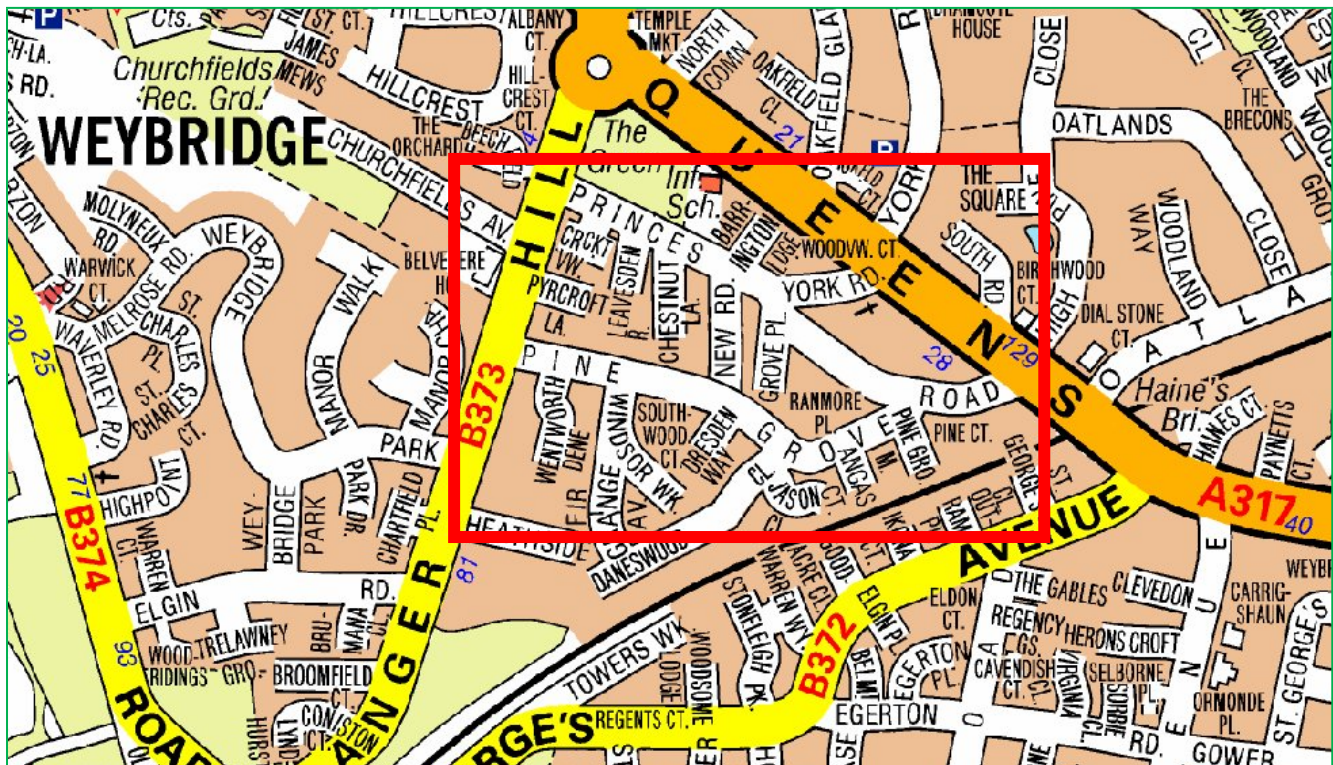


‘The Triangle’, Weybridge Speed Limit & Traffic Calming Feasibility Report

February 2019



Project Title: 'The Triangle', Weybridge
Speed Limit and Traffic Calming

Document Title: Feasibility Report

Client Reference: PC0900

Date: February 2019

Prepared By: Harry Blake

Authorised By: Jamie Daly

Amendment List

Issue / Rev	Issue / Rev Date	Removed		Inserted	
		Page	Issue / Rev	Page	Issue / Rev

File path: I:\EA\PC all\Resource Pool\Projects\NE Elmbridge\PC0900 Pine Grove, Weybridge\4. Reports

