SURREY
COUNTY COUNCIL

Charlton Village (C233 Charlton Road) Speed and Traffic Management Study

Feasibility Report

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1. INTRODUCTION:

The County Council has carried out this report at the request of the County Councillor for the local area who has received concerns from the residents of Charlton Village regarding vehicle speeds and safety along Charlton Road which runs north south through the centre of the village.

This road has therefore been assessed under Surrey County Council's policy (2014) for determining speed limits. The policy can be found at the following address:
https://www.surreycc.gov.uk/__data/assets/pdf_file/0011/28748/Setting_Local_Speed_Limits_Policy_July2014.pdf

This is an 8 step approach consisting of:

Step 1 – Request to change speed limit is received.

Step 2 – Measure existing speeds and analyse road casualty data.

Step 3 – Compare the existing speeds with the suggested new speed limit.

Step 4 – Conduct feasibility of supporting engineering measures.

Step 5 – Consult with Surrey Police Road Safety and Traffic Management Team.

Step 6 – Local Committee decision and allocation of funding

Step 7 – Advertisement of legal speed limit order and implementation.

Step 8 – Monitoring of success of scheme

There should be no expectation that the police would be able to provide regular enforcement if a speed limit is set too low as this could result in an unreasonable additional demand on police resources. It is also important to set reasonable speed limits to ensure consistency across the country.

2. SITE ANALYSIS:

Charlton Road is a class 'C' section of road and approximately 975 metres in length. It joins Ashford Road to the north and becomes New Road at its junction with Charlton Lane in the south. Charlton Road has been given Surrey Priority Network (SPN) code 1 which means the road has been classified as a Strategic Route, the highest classification within the Surrey County Council managed network. These classifications in part help to establish the priority levels for maintenance purposes. More information on Highway Network Hierarchy can be found online at the following address: https://www.surreycc.gov.uk/__data/assets/pdf_file/0005/34547/Highway-Safety-Inspection-Policy-Nov13.pdf

Charlton Road forms part of a link between Ashford and the A308 to the north and Littleton, Upper Halliford and Shepperton to the south. In addition to these towns and roads, to the south of Charlton village there is a primary school, Shepperton Studios and a popular garden centre. To the north on Ashford Road is an industrial estate.

The width varies from 7.0m at its narrowest to 11.6m at its widest, but mainly ranges between 7 and 8.8m.

Width (m)	Lane widths at islands (m) (sb / Is. / nb)	Location
9.6	4.0 / 2.0 / 3.6	Refuge island near mini roundabout
7.0		Waterside Close
7.0		Queen Mary Road
7.1		Hetherington Road (north)
8.8	3.2 / 2.1 / 3.5	Refuge island near Hetherington Road (south)
7.1		Crosswell Close
7.3		Walnut Tree Road
8.0		Approximately midpoint of bend
8.2	3.3 / 1.5 / 3.4	Traffic island near Manor Farm Stables
11.6	4.3 / 3.8 / 3.5	Refuge island near Charlton Lane

