough speeds, although it is accepted that there will be less traffic on these roads.



There are numerous roads within Stradbroke village that could be suitable for inclusion as part of a 20mph limit scheme. These roads are concentrated within the village centre, due to the denser environment, which should reduce traffic speed accordingly. Outside the village centre, traffic speed is likely to be higher, potentially above the 24mph threshold for consideration of a 20mph limit. This is illustrated with the traffic survey undertaken along Laxfield Road, where the mean traffic speed was 34mph.

It is recommended that the Parish Council commission Suffolk County Council to undertake a further traffic survey to support the 20mph speed limit intervention. This survey would be effective within the extents of Church Street, which is approximately

centre of the village. A further survey could be included slightly west, along New Street, as there is aspiration to have a 20mph speed limit within the conservation area.

Without the traffic survey, it is difficult to determine the suitability of roads for inclusion in a scheme. However, based on the initial assessment, the roads where it's expected that mean traffic speed will enable the introduction of a 20mph speed limit include:

- Church Street;
- Chapel Close;
- Doctors Lane;
- Drapers Hill;
- Eastlands;
- Shelton Hill;
- Willow Close.

The majority of the residential streets that would be included within a 20mph scheme are cul-de-sacs. The length of these roads means limited if any repeater signs will be required. As many of the roads are connected to Church Street, very few 20mph speed limit gateway signs will be required. This means costs will be reduced, and it removes the likelihood of street clutter occurring through the additional signage that would be erected in a different situation. Additional signage can be considered though.

Whilst speed isn't likely to be an issue in these roads, the 20mph speed limit will provide reassurance to drivers that they can travel at a slower speed within the residential streets. This will result in a positive road safety improvement. Average speed is still likely to reduce, with a 1-3mph average speed reduction likely, depending on the length of the road, and the existing speed prior to the 20mph limit introduction.



Although the Parish Council have aspiration for a 20mph speed limit along Queen Street, the traffic speed from the previous traffic survey demonstrated slightly mixed results. Whilst northbound mean traffic speed was 24mph, which would be suitable for a 20mph speed limit, the southbound mean traffic speed was 26mph. It could be argued that with additional road safety interventions, such as the intermediate 40mph speed limit north of the primary school along Queen Street, the mean speed will reduce to a point within threshold. However, there is scope to consider the introduction of a 20mph zone along Queen Street, which should be more effective around the school.

This intervention is discussed in greater detail within chapter 5.6 below.

The cost involved in implementing a 20mph speed limit scheme across residential streets in Stradbroke is a low cost measure. The main cost element of the intervention will be the statutory process, which includes the requirement to produce a Traffic Regulation Order, and consultation requirement. The likely cost for a 20mph speed limit scheme across residential streets in Stradbroke is likely to be in the region of £10,000. This basis cost is inclusive of statutory traffic orders and signs that are required. There will be minimal change in cost with the inclusion of additional streets.

Intervention	Safety	Speed	Volume	Impact	Total	Cost
Implementation of 20mph limit within village centre	7/10	7/10	5/10	9/10	28/40	9/10

5.6 20MPH ZONE ALONG QUEEN STREET OUTSIDE SCHOOL

An area with high footfall within the village is likely to be Queen Street, due to the location of the primary school. The vehicle flow through this area will be high at peak school drop-off, and pick-up times. In a bid to improve safety along this critical area in Stradbroke, it is proposed to introduce a 20mph zone. A 20mph zone differs from a 20mph speed limit. 20 mph zones require traffic calming measures (e.g. road narrowings) or repeater speed limit signing and/or roundel road markings at regular intervals, so that no point within a zone is more than 70m from such a feature.

As outlined above, the mean traffic speed along Queen Street is just above the threshold for the implementation of a 20mph speed limit. The Parish Council may decide to pursue a 20mph speed limit with an expectation that mean traffic speed will reduce due to the additional road safety interventions implemented.

A 20mph zone can include physical and/or non-physical traffic calming measures. The effectiveness of a 20mph zone is far greater when physical traffic calming features are used. These physical traffic calming measures can be both high cost and low cost. Examples of low-cost measures include speed limit signage and road markings (carriageway repeater signs and edge of carriageway markings) whilst examples of high-cost measures include surface treatment and road realignment.



Queen Street within the extents of this study is approximately 790m long. To reduce overall cost but ensure effectiveness is high it is recommended to implement this intervention with a mixture of both high cost and low-cost infrastructure. To ensure the intervention is suitable for an attractive rural village, it's recommended to consider road enhancement treatments as oppose to more traditional traffic calming measures.

Examples of treatment that would be effective along Queen Street include new surface materials, and / or new surface colour. In addition to this, consideration could be given to the reallocation of roadspace, where footways are widened, which will reduce the width of the carriageway. Road enhancement interventions also provide the opportunity to incorporate green infrastructure. This can be combined with signage & road markings. A controlled crossing point will also be effective for the 20mph zone.

Due to the costs involved, it isn't recommended to consider the road enhancement treatment for the full length of Queen Street within the study extents. This should be focused on the area within close proximity to the primary school. The signage and road markings will dictate the extents of the 20mph zone, which can be agreed with both Suffolk County Council and the Parish Council during implementation discussions.

Figure 10 provides a plan that demonstrates the type of treatment recommended along Queen Street. The green line represents the road enhancement area, and the blue line represents the lower cost signs and road markings treatment for the 20mph zone.

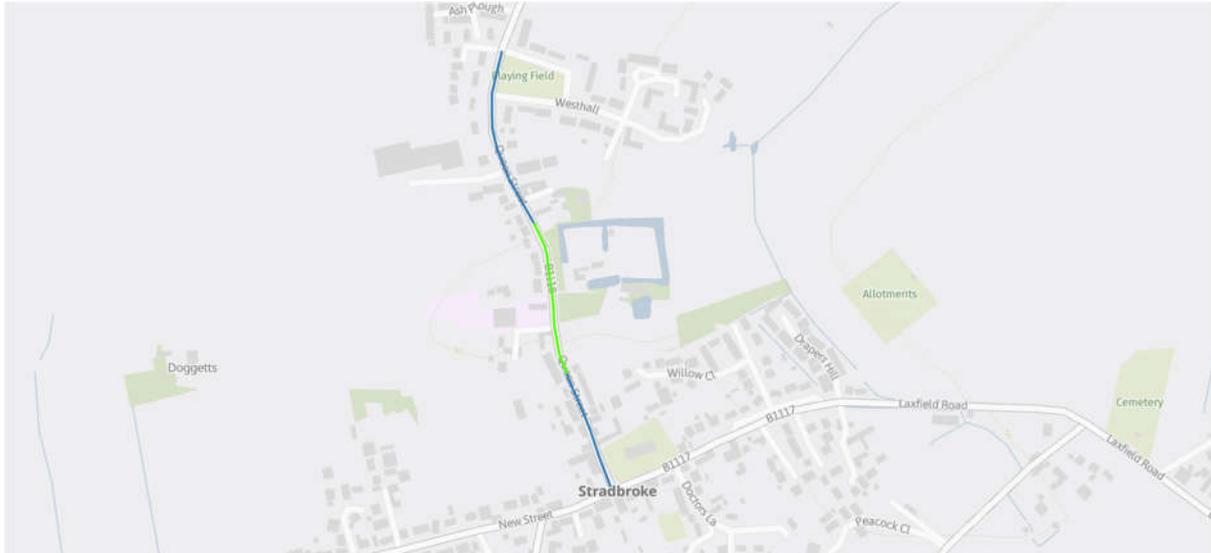


Figure 10 – Proposed 20mph treatment areas for Queen Street

Statistically, 20mph zones with physical measures demonstrate greater speed reductions of approximately 7mph against zones which don't have physical measures, which is more likely to be 1-3mph depending on the nature of the road. This makes the intervention one of the most effective at reducing traffic speed within the village.

Improving the environment within the area of the school will likely encourage more footfall to the school, assisting in achieving modal shift. There is a concern that without an enhancement intervention, there is risk of collisions occurring between pedestrians and vehicles.

Figure 11 below provides an example of the impact a surface colour treatment can have within a village environment. This is an alternative to different surface materials.