CONTENTS

	Page No.
1. INTRODUCTION	3
2. SITE ANALYSIS	4
3. DATA COLLECTION	7
3.1. Speed Data	
3.2. Personal Injury Collisions	
3.3. Highway Extents	
4. DISCUSSION AND OPTIONS	8
4.1. 20mph Limit	
4.2. 20mph Zone	
4.3. One Way Systems	
4.4. Road Tables	
4.5. Priority Give Ways	
4.6. Road Table in Princes Road near Manby Lodge	
4.7. Junction Realignment	
4.8. Stopping up of Pine Grove and/or Princes Road	
4.9. HGV Restriction	
4.10. Signs and Road Markings	
4.11. Parking Controls	
4.12. Crossing Point of Pine Grove at New Road	
4.13. Do Nothing	
4.14. Other Options Considered	
4.15. Summary	
5. RECOMMENDATIONS	16

1. INTRODUCTION:

Concerns have been raised by residents of 'The Triangle' in Weybridge regarding traffic speeds, road safety and use of the residential roads. In June 2017 a petition was presented to Surrey County Council's Local Committee for Elmbridge to highlight the concerns. Elmbridge Local Committee agreed to a feasibility study to investigate the concerns and identify potential options for highway measures.

This road has therefore been assessed under Surrey County Council's policy (2014) for 'Setting Local 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.

Consultation has taken place with the local Divisional Member and representatives of the Triangle Residents' Group, in developing potential highway measures as presented in this report.

2. SITE ANALYSIS:

'The Triangle' is the area bounded by Hanger Hill (B373), Queens Road (A317) and the main railway line. Both Pine Grove and Princes Road are 'D' classified roads. They are through roads between B373 Hanger Hill and A317 Queens Road which are main distributors between Weybridge and Brooklands/Byfleet/Cobham/the A3 to the south and Hersham/Esher to the east. Princes Road is also connected to Queens Road via York Road, which has a left-turn only access onto Queens Road.

Pine Grove is fronted by a number of residential houses, flats and has cul-de-sacs accessed from it. There is on-street parking in places which narrows the carriageway from two lanes to one lane creating informal areas requiring give-and-take behaviours. To the east of the Daneswood Close junction there is a narrow bend creating a pinch point which has become a safety concern for the residents.

(Images © Google)



Figure 01: Pine Grove bend



Figure 02: Pine Grove parking issues

Princes Road is fronted by a number of residential houses with on street parking, creating the need for informal priority for vehicles. Towards the Hanger Hill junction, Princes Road is fronted by Manby Lodge Infant School and Weybridge Green. There is also a free car park next to the School and Green which is used by parents dropping off and collecting their children from the school. There is an existing 'Priority Give Way' on Princes Road approaching Weybridge Green car park from the west.

In April 2018, a Road Safety Outside Schools Audit for Manby Lodge was completed. A concern recorded was the parents' behaviour while using this 'free' car park. Road Safety Officers observed parking in an unsafe and inconsiderate way causing concerns for safety.



Figure 03: Princes Road priority give way



Figure 04: Princes Road Manby Lodge School Entrance

Both Princes Road and Pine Grove have a system of street lighting along their length and are subject to a speed limit of 30mph. They are both situated near to A317 Queens Road, which has a number of shops and restaurants along it.

Pine Grove is classified as Surrey Priority Network (SPN) code 4b. 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/0005/34547/Highway-Safety-Inspection-Policy-Nov13.pdf>

At the junction of Princes Road and Pine Grove, the road width measures 15.3m and is often 'straight-lined' by vehicles entering the road, increasing the entry speeds.



Figure 05: Princes Road j/w Pine Grove

Similarly, the junction of Queens Road into Princes Road is wide, with potential for high entry speeds.



Figure 06: Queens Road j/w Princes Road

These features are likely to make the use of Pine Grove between Queens Road and Hanger Hill more attractive to drivers seeking to bypass the main roundabout junction on Monument Hill.