Figure 01: Carriageway widths

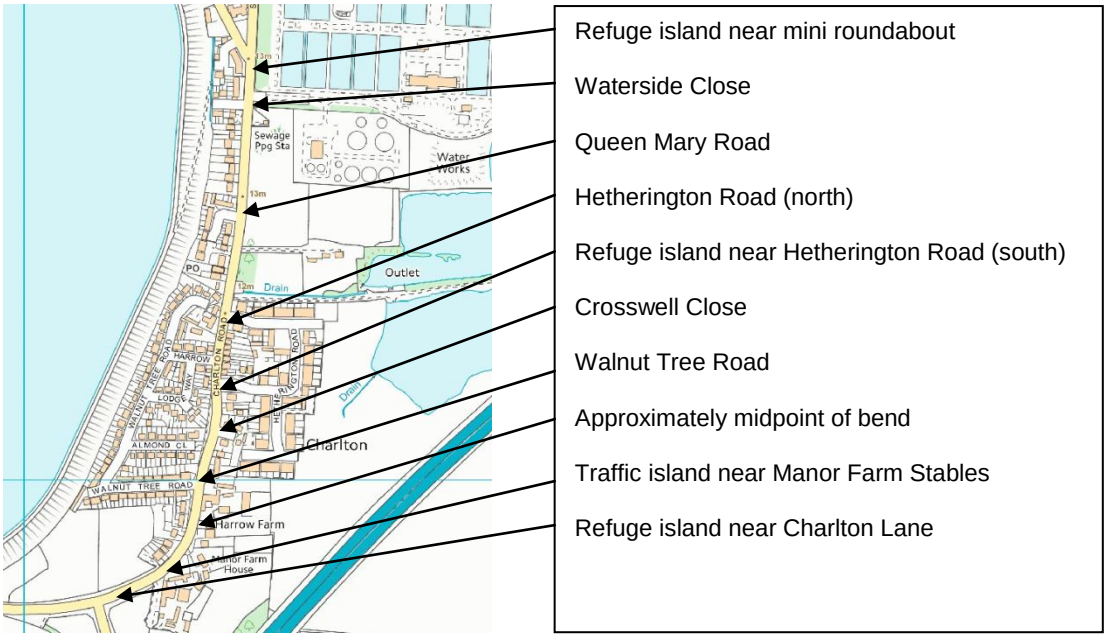

Figure 02: Location of carriageway widths

Having inconsistent widths can make any treatment that runs along the entire length of the road limiting.

Charlton Road is predominantly fronted by residential properties, with a few businesses. The northern most section has trees running along its eastern side. There are footways that run along adjacent to both sides of the carriageway.

Figure 03: Charlton Road (google)

There are a number of existing features within the road that have a traffic calming effect.

There is an existing fixed speed camera, near to Queen Mary Road. It was installed in January 1995, after there were 15 collisions in three years resulting in 27 casualties including three suffering serious injury. This camera is due to be replaced. The DriveSmart team that operates the camera are currently investigating a number of different options for its replacement, these being: single direction fixed camera (as is there currently), twin-headed fixed camera for enforcement in both directions and time/distance (average speed) cameras. However, the outcome of this will, in part, be dependent on the recommendations for measures from this report.

There is also a Vehicle Activated Sign (VAS) situated towards the southern end of the village to help re-iterate the speed limit to drivers entering the village from the south.

Where the road is wider, central hatching has been used to keep the lane widths narrow. If the hatching was not present, and a single lane line marking run down the centre of the carriageway, then the lanes would be wider and this might encourage drivers to increase speed.

At a number of locations along the length there are pedestrian islands to assist pedestrians with crossing the road in two stages. These can be found just south of the mini roundabout at the junction with Spelthorne Lane and Ashford Road, just south of the junction with Hetherington Road, and just north of the junction with Charlton Lane. There is also a traffic island near Manor Farm Stables adjacent to the village gateway signs. Figure 02 shows the location of these islands.

3. DATA COLLECTION:

3.1 Speed Data

Speed data for this location has been assessed.

The results are shown in the following table:

Location		Mean speed	85th percentile	Total number of vehicles
Site 1	North Bound (nb)	31.4	35.7	67549
	South Bound (sb)	31.2	35.4	63236
Site 2	North Bound (nb)	29.9	34.4	67408
	South Bound (sb)	30.1	34.6	62754
Site 3	North Bound (nb)	29.9	34.4	69824
	South Bound (sb)	28.2	31.5	62562
NB. Site 3 is near a speed camera positioned in verge south bound				

Figure 04: Speed data

The 85th percentile is a measurement that reflects the speed that 15% of drivers are exceeding, and is used by Highway engineers when evaluating driver speed behavior.