Figure 11 – Example of changing the surface colour to enhance the environment

A 20mph zone varies in cost due to a number of variables such as the length of the road, number of features, the type of features, location, and consultation involved. This means estimating a cost can be difficult at this stage. The cost of the 20mph zone signage and road markings will be low. £5,000 should be sufficient for this aspect. For the purpose of this study implementing a 20mph zone along Queen Street is likely to cost in the region of **£60,000-£80,000**, which is based on the inclusion of both road enhancements in the core area, and lower cost measures.

Implementing a 20mph zone along Queen Street will be very effective in reducing non-residential traffic. This is because a 20mph zone can negatively impact the journey coherence for vehicular traffic. This means that traffic either reduces in speed, and/or drivers find alternative routes, which may involve circumnavigating Stradbroke entirely. Based on observations onsite, there appears to be a high proportion of non-residential traffic travelling along Queen Street. These enhancements will reduce traffic along the road due to the reduction in coherence the proposals will bring.

Intervention	Safety	Speed	Volume	Impact	Total	Cost
20mph zone along Queen Street	8/10	8/10	7/10	8/10	31/40	6/10

5.7 INSTALLATION OF SPEED INDICATOR DEVICES

Speed Indicator Devices (SID) are one of the most effective non-physical methods for slowing traffic in a specific location. There are a number of different types of SIDs that range in cost but also provide different results. SIDs can be considered an upgrade on the traditional Vehicle Activated Signs that flash “Slow Down” that are likely to see

average speed reductions of 1-2mph. SIDs that display the actual speed vehicles are travelling are likely to see average speed reductions of 3-4mph. However, the signs are most effective within the first two to three weeks where drivers are often surprised by the sign illuminating and reduce their speed accordingly. This is especially the case for the signs that display motorists speed as they travel past.

Figure 12 provides an example of a basic VAS, and figure 13 provides an example of a higher cost SID that displays vehicular speeds.



Figure 12 – Example of basic VAS displaying speed limit



Figure 13 – Example of more expensive SID displaying vehicle speed

An alternative to fixed SID, is to utilise mobile VAS. These are signs that can be operated in any location due to the sign sitting on a stand. These signs are most commonly found as part of SpeedWatch programmes. This is an option that

Stradbroke Parish Council could consider, as this would enable the sign to be rotated through the village, which is likely to increase the effectiveness.

Figure 14 provides an example of a mobile VAS that displays vehicle speeds.



Figure 14 – Example of mobile VAS displaying vehicle speed

It is therefore recommended that if the Parish Council wish to pursue these signs, it should be a SID if it will be a permanent sign, or a VAS if it will be a mobile sign that relocated across the village. Although the effectiveness is highest within the first two to three weeks, they continue to reduce speed. Based on the traffic survey along Laxfield Road, traffic speed is high enough to justify at least one permanent sign.

The installation of a SID should be limited regardless of the size of the village to avoid the effectiveness of the signs reducing, which may occur through implementation of multiple devices. In the case of Stradbroke, there could be justification for one sign on each approach to the village. This would result in four signs, which seems excessive based on the location and size of Stradbroke. It seems that traffic speed is higher east-west compared to north-south. Therefore, it's recommended that two signs are prioritised approaching the village along New Street and Church Street/Laxfield Road.

The caveat to this would be if the 20mph zone was introduced along Queen Street. A SID is classified as a traffic calming measure, meaning it could be a lower cost intervention to support the 20mph zone. There would be greater benefit in installing the sign for southbound traffic approaching the school as traffic speed is higher in this direction. This is likely due to the traffic travelling from a higher speed road.

Figure 15 provides a plan that illustrates the suggested locations of the two SIDs.

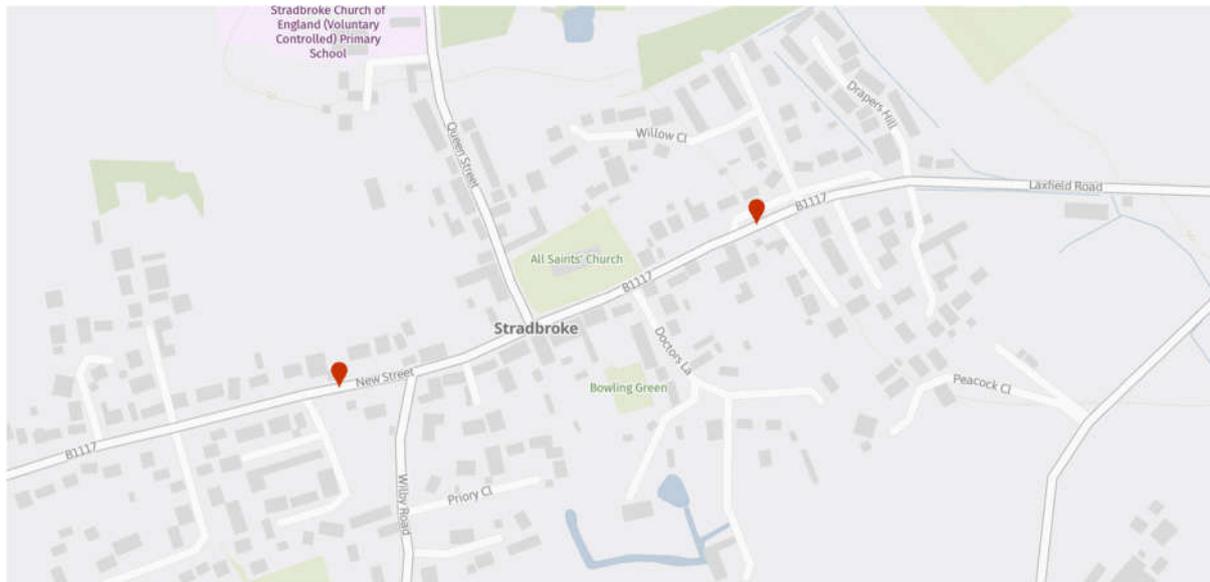


Figure 15 – Suggested location for SIDs along the B1117

The cost is dependent on the type of sign purchased. Due to the rural environment, and the amount of traffic travelling through the village, which may encourage speed, it's recommended to purchase the higher cost, greater effectiveness SID. This can either be fixed position signs, or mobile signs that can be rotated through the village. SIDs can be installed with solar panels, which can increase the lifespan of the battery.

These signs are likely to cost in the region of **£3,000-£5,000** per sign. Therefore, two signs will cost approximately **£6,000-£10,000**.

Intervention	Safety	Speed	Volume	Impact	Total	Cost
Installation of Speed Indicator Devices (SIDs)	7/10	8/10	4/10	8/10	27/40	9/10

5.8 REMOVE CENTRE LINE ALONG THE B1117 AND B1118

To access Stradbroke, traffic is required to use either the B1117 (east-west) or the B1118 (north-south) Both these roads at times can have moderate amounts of traffic flow travelling in both directions. Through the central part of the village there is many residences, and key locations that sit close to the carriageway edge, which increases the chance of safety issues if vehicles are travelling at excessive speeds. To mitigate against this the proposal would be to remove the centre line on the carriageway.



In removing the centre line marking it can reduce the drivers confidence to travel at excessive speed by ensuring that there is no defined area to travel on the road. This lack of confidence in the position you undertake when travelling means that the driver at times will decrease speed because of potential conflict on the carriageway.

This intervention is best used primarily on B roads and minor roads as the traffic flow should be moderate to low. It is proposed that this intervention be introduced along both the B1117, and the B1118. This intervention would contribute to an overall reduction in speed and an improvement in safety.

In the central area of the village the centre line is faded but still visible. It is unknown if SCC are deliberately allowing the centre line to fade under a “Do Not Refresh” instruction, or whether it’s on a forward plan for future refreshment. This will have an impact on cost. Allowing the centre line to fade away will result in no budget being needed. If the centre line is removed, it would most likely require a contractor to come in for a day to remove the lines. This would cost approximately **£2,500 - £3,000**.

Whilst a cost saving would be made if SCC allowed the centre line to fade under a “Do Not Refresh” instruction, it would take longer to resolve. Whilst the centre line along Church Street in particular is faded, the centre line in other locations within the village is more prominent. For example, along New Street, and Queen Street. For consistency it’s recommended to arrange for the centre line to be removed due to the low cost.