3. DATA COLLECTION:

3.1 Speed Data

Speed data for this location was assessed for a one week period, from 21 – 27 April 2018 using a mixture of loop and radar surveys. The results are shown in the following table:

	Direction of travel	Average speed of vehicles
Site 1 LC6, Pine Grove	Eastbound	23.5mph
	Westbound	20.5mph
Site 2 LC9, Pine Grove	Eastbound	21.2mph
	Westbound	23.0mph
Site 3 LC15, Pine Grove	Eastbound	24.6mph
	Westbound	23.6mph
Site 4 LC6, Princes Road	Eastbound	22.9mph
	Westbound	21.2mph
Site 5 LC12, York Road	Eastbound	17.0mph
	Westbound	21.0mph
Site 6 LC8, Princes Road	Eastbound	19.5mph
	Westbound	21.5mph
Site 7 LC14, Princes Road	Eastbound	14.1mph
	Westbound	16.8mph

Figure 07: Speed Survey Results (see Drawing PC0900-00)./

3.2 Personal Injury Collisions

An assessment has been made of the personal injury collisions, as recorded by Surrey Police, for the roads within The Triangle for the period between 1 January 2015 and 30 November 2018. 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 were no recorded personal injury collisions on Pine Grove and two on Princes Road (both between the junctions with Pine Grove and Grove Place; one in August 2017 involving injury caused by a moving vehicle hitting the door of a stationary vehicle and one in December 2017 caused by a collision where 'impaired by alcohol' was recorded).

3.3 Highway Extents

The Highway Extents at Pine Grove, Princes Road and surrounding roads were obtained to understand which areas could be improved without the need to acquire land.



Figure 08: Highways Extents

4. DISCUSSION AND OPTIONS:

There are a number of different options explored below. All of the below options are within Surrey’s Highway Extents and all drawings have been subject to independent Stage 1 Safety Audit.

For the options where vertical traffic calming features are considered, the drawings include areas shown with hatching. This indicates those areas where constraints, such as residential accesses, preclude installation of features.

4.1 Option 1 – 20mph Limit – Refer to drawing PC0900_01

The results from the speed surveys show that the speed limit can be reduced to 20mph, in line with Surrey County Council’s policy ‘Setting Local Speed Limits’. This policy states that if the mean speed is already at or below 24 mph on a road (see below table), introducing a 20 mph speed limit through signing alone is likely to lead to general compliance and has the attraction of being relatively inexpensive to implement.

Change from urban and rural 30 mph speed limit to 20 mph speed limit (without traffic calming)	
Measured mean speed before	20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
Predicted mean speed after	19.9 20.6 21.4 22.2 23.0 23.7 24.5 25.3 26.1 26.8 27.6 28.4 29.2 29.9 30.7 31.5 32.2 33.0 33.8 34.6 35.3
	New lower speed limit allowed New lower speed limit only allowed with supporting highway measures

Consultation has been carried out with Surrey Police's Road Safety and Traffic Management Team, who support the lowering of the speed limit to 20mph. A traffic order would be required for this option, plus associated signing.

Cost estimate: £15,000.

4.2 Option 2 – 20mph Zone – Refer to drawing PC0900-02

20 mph zones should be used where a speed reduction to 20 mph is desirable and where traffic calming measures would be needed to ensure that speeds are at or below 20 mph. These traffic calming measures could include road tables, priority give ways, humps and cushions. The combination and design of measures chosen will depend on the road type, the layout of the local road network, the level and type of traffic flow. As the existing speeds meet Surrey County Council policy for lowering of the speed limit via signing, a 20mph zone is not necessary. However, this option could be considered if in the future there was a further need to address vehicle speeds or discourage through traffic.

Cost estimate: £55,000 (dependent on type and number of measures).