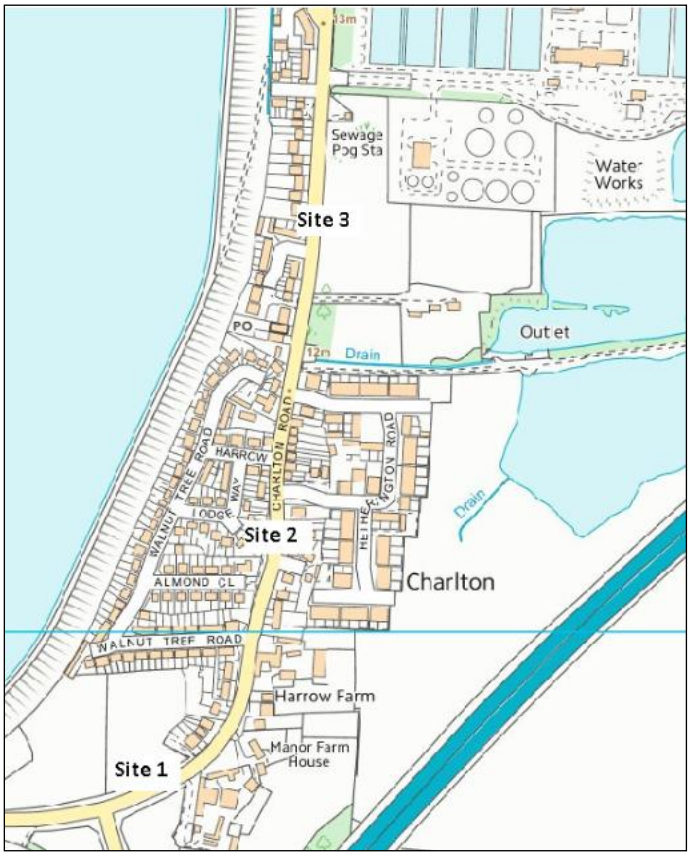

Figure 05: Location Map: Vehicle speed data capture sites

Based on the County Council's speed limit policy, the recorded speeds suggest that the existing speed limit of 30mph is the most appropriate.

Consultation has been carried out with Surrey Police Road Safety and Traffic Management Team, who support the retention of a 30mph speed limit.

3.2 Personal Injury Collisions

An assessment has been made of the personal injury collisions along Charlton Road, between but not including, its junctions with Ashford Road to the north and New Road to the south for the last 3 full years and part of 2016 where data is available, giving the period between 1st January 2013 and 30th November 2016. The Police and Surrey County Council do not collect or hold 'damage only' collision data, and therefore we are unable to report or comment on these. During this period there are four recorded personal injury collisions, all had a severity of 'slight'.

Latest 3 year and year to date collisions (01/01/13 to 30/11/16)			
Year	Slight	Serious	Fatal
2013	1	0	0
2014	3	0	0
2015	0	0	0
2016 (Jan to Nov)	0	0	0
Total	**4**	**0**	**0**

Figure 06: Personal Injury Collision Data

When the police attend personal injury collisions they assess and log the contributory factors that lead to the collision. The table below shows all the factors that led to the collisions that have been recorded at this location during this assessment period. Some collisions have a number of factors attributed to them.

Collision contributory factors (01/01/13 to (30/11/16)	
Factor	**Number**
Failed to look properly	1
Vision affected by vegetation	1
No factors given	1
Exceeding speed limit	1
Following too close	1
Slippery road (due to weather)	1
Sudden braking	1
Deposit on Road (e.g oil, mud etc)	1
Fatigue	1

Figure 07: Personal Injury Collision Contributory Factors

All the collisions took place during daylight, and three of the four collisions happened when the road surface was dry.

Half of the collisions took place at or near junctions whilst the others took place away from side road junctions.

As can be seen from the location (shown in Figure 8) as well as the factors for the collision there is no clear or dominant pattern for these collisions. It is worth noting that there have been no reported personal injury collisions on this road between November 2014 until the end of November 2016 (the end of the period where data is available).

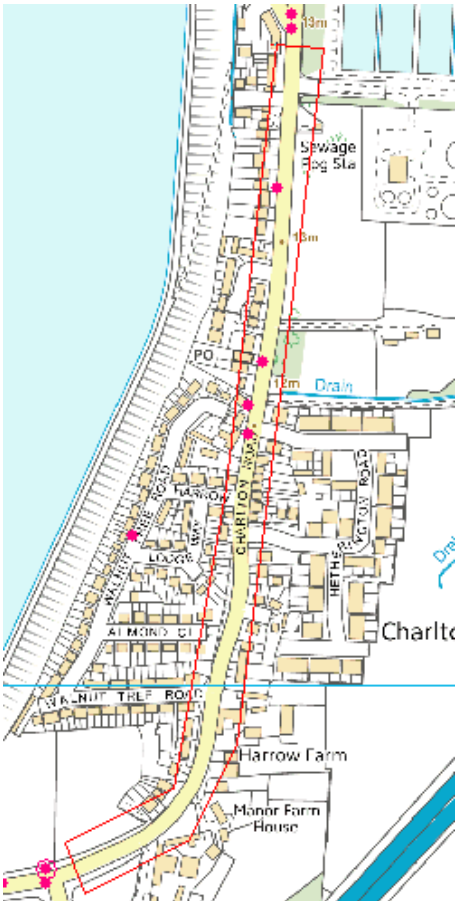

Figure 08: Personal Injury Collision locations

4. DISCUSSION AND OPTIONS:

According to the Department for Transport's documentation, traffic calming is a useful way of controlling drivers' speeds where speeds are either excessive and/or inappropriate for the type and use made of a road. Justification for installing traffic calming is often based on improving safety by reducing accidents. Existing road usage and characteristics that need to be considered are:

1. Bus routes:
   Charlton Road forms part of at least two bus routes that help to form an important part of the integrated transport system. Introducing physical traffic calming measures has the potential for creating issues likely to impact on passenger comfort and patronage, drivers' health, bus journey times and vehicle maintenance costs. This may affect the viability of a service, which should be considered.