Intervention	Safety	Speed	Volume	Impact	Total	Cost
Remove centre line along the B1117 and the B1118	5/10	6/10	4/10	4/10	19/40	10/10

5.9 ACCESSIBILITY IMPROVEMENTS THROUGHOUT VILLAGE

It was noted during the site assessment, that there are a number of junctions where pedestrians need to cross the carriageway do not have the appropriate infrastructure in place to make the crossing points accessible to all Non-Motorised Users (NMUs). In Stradbroke village, there are junctions without dropped kerbs, and junctions without tactile paving. Junctions without dropped kerbs will make it extremely difficult for users that rely on wheels, such as wheelchair users, and pedestrians with push chairs to navigate the junction safely. Without dropped kerbs, these NMUs may have to walk in the carriageway where there is a dropped kerb, increasing the risk of collisions.

In addition to these NMUs those that are visually impaired will rely upon the tactile paving to determine suitable locations to cross. Without this in place, there is a risk that they may cross in an inappropriate location, which may result in collisions with vehicular traffic. Therefore, it’s considered important that both dropped kerbs and tactile paving are implemented throughout Stradbroke village at key crossing points.

Examples of junctions where accessibility improvements are necessary include:

- New Street junction with Woodfields;
- New Street junction with Wilby Road;
- Church Street junction with Queen Street;
- Church Street junction with Shelton Hill;
- Queen Street junction with Westhall;
- Westhall junction with Grove End.



Accessibility improvements will not impact traffic speed through the village. It will also not discourage non-residential traffic from travelling through the village. However, it's likely to see a road safety improvement as all NMUs will be able to cross the road at the most suitable location, and will remove the need to travel along the carriageway.

The cost of the intervention is dependent on the number of sites chosen for inclusion. To convert a full height kerb to a dropped kerb, and implement tactile paving, the cost is expected to be in the region of £2,500. As both sides of the carriageway need to be delivered, this results in an approximate cost of **£5,000**. The more sites included, the higher the economy of scale should be. This may reduce the cost to **£4,000** per site.

Figure 16 below provides an example of a junction that is accessible for all NMUs, with dropped kerbs with a small upstand to aid understanding that it's a junction, and tactile paving on both sides of the carriageway in the centre of the footway.



Figure 16 – Example of an accessible junction for all NMUs

Intervention	Safety	Speed	Volume	Impact	Total	Cost
Accessibility improvements throughout village	6/10	3/10	3/10	4/10	16/40	8/10

5.10 PEDESTRIAN CROSSING ALONG QUEEN STREET NEAR PRIMARY SCHOOL / CHURCH STREET & QUEEN STREET JUNCTION

As stated within this report, road safety concerns have been raised on a lack of safe facilities for pedestrians to cross Queen Street to access the primary school from the Westhall area, with a number of residential properties situated within the roads. There appears to be a number of children attending the primary school walking from Westhall. As there are no crossing facilities, there is pedestrians crossing in various places along Queen Street, which creates a significant road safety risk at peak times.

Although the mean traffic speed isn't a cause for concern, the volume of traffic is high at peak times. During the site assessment numerous pedestrians attempted to cross this location waiting upwards of 45-60 seconds during peak periods. Vulnerable road users including children and the elderly struggle even more. Therefore, it is recommended that a pedestrian crossing point is implemented in a suitable location that provides a crossing point from Westhall onto the western side of Queen Street where the school is located.

Figure 17 demonstrates the location where a pedestrian crossing could be considered.





Figure 17 – Location for a proposed crossing along Queen Street

In addition to this location, there is also cause for concern with pedestrians crossing the carriageway in vicinity of the Church Street / Queen Street junction. Although visibility is adequate along Church Street (into New Street), there is on-street parking, which restricts visibility on the northern side of Church Street. The width of the carriageway is also wide, which can encourage traffic speed, and results in a longer distance for pedestrians to cross. Again, it was observed that pedestrians are crossing at various points within the extents of the junction, increasing the risk of collisions.

Figure 18 demonstrates the location where a pedestrian crossing could be considered.





Figure 18 – Location for a proposed crossing near junction of Church Street / Queen Street

It is possible to implement a controlled crossing (Zebra crossing) or an uncontrolled crossing at this point to enable pedestrians to safely cross the carriageway. The most suitable crossing is likely to be a Zebra crossing, although the local highway authority would need to undertake a PVM² survey to confirm the threshold for this type of crossing is met. The threshold compares the number of pedestrians looking to cross the road with the volume of traffic. The more pedestrians looking to cross and the higher the traffic volume, the more importance for a controlled crossing. This will give pedestrians the right of way. A Zebra crossing will slow traffic down further, which has additional benefits for the village, and can contribute towards the proposed 20mph zone along Queen Street near the primary school discussed in chapter 5.6 above.

It is possible to utilise a Zebra crossing for traffic calming further still by constructing the crossing as a humped crossing. This involves constructing a speed table that raises the crossing point to the same height as the footway. This requires traffic to slow down further than a standard crossing, which is likely to make the crossing safer still. This could work at either of the two locations described above. Although this study has dismissed speed humps and ramps, a humped crossing has additional benefits, and due to the longer tabletop, many of the drawbacks of speed humps don't apply.

Implementing a Zebra crossing is a high-cost intervention and the approximate cost of is likely to be in the region of **£50,000-£60,000** for a standard crossing and a further **£10,000** for a humped crossing. There are a lot of variables that need to be considered such as lighting and ducting as well as locating the crossing. There is also design,

consultation, and legal fees that are required for implementation. Therefore, the total cost involved is likely to exceed **£75,000-£80,000**. The illumination would need further investigation as there isn't any street lighting along Queen Street near the crossing.

A Zebra crossing usually results in average speed reductions as much as 5mph in the direct vicinity as the majority of traffic reduces speed when approaching a crossing in case pedestrians start to cross the road. Figure 19 below shows an example of a Zebra crossing and figure 20 provides an example of a humped crossing.



Figure 19 – Example of Zebra crossing



Figure 20 – Example of humped Zebra crossing

An alternative to a controlled crossing at this point is the installation of an uncontrolled crossing. An uncontrolled crossing is a less intrusive crossing point and is often used in locations where the demand for pedestrians to cross the carriageway is lower. An uncontrolled crossing point is much cheaper compared to a Zebra crossing, although it isn't as safe as pedestrians do not have the right of way over traffic.

An uncontrolled crossing usually involves a dropped kerb and tactile paving either side of the carriageway. On wide roads, it is sensible to include a central island to reduce the time pedestrians are crossing the carriageway and provide more opportunities to cross i.e., when one direction is clear rather than waiting for both lanes to be clear. The width of the carriageway along Queen Street doesn't require a central island. The proposed location near the junction of Church Street and Queen Street may be wide enough to consider a central island.

The cost of implementing an uncontrolled crossing point is likely to be in the region of **£10,000-£20,000** depending on whether a central island is included. Figure 21 below shows an example of an uncontrolled crossing point.



Figure 21 – Example of uncontrolled crossing

Intervention	Safety	Speed	Volume	Impact	Total	Cost
Pedestrian crossing along Queen Street near primary school	9/10	8/10	3/10	8/10	28/40	5/10
Intervention	Safety	Speed	Volume	Impact	Total	Cost
Pedestrian crossing Church Street & Queen Street junction	9/10	7/10	3/10	8/10	27/40	5/10

5.11 CONTINUOUS FOOTWAY ALONG QUEEN STREET FOR ACCESS ROAD INTO INDUSTRIAL SITE

A continuous footway is where the footway is extended across a junction, changing priorities. This means that traffic is required to give way to pedestrians. A continuous footway allows for an increase in pedestrian safety and an increase in attractiveness for use. A continuous footway increases user confidence, often a sense of place, and it provides priority for pedestrians at junctions over motor vehicles. Continuous footways are becoming more and more popular as a method to prioritise pedestrians over motor traffic. Whilst more common in urban environments, rural locations are now beginning to consider the use at appropriate sites (cul-de-sacs or residential roads).

The design of a continuous footway can vary to meet the requirements of Stradbroke. However, the key design feature is to utilise the same material / surface colour across the junction as the existing footway. This creates the continuous nature of the footway, making it more obvious to traffic that they are required to give way. The installation can make the footway more attractive and contribute to the overall public realm.

An example of a continuous footway is shown in figure 22 below.