4.3 Option 3 – One Way Systems – Refer to drawings PC0900-03, 04

Due to the very narrow carriageway widths, reducing Pine Grove down to one way traffic would eliminate the conflict between oncoming vehicles at the bend. Constructing a build out at the junction with Princes Road will allow better movements entering/leaving Pine Grove, as at present it is too wide for one-way traffic. However, rearranging the current layout to only allow one-way traffic can potentially result in increased vehicle speeds. A one-way system could encourage more through traffic, which would be unimpeded by opposing movements. A one way system would likely result in increasing the number of vehicles on Princes Road. A traffic order would be required for this option, plus associated signing.

Cost estimate: £10,500.

4.4 Option 4 – Road Tables

Road tables are a widely used form of traffic calming device because they have proved to be effective at controlling speeds and are generally applicable to most road layouts. According to research conducted by the Department for Transport, road tables have the largest impact on speed reduction, flow and injury collisions. The geometry can also affect the degree of discomfort experienced by road users. However, they also tend to cause the greatest delay to emergency service vehicles. In addition, significant drainage work will have to be undertaken which will increase the cost of any

scheme, requiring carriageway excavation and reconstruction. The existing speed limit will be retained in this option. A traffic order would be required for this option.

There are a number of variations to the option of road tables:

- Option 4a – Road tables along the lengths of Pine Grove and Princes Road. Refer to drawing PC0900-05A.
Cost estimate: £145,000.
- Option 4b – Road tables at the junctions. This would be a scaled-down version of the above (Option 4a). It would address speeds on Pine Grove but not address the bend or Princes Road. Although a road table on Windsor Walk is feasible, due to the slight incline a detailed design would be required to ensure it meets road safety standards. Refer to drawing PC0900-05B.
Cost estimate: £50,000
- Option 4c – Road tables approaching the bend on Pine Grove. This option would likely reduce speeds approaching the bend. The visibility would be unchanged and additional road features, i.e. the tables, may distract drivers in negotiating the road. Refer to drawing PC0900-05C.
Cost estimate: £30,000.

4.5 Option 5 – Priority Give Ways – Refer to drawing PC0900-06

Chicanes, or priority give ways, are described as ‘a series of two or more build outs constructed on alternate sides of the carriageway and not opposite each other’. A single lane chicane allows traffic in both directions, but there is only room for one vehicle to pass through at one time. Priority is then given to one direction of traffic so that the possibility of vehicle conflicts is minimised. Although there is one feasible location for this option on Pine Grove, the consequence would be a loss of on street parking. Consultation would be needed to ascertain if the benefits of a priority give way outweigh the need for parking. The possible impact on vehicle approach speeds would need to be considered as an increase of approaching speeds is a known disadvantage of Priority Give Ways

Cost estimate: £12,500.

4.6 Option 6 – Road Table in Princes Road near Manby Lodge –

Refer to drawing PC0900-07

As identified as part of the Road Safety Outside Schools, a design was undertaken to improve the layout outside Manby Lodge Infant School, creating a safer crossing point for pedestrians. At present, parents and their children have no suitable crossing point when exiting from the school, causing a conflict point at the entrance of the busy Weybridge Green car park. Therefore installing dropped kerbs and tactiles on the proposed road table will improve pedestrian safety. The proposed table will also reduce vehicle speeds. Impact on drainage will need to be considered. A traffic order would be required for this option.

Cost estimate: £20,000.

4.7 Option 7 – Junction Realignment

At present, a number of the junctions allow vehicles to proceed without reducing their speed, due to the nature of the carriageway. Narrowing the mouth of a junction will encourage lower speeds, with the potential additional benefit of improved pedestrian facilities.

There are a number of variations to the option of junction realignment:

- Option 7a – Realignment of Princes Road/Pine Grove (see Figure 05). At present, the junction is wide which enables drivers to enter at higher speeds. Increasing the width of the eastern footway is a feasible option to emphasise and narrow the junction. This option will also improve the pedestrian facilities, where there are currently no crossing facilities. Refer to drawing PC0900-08.
Cost estimate: £9,000.
- Option 7b – Realignment of Pine Grove/Dresden Way. Increasing the width of the footways is a feasible option to emphasise and narrow the junction. However, as Dresden Way is not a through-road and there are existing dropped kerbs for pedestrians, it is not considered a priority for works. Refer to drawing PC0900-08.
Cost estimate: £8,000.
- Option 7c – Realignment of Queens Road/Princes Road. At present, the junction is wide (as shown in Figure 06). Increasing the width of the eastern footway is a feasible option to emphasise and narrow the junction. This option will also improve the pedestrian facilities. Refer to drawing PC0900-09
Cost estimate: £8,000.