2. Emergency service vehicles:
   Consideration should be given to the cumulative effect physical traffic calming schemes can have on the ability of fire and ambulance services in meeting response times. Certain types of traffic calming features, e.g. chicanes, can unwittingly lead to increased patient discomfort, or cause damage to equipment carried in ambulances or fire appliances. Objections maybe raised by the emergency services to proposed traffic calming schemes.

3. Vulnerable road users:

   3.1. Pedestrians:
   Pedestrians frequently cross the road at locations most convenient to the desired line of travel. Depending on the type and location, traffic calming measures can influence pedestrian flows and movements for the better. There are existing measures, traffic island refuges, from which pedestrians gain benefit. Certain additional measures may improve helping them cross the road.

   3.2. Disabled people:
   Disabled people can benefit from traffic calming. Reductions in traffic speeds and full width flat-top humps assist wheelchair users in the task of crossing roads.

   Considering the needs of disabled people when identifying the most appropriate form of traffic calming would ensure access opportunities are equal to those of able-bodied people.

3.3. Cyclists:
Traffic calming can be of benefit to cyclists; where reductions in motor vehicle speed, dominance and volume are achieved. Space is at a premium and there is insufficient road width to incorporate a cycle lane, even an advisory one, along Charlton Road.

3.4. Equestrian:
At the southern end there is an equine presence on both sides of Charlton Road. Equestrians are vulnerable to inconsiderate drivers. Reducing vehicle speed, dominance and where possible the volume provides a potential benefit to the ridden, led or driven horse.

Gateways blocking verges can lead to equestrians having to move onto the carriageway, where they may be less safe. The British Horse Society reports that horses have been known to trip on round-top humps. There is suggestion that horse riders feel threatened where road narrowings are used: however, this is anecdotal, without substantiating research results being available owners and/or manager of the local riding stable(s) should be consulted in this regard.

3.5. Motor cyclists:
The behaviour and road usage of motorcycles is different to that of vehicles with four-wheels or more. Riders face hazards not apparent to other drivers, such as changes in road surface or alignment.

4. Street lighting:
Although a system of street lighting is present it may prove to be insufficient for certain types of proposed traffic calming measure. For example, the regulations governing the requirements of the road hump are such that, other than in 20 mph zones schemes, street lighting should extend over the whole length of the road where they contain humps. Chicanes and narrowings need to be conspicuous for drivers, during both day and night-time conditions: adequate levels of street lighting need to be in place in the areas around chicanes.

It is likely a check will be needed to ensure the required standard of lighting is met if additional traffic calming features are introduced.

5. Public attitudes:
Vertical and horizontal deflections are useful devices to control speeds and consequently reduce accidents. The success of these types of schemes is determined by not just the effect on speed, flows and collisions, the objective measures, but also their subjective evaluation.

Without support, any traffic calming measure can become discredited. Although it may not occur in this situation, there are documented examples of pressure from local communities, citing for example noise and vibration problems generated by vehicles passing over or through features, leading to objections and eventual removal of the measures.

6. Impact on street activities:
According to the Department for Transport there is some evidence that indicates traffic calming schemes can have a positive effect on the independent mobility of children. However, there is less evidence that they substantially affect the amount of adult mobility, walking and/or cycling.

7. Environment:
Before a scheme is implemented it is advisable to ascertain the full impact the proposed traffic calming measures will have. This would consider not only vehicle speeds, personal injury incidents and non-motorised user needs but also the environmental impact.

Environmental impact can cover a range of areas, but it is unlikely to be practical or necessary to carry out an in-depth assessment for air quality, visual and landscape quality, cultural heritage, flora and fauna, drainage, social cohesion, economic impacts and overall quality of life in this situation. It is only where a significant impact on any of these factors is anticipated that an in-depth analysis should be undertaken, assessing negative impacts against the benefits.