Figure 22 – Example of a continuous footway

The current layout of the junction is a typical junction layout with the footway stopping at the junction to give-way to any traffic entering or exiting the industrial site. Whilst there are dropped kerbs in place, they are poorly positioned. There is no tactile paving. A pedestrian with limited vision may take an incorrect path from the footway due to the position of the dropped kerbs. Due to the limited path width, and the angle of the

dropped kerbs, it may be difficult for pedestrians that use wheelchairs or pushchairs to negotiate the junction at ease. Extending the footway will remove these issues.



The cost of a continuous footway is expected to be in the region of **£20,000-£25,000** per junction, making this a medium cost proposal. This is dependent on the size of the junction, and the type of materials / surface utilised. Whilst there are a number of sites within Stradbroke where this could be implemented, it is recommended that one site is constructed and monitored first before progressing additional sites. This proposed site appears logical, as the access road is subject to low levels of traffic, but higher volumes of pedestrian footfall, especially during school drop-off and pick-up times.

Intervention	Safety	Speed	Volume	Impact	Total	Cost
Continuous footway along Queen Street for access road into industrial site	6/10	4/10	3/10	6/10	19/40	7/10

5.12 PRIORITY GIVE WAY ALONG NEW STEET & LAXFIELD ROAD

Based on the attractive environment of Stradbroke, along with the costs associated with more physical traffic calming measures, Ethos have where possible prioritised alternative interventions that can deliver both road safety improvements and speed reduction. However, it’s critical that road safety interventions are consistent throughout the village to achieve the ultimate aim of behaviour change with road safety.

The outer extents of the village, will be more challenging to deliver road safety improvements and traffic speed reduction without more intrusive physical traffic calming interventions. This is because the environment is different (less populated, and more open), which has been shown to encourage speed. In the case of New Street

and Laxfield Road, the roads are relatively straight in alignment with good visibility, which also encourage traffic speed. Based on this, it's felt that physical traffic calming measures will be the most effective to increase safety, and discourage traffic speed.

Figure 23 illustrates the alignment and visibility along New Street, approaching the village centre from the west, and figure 24 illustrates the same along Laxfield Road, approaching the village centre from the east.



Figure 23 – Road alignment and visibility along New Street approaching the village centre



Figure 24 – Road alignment and visibility along Laxfield Road approaching the village centre

It has been observed from the site visit that a viable intervention would be to implement a priority give-way along both New Street and Laxfield. This would involve a carriageway build out and give-way markings that would increase the overall safety of the area and also condition drivers of the awareness of entering into a village area where there are increase of possible conflicts and NMU interactions.

A priority give-way prevents two-way traffic passing. As a result of this, it is necessary to signpost a direction of traffic that has priority, as well as the direction of traffic that

is required to give-way. Due to a direction of traffic having priority, it's vital that the most appropriate direction is determined.

Traffic travelling eastwards along New Street would be required to give-way to westbound traffic, and traffic travelling westwards along Laxfield Road would be required to give-way to eastbound traffic. This means traffic approaching the village centre from both directions would be required to give-way, reducing speed at key locations prior to traffic entering the village centre. In conjunction with additional road safety interventions prior to the priority give-ways, and into the centre, will result in a consistent approach to speed reduction, resulting in a continued reduction in speed.

This intervention will be effective at mitigating against the tidal traffic flow that may occur in the morning and evening when traffic is using the B1117 to access other locations in the local area. Having a requirement to give-way entering the village from the east and west may discourage traffic from using the route, especially during busier periods of the day. It also forces traffic speed to reduce at a key point in the village.

Figure 25 below provides an example of a priority give-way system in operation.



Figure 25 – Example of a priority give-way system

A priority give-way system would be a medium cost measure and is likely to require a budget of approximately **£20,000-£25,000** to implement with design costs and any associated works. Although it's not critical for the village to have a priority give-way system on both approaches to the village, the intervention will work better having one either side of the village centre. Therefore, the cost for both would be **£40,000-£50,000**. Priority give way-systems work best with a by-pass for cyclists so they do not

have to enter into the narrowed carriageway. The costs include the relevant signage and road markings needed including the priority and give way signage.

A priority give-way system requires illumination such as street lighting or illuminated bollards. There is currently no street lighting within these sections of Stradbroke village. This means that consideration would need to be given to alternative illumination requirements. There are examples across the country where priority give-way systems are implemented without street lighting, but this increases the risk of vehicles colliding with the measure, and would need discussion with SCC officers.

Intervention	Safety	Speed	Volume	Impact	Total	Cost
Priority give way along New Street and Laxfield Road	7/10	8/10	5/10	6/10	26/40	6/10

5.13 ROAD NARROWING OUTSIDE POOL AND FITNESS CENTRE

Stradbroke Swimming Pool and Fitness Centre appears to be a popular trip generator within the village, with customers attending across the day. In addition to this, the site has an outdoor playground, community centre, a medical centre, a recycling centre, and additional sports facilities including tennis, and bowls. Although there is frequent traffic entering and exiting the site, there is also high footfall from local residents.

There is currently only a small section of footway on the western side of Wilby Road where the site is located. This travels from the site northwards for approximately 25 metres. There is no footway to the south of the site on the western side of Wilby Road. There is however a footway on the eastern side of Wilby Road that travels northwards to connect into the village centre. There isn't sufficient width within the extents of the public highway to consider constructing a new footway on the western side of the road.



There are no crossing facilities along Wilby Road to support pedestrians cross the carriageway to access the site. This may discourage some residents from walking, resulting in additional traffic on the local road network. The pedestrians that are walking are crossing the carriageway at various locations, similar to the situation along Queen Street to access the primary school from Westhall. To improve safety, and encourage local residents to walk to the site, it's felt that intervention is required.

Based on site observations, it's felt that there is less demand for a controlled pedestrian crossing i.e. zebra crossing. Therefore, an uncontrolled pedestrian crossing would be an effective intervention. Similarly, to the priority give-way system as outlined above, a traffic calming measure would be a useful inclusion along Wilby Road, as traffic enters the village centre from the south. Implementing a road narrowing will reduce traffic speed, and provide an uncontrolled crossing point.

A road narrowing differs to a priority give-way system. The carriageway is narrowed on both sides for a small distance (usually no more than approximately 5 metres). Whilst the carriageway is narrowed, it still enables two-way traffic to pass, based on standard motor vehicles. However, it creates apprehension that two-way traffic cannot pass, and as a result a driver will slow down as they pass through the narrowing.

To achieve a road narrowing, a new kerbline should be constructed into the carriageway on both sides. The top of the new kerbline can either be grass or a hard standing. Illumination is recommended but can be substituted by high levels of retro reflectivity' or similar. Whilst the primary aim of a road narrowing is to achieve a speed reduction at a specific point, it reduces the carriageway width for pedestrians to cross.

Figure 26 provides an example of a road narrowing that incorporates a crossing point.



Figure 26 – Example of a road narrowing with pedestrian crossing facilities

A road narrowing would be a low-medium cost measure and is likely to require a budget of approximately **£10,000-£15,000** to implement with design costs and any associated works. The costs include the relevant signage and road markings needed. A road narrowing doesn't have the same illumination requirements although it may be necessary to consider some type of illumination such as reflective bollards.

Intervention	Safety	Speed	Volume	Impact	Total	Cost
Road narrowing outside Pool and Fitness Centre Wilby Road	6/10	6/10	6/10	6/10	24/40	8/10

5.14 ROAD ENHANCEMENTS ALONG CHURCH STREET

One of the most effective methods of reducing traffic speed without the introduction of physical traffic calming measures such as speed humps and priority give way systems is through changing the environment in a substantial way. Examples of this would include the type of road surface or the surrounding buildings / landscape. Without necessarily realising it, the majority of drivers will reduce speed when they pass schools or see lots of children nearby.

In rural villages, the changing of landscape isn't always a viable solution to achieving a reduction in speed due to the lower footfall and facilities because of the size of the village. This is one of the primary reasons there is often speed issues within rural villages. As a large number of rural villages are not within the strategic road network, it does provide the opportunity to consider adjusting the road surface to achieve the perception of a changed environment. The most common and effective method of achieving this is changing the colour of the road surface i.e., to buff coloured.

The contrast between the traditional tarmacked surface and the new buff coloured surface causes a driver to slow down, especially if the surface coloured is combined with other interventions such as the creating of a shared environment or removal of road markings. To achieve the speed reduction, it is important that the areas of surface treatment are restricted. If the entire surface through a village was changed, the impact would be much smaller. As well as this, surface treatments usually come with higher maintenance liabilities, which the local highway authority will likely resist.

Therefore, within Stradbroke village, only the most crucial area has been considered for this type of intervention. The most suitable location for this type of intervention would be along Church Street in the vicinity of the junctions of Wilby Road and Queen Street. This area could be considered the hub of the village and the centre point. It is recommended to locate the change of surface from a point approximately 45 metres east of the junction with Wilby Road to the west, and continue the surface treatment to a point where the White Hart pub is located, about 50 metres east of Queen Street.



Figure 27 below provides an example of the impact a surface colour treatment can have within a village environment. This is the approach recommended at this site.



Figure 27 – Example of changing the surface colour to enhance the environment

An alternative to changing the surface colour would be to change the surface material instead. This could incorporate a change of colour as well i.e. sand coloured block paving. There are several different surface materials that can be considered, ranging from high quality materials such as granite setts, and yorkstone paving to slightly lower cost materials such as natural stone, and concrete blocks. Church Street is situated within a conservation area so any changes or improvements would need to adhere to constraints imposed and specific planning controls.

The decision on the type of surface material should be based on numerous considerations. Certain materials are more defined in specific colours, which may make the use dependent on surrounding materials and colours. As expected, the higher quality materials such as granite setts, and yorkstone paving are more costly to install, both the purchasing and construction, and the ongoing maintenance.

Due to the higher costs, the use of these surface materials is far more infrequent than tarmac and other lower cost materials. Apart from major regeneration schemes often reserved for city and town centres, it's rare for continued use of the materials over a wide area. Instead, the materials are used sparingly in conjunction with lower cost materials such as tarmac. It can be effective to use the higher quality materials with coloured road surfacing, which can create an enhanced environment with a much lower cost than only using the materials.

Figure 28 provides an example of a surface treatment using different materials to change the environment, which would be as effective as changing the surface colour.



Figure 28 – Example of changing the surface material to enhance the environment

The cost of implementing a surface enhancement intervention is high. There is a large amount of work required to implement this proposal. This includes design work, work around drainage provision, and the commuted sums involved as a result of delivering a higher quality surface treatment. To implement the intervention within the vicinity of the above mentioned areas is likely to cost in the region of approximately **£75,000 - £80,000**. Proceeding with the surface material would likely be a higher cost intervention, and would cost in the region of **£100,000-£120,000** for the same area.

Intervention	Safety	Speed	Volume	Impact	Total	Cost
Road enhancements along Church Street	6/10	7/10	4/10	9/10	26/40	5/10

5.15 JUNCTION IMPROVEMENTS CHURCH STREET / QUEEN STREET

As highlighted in several parts of this study report, concerns have been raised with the safety of the Church Street and Queen Street junction. The layout of the junction is expansive, with poor pedestrian facilities, such as no dropped kerbs, and limited visibility in places due to on-street parking. Based on the layout of village, this junction feels like the centre of the village, especially due to the location of nearby buildings such as All Saints Church, the Spar convenience store, and the White Hart pub.



Therefore, it is a recommendation of Ethos to make improvements to this junction. A number of the interventions outlined above, such as the proposed 20mph speed limit, and controlled crossing point will improve safety within the extents of the junction. Not with standing this, further improvements should be considered. Most notably, the size of the junction appears to be excessive. Reducing the size of the junction will have a number of benefits for road safety, and traffic speed, especially in combination with other interventions. Accessibility improvements is considered vital for this junction.

Two options have been considered for the junction. Initially, it was felt that this junction may operate well as a mini roundabout. A mini roundabout is most effective when there is a fairly even split of traffic movement. If there are heavy flows in particular directions, it cannot be effective and can become a safety risk in itself. Based on site observations, there appears to be a fairly even distribution of traffic. Undertaking the additional traffic surveys as suggested in this report, would be an effective way of providing this confirmation.

It wouldn't be considered safe to simply install the mini roundabout in the middle of the junction as there would be no deflection. Therefore, the positioning of the junction would need refinement and development with Suffolk County Council. It may be necessary to introduce some parking restrictions to support the mini roundabout.

The effectiveness, and therefore the suitability of a mini roundabout as an intervention for Stradbroke village is heavily reliant on the design, to achieve the deflection. Without deflection for the east-west traffic movement along Church Street, speed may not reduce, which will increase the potential for collisions to occur with traffic exiting from

Church Street. Therefore, the design should include building out a kerb line and shifting the junction slightly further west than the existing give-way arrangement.

Figure 29 below provides a typical layout of a mini roundabout and how it would work at the junction of Church Street and Queen Street. Figure 30 demonstrates how adding some deflection into the mini roundabout will impact traffic movement through the junction. This ensures that traffic proceeds through the junction at slower speeds.