There are a number of different options available for use and some of them have been explored below:

4.1 Do Nothing

The speed data shows the mean speeds on Charlton Road are between 28.2mph and 31.4mph depending on location and direction. These speeds indicate a general compliance around the speed limit. The road also has an improving collision record. It would, therefore, appear to have little benefit in providing any additional measures to further reduce speeds at this time.

4.2 Road Humps

Numerous types of road hump are available including round top, flat top, raised junction, sinusoidal, ‘H’ hump, ‘S’ hump, thumps, and cushions. According to research conducted by the Department for Transport, road humps have the largest impact on speed reduction, flow and, with the exception of the ‘thump’, on injury collisions. However, they also tend to cause the greatest delay to emergency service vehicles. These

measures are very effective, but restrictive, forms of traffic calming and need to be considered against the road classification. Charlton Rd is a classed as a Strategic Route: calming measures of this kind are considered too restrictive for this section of the network. Therefore no road hump measures are recommended.

4.3 Rumble Device

These measures can be in the form of rumble areas or rumble strips. According to research conducted by the Department for Transport, rumble devices appear to have little impact in reducing traffic speed or flow. They do have a moderate impact in reducing injury incidents, and cause little delay for emergency vehicles. Noise from these measure mean that Surrey County Council does not place them near residential properties, and as such, rumble devices are not recommended.

4.4 Narrowing

Narrowings can be created from islands (pedestrian and traffic), pinch points and/or build outs. According to research published by the Department for Transport islands have a low impact on traffic speeds, flows and injury collisions. Pedestrian islands do, however, provide a useful facility for assist pedestrians in crossing the road. Given the existing road widths placing additional islands along would not be possible without widening the carriageway. Opportunities for this are further limited due to constraints in the extent of the highway boundary, trees, and existing accesses. There are existing pedestrian islands at either end of the village and another near the centre. This report was to investigate speed and traffic management and as pedestrian islands have limited affect on this, they would not be recommended. If there is demand for increasing the number of pedestrian crossing points, then this could be investigated in a separate report. The other types of narrowings, including pinch points, and build outs do have a greater impact on traffic speed, flow and injury collisions, although these vary depending upon the layout used. They also, according to the Department for Transport, have the affect of causing delays to emergency services. Due to their impact on flows, and the road being a Strategic Route, these types of narrowings would not be recommended

4.5 Chicane

Chicanes can include single lane, two-way, gateway and mini-roundabouts. From this group of measures, only single lane chicanes have a large impact on speed reduction and flow, whilst the others have a moderate impact. It should be noted that the effective impact of mini-

roundabouts is related to the amount of deflection that can be achieved and visibility. As with the narrowings , the impact on traffic flows would make these features unsuitable on a Strategic Route, and as such could not be recommended.

4.6 Vehicle Activated Devices

These features could include vehicle activated signs or enforcement cameras. These types of measures have a moderate effect of traffic speed and reduction in injuries caused by collisions, but have little impact on traffic flow. As previously highlighted Charlton Road already benefits from a single-direction fixed speed camera near Queen Mary Road and a Vehicle Activated Sign (VAS) to the southern end of the village. Whilst the type of replacement speed camera is still under review, the replacement would either have the same or increased effect on traffic speeds and safety. Additional VAS could be installed along the length of Charlton Road, but as compliance of the speed limit is generally good, it cannot be recommended.

4.7 Road Markings

These features could include the placement of roundels or coloured surfacing or the removal of central lines. A case study report (TAL 01/13 – West Meon, Hants) indicated a reduction of 3-4 mph was obtained when the centre line of a busy ‘A’ road was removed alongside reductions in street clutter and the placement of coloured surfacing. On the other hand, solely adding roundels or coloured surfacing does not appear to have much impact on traffic speeds, reductions in flow, or the prevention of injury collisions. A combination of centre line removal and selective coloured surfacing could be a low cost method of reducing traffic speeds. Depending on scheme budget constraints, these measures could be implemented in conjunction with others. However, as there is general compliance of the speed limit, this cannot be recommended.

5. RECOMMENDATION:

Charlton Road is a Strategic Route, and as such needs to be allowed to function as one, by not putting in too many restrictions. If restriction were put in place, this may move traffic onto other roads that are less suitable, creating issues elsewhere. The recorded speed data indicates that there is general compliance of the 30mph speed limit with the existing range of measures currently found along Charlton Road. The level of Personal Injury Collisions is relatively low when compared to other similar roads across the county. As a result, it is recommended that 30mph is the most appropriate speed limit and that no further measures are necessary at this time.