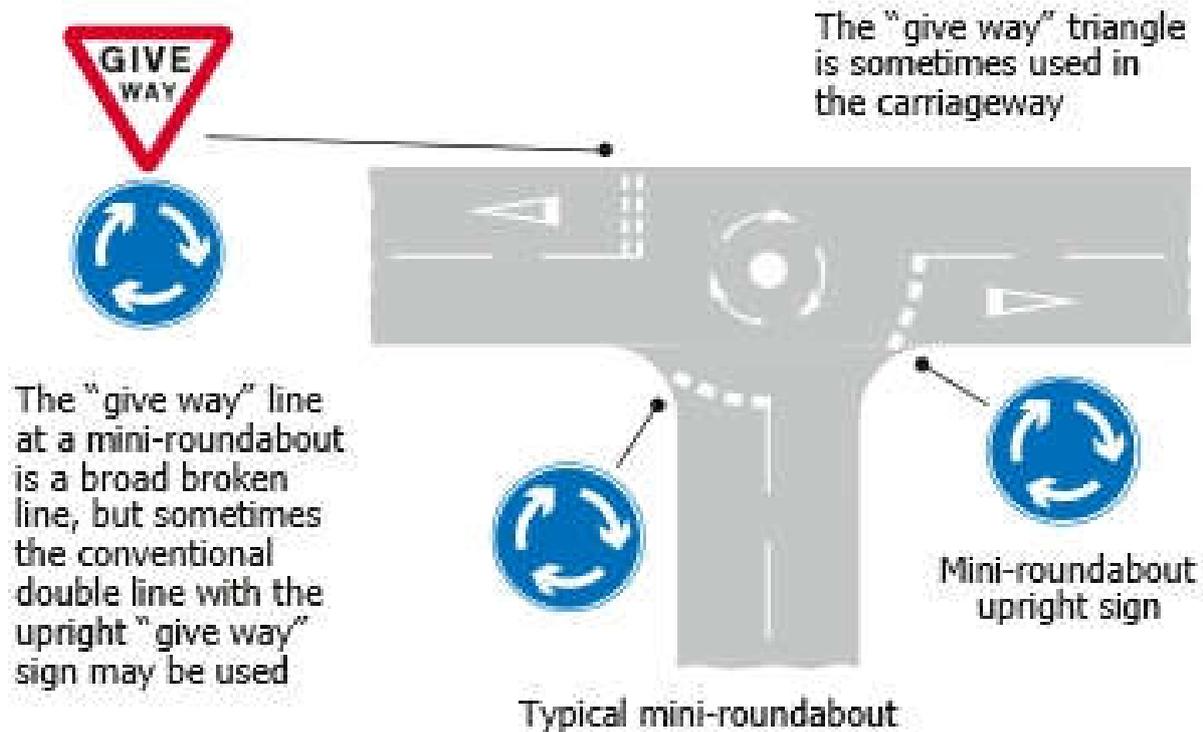


Figure 29 – Typical example of a mini roundabout

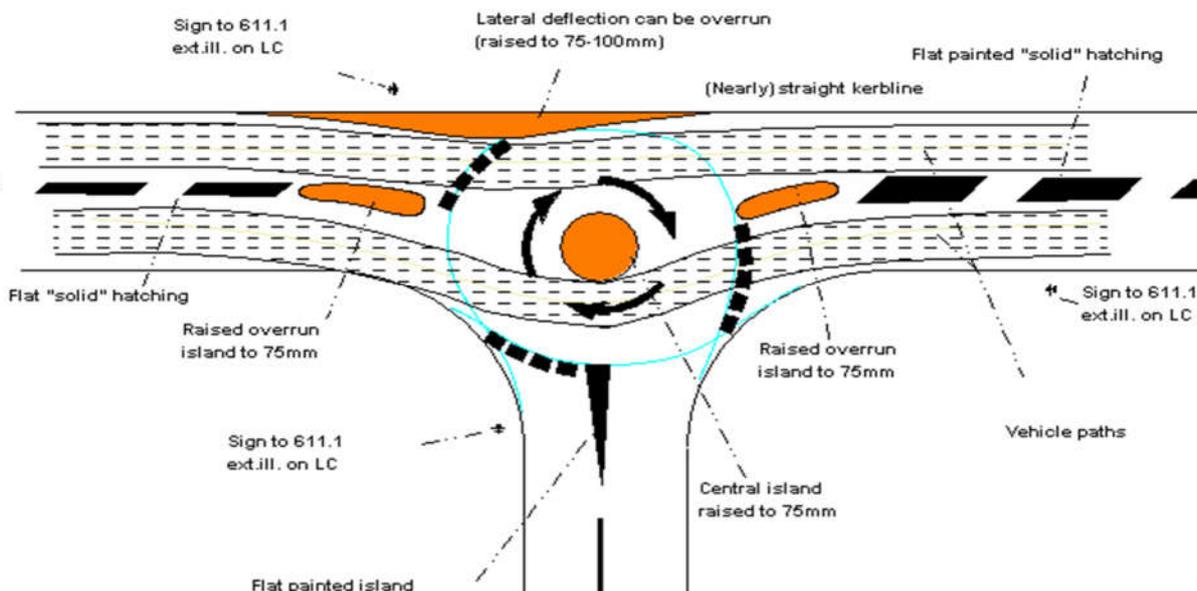


Figure 30 – Illustration of traffic movement through junction with deflection

Mini roundabouts are a very effective form of traffic calming as long as they are implemented correctly as traffic in all directions will need to slow down. Deflection is crucial to control speed through the junction, and it is helpful to raise the mini roundabout circle to create a dome as this reduces traffic travelling over the centre of the junction. Sight lines are important to ensure traffic can be seen, and illumination is required to ensure it can be seen during darkness. At this junction it's acknowledged that there is some existing access and off-street parking that will need consideration during the detailed design stage to ensure the appropriate sight lines are achieved.

The cost of implementing a mini roundabout is dependent on the style and the required infrastructure. A standard style relies predominately on road markings. The physical works will be the deflection and any infrastructure requirements. As part of the design work, it's vital that swept path analysis is undertaken to ensure all vehicle movements can be safely undertaken within the junction footprint. An overrun area may be required for larger vehicles. It may also be necessary to acquire a small parcel of land if there is insufficient room for all vehicle movements.

The cost for this intervention is likely to amount to approximately **£60,000-£75,000**. This cost estimate is based on a traditional road marking design with 75mm dome roundabout and deflection built into the north of Church Street. An alternative to the mini roundabout option would be to build out the footway at the junction, to shrink the size of the junction.

This in turn will reduce the crossing time for pedestrians, as there will be less carriageway to cross. Whilst this would improve road safety for pedestrians, there would be limited speed reduction, especially for traffic travelling east-west along Church Street into New Street or Laxfield Road.

Therefore, it would be necessary to incorporate additional measures to reduce traffic speed for east-west movements. Similarly to the suggestion incorporated into chapter 5.14, consideration could be given to raising the junction. Whilst Ethos are recommending that speed humps and cushions are not implemented within Stradbroke due to the environment of the village, and the negative impacts speed humps and cushions can bring, a raised junction does mitigate many concerns raised.

Whilst a speed humps and cushions can be very uncomfortable due to the immediate up and down, a raised junction has a much longer tabletop, which means travelling up and then down is less impactful. However, they are just as effective at reducing traffic speed, as the impact becomes much greater based on the speed of traffic.

Introducing a raised junction provides a number of additional benefits, including the opportunity to integrate the intervention with others. For example, the tabletop could become the surface area where alternative colours or materials are implemented, which will create a better environment. It will also enable the controlled crossing point to be incorporated into the design, which will reduce traffic speed on the approach, as well as making it more accessible due to the level surface with the footway.

Figure 31 provides an example of an extended raised junction that incorporates attractive surface materials into the design to increase the feeling of place.

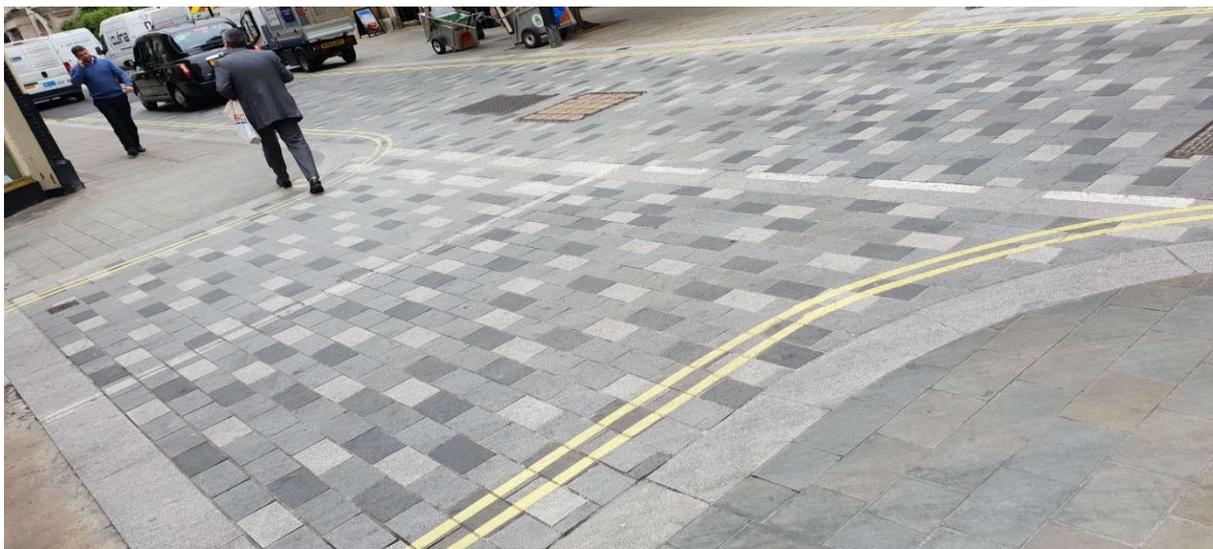


Figure 31 – Example of attractive raised junction with surface materials

Whilst both options contain benefits and drawbacks, it's the opinion of Ethos that the raised junction in combination with the footway widening to shrink the size of the junction is the more preferable option. This is based on the attractiveness of how the intervention can look (especially with the inclusion of surface materials), as well as the opportunity to integrate additional interventions into the design, as discussed. However, engagement with SCC may influence the final decision taken forward.

The cost of implementing this intervention is high, albeit within the same threshold as the mini roundabout option. Further investigation, and design work is required to confirm a suitable design that meets the requirements i.e. turning movements of all

vehicles that will travel through the junction. Providing an accurate cost isn't possible at this stage, as it's unknown if SCC will have any non-negotiables around the design and what is incorporated. Building out the footway to shrink the junction will cost in the region of **£20,000-£25,000**. Raising the junction will add a further **£20,000-£25,000** onto the price. A similar amount will be required to incorporate surface materials.

Based on the above, it's likely that **£60,000-£75,000** will be required to deliver the gold plated option for this intervention. This should be the aim of the Parish Council due to the road safety benefits it will bring, in addition to the attractiveness and feeling of place. Integrating this intervention with others will obviously increase the cost, although it would result in a cost saving compared to treating the interventions as separate. For example, integrating the controlled crossing may cost approximately £100,000-£120,000, whereas both interventions separately could cost £150,000.

Intervention		Safety	Speed	Volume	Impact	Total	Cost
Junction improvements	Church Street / Queen Street	7/10	8/10	6/10	9/10	30/40	6/10

6.0 THE PROPOSALS

Table 4 shows a list of the 15 proposed interventions along with the overall cost effectiveness score. This has been calculated by combining the effectiveness score (safety, speed, volume, and impact score) to create an overall effectiveness score, and dividing the total by four, to create an average effectiveness score.

This score is then combined with the cost score to create an overall score out of 20. For example, introducing a 20mph zone along Queen Street outside the primary school scored 8/10 for safety, and speed, 7/10 for volume, and 8/10 for impact. This provides an effectiveness score of 31/40, but an average overall score of 7.8/10. Combining the 7.8/10 with the cost score of 6/10 results in an overall intervention score of 13.8/20.

Combining the effectiveness and cost scores prevents the highest cost interventions becoming higher priority interventions, which is likely to occur without this combination, due to the benefits these interventions will bring. For example the study identifies seven opportunities that involve physical intervention within the public highway. These are likely to score higher than less intrusive non-physical interventions as prevent traffic from continuing to behave as it may currently do. However, the costs involved in implementing these interventions are much higher than non-physical interventions.

The highest rated road safety intervention for Stradbroke village achieves an overall score of 16.0, which is the implementation of a 20mph limit within village centre. This intervention can be classified as a low cost intervention (cost score of 9/10). The second highest rated intervention was the installation of Speed Indicator Devices (SIDs), which scored 15.8. This is also a low cost intervention (9/10 score).

The third (implementation of new 40mph speed limit on the approaches to the village), and fourth (gateway treatments at 30mph terminals on approaches to Stradbroke) were also low scoring interventions (9/10 score), achieving an overall score of 15.3, and 15.0 respectively. Following these interventions, the next highest scoring intervention was the removal of the centre line along the B1117, and the B1118, which achieved an overall score of 14.8. This is the lowest scoring intervention included in the study, scoring 10/10 for cost, which isn't likely to exceed **£3,000** to deliver.

The highest scoring intervention that didn't achieve a cost score of 9/10 was a road narrowing outside the Swimming Pool and Fitness Centre along Wilby Road. Scoring 14.0 overall, the cost score was 8/10, which still classifies the intervention as a lower costing intervention. Junction improvements at the junction of Church Street and Queen Street is the highest scoring intervention that isn't classified as low cost. This intervention achieved an overall score of 13.5, and a cost score of 6/10.

The lowest scoring intervention from the assessment is road enhancements along Church Street. This intervention achieved an overall score of 11.5, and a cost score of 5/10. Even though this would be an effective intervention for Stradbroke, it's one of the highest cost interventions included within the study. What this means is that although the intervention is likely to deliver good road safety improvements, it's unlikely to deliver substantially better improvements compared to the lower cost interventions. A value engineering exercise would likely improve the overall score.

Table 4 provides all 15 interventions, and the overall intervention score out of 20.

Ref	Intervention	Safety	Speed	Volume	Impact	Total	Cost	Overall Score
1	Gateway treatments at 30mph terminals on approaches to Stradbroke	6	7	3	8	24	9	15
2	Improvements to traffic signage	4	5	3	5	17	9	13.3
3	Implementation of new 40mph speed limit on the approaches to the village	7	7	3	8	25	9	15.3
4	Implementation of 20mph limit within village centre	7	7	5	9	27	9	16
5	20mph zone along Queen Street	8	8	7	8	31	6	13.8
6	Installation of Speed Indicator Devices (SIDs)	7	8	4	8	27	9	15.8
7	Remove centre line along the B1117 and the B1118	5	6	4	4	19	10	14.8
8	Accessibility improvements throughout village	6	3	3	4	16	8	12
9	Pedestrian crossing along Queen Street near primary school	9	8	3	8	28	5	12
10	Pedestrian crossing Church Street & Queen Street junction	9	7	3	8	27	5	11.8
11	Continuous footway along Queen Street for access road into industrial site	6	4	3	6	19	7	11.8
12	Priority give way along New Street and Laxfield Road	7	8	5	6	26	6	12.5

13	Road narrowing outside Pool and Fitness Centre Wilby Road	6	6	6	6	24	8	14
14	Road enhancements along Church Street	6	7	4	9	26	5	11.5
15	Junction improvements Church Street / Queen Street	7	8	6	9	30	6	13.5

Table 4 – Prioritised proposals for Stradbroke

Figure 32 provides a plan showing the locations for each of the interventions using the reference number from table 4 above. For instance, 1 highlights the proposed location of the 30mph gateway treatments. Please note that references 2,7, and 8 have not been included in this plan as these proposals would involve intervention throughout the village rather than at specific points within the village like those shown below are.

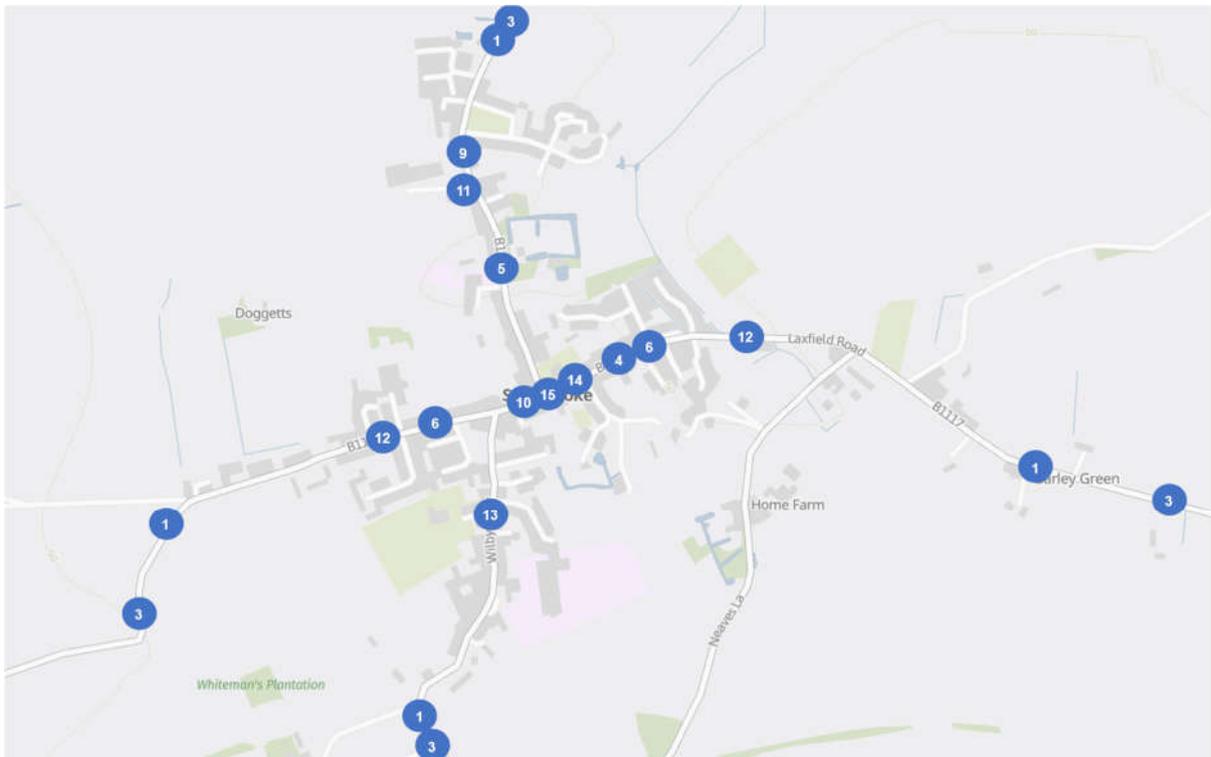


Figure 32 – Location plan for interventions

7.0 VISUALISATIONS

To support the narrative contained above on the most suitable and effective road safety interventions to consider within Stradbroke, Ethos have designed some visualisations to illustrate how the interventions may look if implemented on site. For some interventions, such as accessibility improvements, and improvements to signage, a visualisation isn't likely to offer much benefit.

Therefore, the interventions selected for this task are those that may not be fully understood by stakeholders i.e. road narrowing, or those that may be more of interest to stakeholders i.e. 20mph speed limit. The visualisation should demonstrate what the intervention is, and how it will look within the extents of the village.

Based on this, six interventions have been designed as part of this commission. These include:

- Implementation of 20mph limit within village centre (figure 33);
- Continuous footway along Queen Street for access road into industrial site (figure 34);
- Road narrowing outside Pool and Fitness Centre Wilby Road (figure 35);
- Road enhancements along Church Street (figure 36);
- Priority give way along New Street (figure 37);
- Pedestrian crossing Church Street & Queen Street junction (figure 38).



Figure 33 – Visualisation of proposed 20mph limit within village centre



Figure 34 – Visualisation of proposed continuous footway along Queen Street industrial site



Figure 35 – Visualisation of proposed road narrowing outside Pool and Fitness Centre Wilby Road



Figure 36 – Visualisation of proposed road enhancements along Church Street



Figure 37 – Visualisation of proposed priority give way along New Street



Figure 38 – Visualisation of proposed pedestrian crossing Church Street & Queen Street junction

8.0 PACKAGE OF MEASURES

Each of the interventions described in section 5 should achieve either a speed, or volume reduction, and improvements to safety through the village. Some interventions will achieve a greater speed / volume reduction and improvements to safety compared to others. On the whole, these will be related to cost. The most effective application of works would be to implement a package of measures, which collectively contribute to achieving a greater reduction in speed and overall, a greater improvement in safety.

Hence, this means that if improvements to the village gateways coupled with priority build-outs, then this would lead to a greater improvement in speed reduction, and overall safety, as opposed to implementation of just one proposal alone. The more measures combined; the greater the overall improvement is likely to be.

Some measures will work better in combination than others. Therefore, it is crucial that measures that complement each other are grouped together. For example, installing the 30mph gateway treatments, implementing an intermediate 40mph speed limit on the approach to the 30mph gateway terminal signs, and Vehicle Activated Signs would work well together as this would provide a consistent message heading towards the centre of the village, where traffic speed may be higher without intervention. This in addition to road enhancements such as within the junction of Church Street and Queen Street would reaffirm to the driver that they are travelling within a 30mph speed limit.

Therefore, the ambition for Stradbroke Parish Council should be to implement work package of measures that contain a number of interventions. The works package progressed should be largely based on the budget available. Stradbroke Parish Council should focus on the overall intervention score, as appose to the cost solely. For instance, if only £50,000 was available to address safety in the village, it wouldn't be recommended to progress a road enhancement intervention as this would utilise all the available budget, leaving no funding for additional interventions in the village.

To support the Parish Council understand what interventions will make the most suitable work packages based on the availability of budget, Ethos have produced three work package examples based on low, medium, and high cost budgets.

Please note, the approximate costs shown in tables 5-8 are based on a likely average. However, some interventions have been adjusted where there is flexibility in the

budget. For instance, a road enhancement scheme could be delivered for £70,000 but could be delivered for £90,000, based on the type of measures if funding permitted.

Whilst securing funding of £100,000 or more may seem aspirational, the aim should be for the Parish Council to seek match funding from Suffolk County Council. As road safety interventions within the public highway should be the responsibility of SCC as the highway authority, Stradbroke Parish Council are well within their right to request 100% funding. However, if Stradbroke Parish Council confirm that they can provide 50% of the funding this shows commitment to resolving the road safety issues in the village. This will increase the likelihood of gaining the 50% funding from SCC.

Table 5 illustrates a works package based on an available budget of £25,000.

Measure	Approximate Cost
Gateway treatments at 30mph terminals on approaches to Stradbroke village (based on two village approaches)	£8,000
Intermediate 40mph speed limit on approaches to village	£9,000
Installation of 2x Speed Indicator Devices	£8,000
TOTAL COST	£25,000

Table 5 – Example works package with budget of £25,000

Table 6 illustrates a works package based on an available budget of £50,000.

Measure	Approximate Cost
Gateway treatments at 30mph terminals on approaches to Stradbroke village (based on four village approaches)	£16,000
Intermediate 40mph speed limit on approaches to village	£9,000
Installation of 2x Speed Indicator Devices	£8,000
Implementation of 20mph limit within village centre (including along Queen Street)	£2,000
Uncontrolled pedestrian crossing Queen Street near school	£15,000
TOTAL COST	£50,000

Table 6 – Example works package with budget of £50,000

Table 7 illustrates a works package based on an available budget of £75,000.

Measure	Approximate Cost
Gateway treatments at 30mph terminals on approaches to Stradbroke village (based on two village approaches)	£8,000
Intermediate 40mph speed limit on approaches to village	£9,000
Installation of 2x Speed Indicator Devices	£8,000
Implementation of 20mph limit within village centre	£2,000
20mph zone along Queen Street	£48,000
TOTAL COST	£75,000

Table 7 – Example works package with budget of £75,000

Table 8 illustrates a works package based on an available budget of £100,000+.

Measure	Approximate Cost
Gateway treatments at 30mph terminals on approaches to Stradbroke village (based on four village approaches)	£16,000
Intermediate 40mph speed limit on approaches to village	£9,000
Installation of 2x Speed Indicator Devices	£8,000
Implementation of 20mph limit within village centre (including Queen Street)	£2,000
Junction improvements Church Street / Queen Street	£50,000
Uncontrolled pedestrian crossing Queen Street near school	£15,000
Road narrowing & uncontrolled crossing Wilby Road	£15,000
TOTAL COST	£115,000

Table 8 – Example works package with budget of £100,000+

Tables 5-8 demonstrate that three interventions have been included in all four work package examples. This is because they are effective regardless of the available budget due to the lower costs involved, and will be suitable for the rural environment of Suffolk. Based on this, it is the belief of Ethos that these should be prioritised. The tables also highlight interventions that have a reduced cost scheme included. These are interventions that can be value engineered to reduce budget. For example, a 20mph zone is expected to cost approximately £60,000. However, the intervention design can be adjusted to deliver within a lower cost budget i.e. £48,000.

The work package examples also illustrate the opportunity to amend the proposals based on the budget availability. For example, whilst the intervention along Queen Street promotes a 20mph zone, it's the opinion of Ethos that a 20mph speed limit should be sufficient for implementation based on the additional road safety interventions. Therefore, this should be a viable intervention for implementation.

9.0 NEXT STEPS

As part of the feasibility report, Stradbroke Parish Council have the opportunity to provide their comments and any recommendations that they are particularly keen to see progressed further. These comments will be provided below once they have had the opportunity to discuss the feasibility report in detail.

Following this, the Parish Council should then escalate the findings of this report to the local highway authority, Suffolk County Council. It is advisable to carry out some community engagement within the village prior to meeting with Suffolk County Council to discuss that some or all the costs may need to be supplied by Stradbroke Parish and that support for the proposals would need to be achieved.

The Parish Council hold a budget that may fund or contribute towards a works package. This should make the process around gaining approval from Suffolk County Council more straight forward compared to the process that would require SCC to fund the interventions entirely. However, it is recommended for the Parish Council to see contributions towards the interventions from SCC as part of their remit as the local highway authority. This would then enable more interventions to be delivered. For instance, if SCC provided £50,000 assuming Stradbroke Parish Council could allocate £50,000, this would provide a budget of £100,000 for interventions.

This feasibility study has highlighted potential interventions that is expected to improve road safety within Stradbroke village. To progress the study further, in conjunction with identifying funding opportunities, it is recommended that Stradbroke Parish Council consider developing all or some of the interventions to provide greater reassurance on the deliverability and community support alongside commencing dialog with SCC.

Based on this, there are three key steps that the Parish Council can undertake to support this process. These include:

- **Consultation** - This would be an informal consultation to stakeholders within the local community. This can include residents, and businesses. The feedback received from stakeholders can support existing recommendations or provide alternative actions due to experience or research already undertaken. This consultation should be focused on the works package that the Parish Council

wish to pursue rather than all potential interventions to avoid contrasting views that may appear that stakeholder support is low for individual interventions.

- **Surveys** – Further surveys can be commissioned that can contribute supporting data and understanding into the improvements that can be made within the village. Active travel surveys and discussions with targeted groups can support what the village wishes to achieve.

- **ATC Survey** – Although the Parish Council have two sets of traffic data collected by Suffolk County Council during the calendar year, further conclusive evidence can be achieved through the commissioning of additional ATC (Automatic Traffic Count) surveys. This additional data at locations such as New Street, Church Street, and Wilby Road would help support the data already accumulated, and enable origin and destination analysis to be undertaken.

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