4.8 Option 8 – Stopping up of Pine Grove and/or Princes Road

This option has been considered as closing the road to through traffic will prevent motorists using Pine Grove and/or Princes Road as a 'cut through' to reach their destination rather than using main roads. Consultation with the local residents may prove this option not welcome due to the longer journey needed to access/leave their property. The effect on the surrounding roads would also need to be considered due to the displaced traffic. There could be a negative impact at the school accesses on Princes Road. However, there is insufficient public highway land to create a suitable safe turning area in Pine Grove, Princes Road or surrounding cul-de-sacs. Private land would need to be acquired to provide a turning area. An option within the public highway would require reversing manoeuvres by larger vehicles such as refuse lorries, e.g. closure of Pine Grove to the east of the junction with Daneswood Close would allow vehicles to the west to turn in the mouth of Daneswood Close, but larger vehicles to the east would need to reverse into or out of Pine Grove from Princes Road. There would also be a significant impact on traffic flow on Princes Road (or vice versa if a closure is implemented on Princes Road).

4.9 Option 9 – HGV Restriction – Refer to drawing PC0900-10

It was noted from the Traffic and Speed survey, that there is a higher than average number of HGV vehicles using both Princes Road and Pine Grove, possibly as a 'cut through'. This option proposes the introduction of a 7.5 tonne weight limit (except for access) at the access points to The Triangle via Pine Grove, Princes Road and York Road. HGVs will use the A317 and B373 which are suitable for larger vehicles. The restriction of HGV movements has the potential to deliver road safety and air quality improvements. A traffic order would be required for this option, plus associated signing.

Cost estimate: £15,000.

4.10 Option 10 – Signs and Road Markings – Refer to drawing PC0900-11

Improving the signage and road markings around the tight bend on Pine Grove will make drivers more aware of the potential danger ahead. This option will be relatively cheap but will not have as great an effect as many of the aforementioned options, as 'slow' markings can often be ignored by vehicles. However, this option can be undertaken as supplementary to any of the above options.

Cost estimate: £3,000.

4.11 Option 11 – Parking Controls

There are a number of variations to the option of parking controls:

- Option 11a – Double Yellow Lines. Cars are frequently parked on the footway on Pine Grove, west of the junction with Dresden Way. This may be in part due to limited off-street parking at Southwood Court. The parked cars create safety concerns including obstruction to the footway and a sight line hazard for westbound vehicles. Installing double yellow lines will remove this hazard and will improve footway widths for pedestrians. However, this would need to go to consultation with the residents. A traffic order would be required for this option. In addition removing the parked cars could encourage greater speeds as parked vehicles are sometimes an effective traffic calming measure. However, a Priority Give Way (see Option 5) could include parking controls to address these issues whilst providing a measure to mitigate traffic speeds.

Cost estimate: £3,000.

- Option 11b – Parking Bays. In contrast to Option 11a, installing parking bays in an area with sufficient visibility could be an effective traffic calming measure. The only suitable location along Pine Grove to offer this facility would be near to its junction with Princes Road, in a wider and straighter part of carriageway. It would also provide additional parking, which would be solely on the carriageway. A traffic order would be required for this option. An option to include parking bays on either side of the carriageway to create a chicane was also explored, but is not considered appropriate recommended due to the likelihood of vehicle conflict and obstruction. Refer to drawing PC0900-012.

Cost estimate: £3,000.

4.12 Option 12 – Crossing Point of Pine Grove at New Road –

Refer to drawing PC0900- 013

A new uncontrolled tactile crossing at the cut-through with New Road will provide a safer area for pedestrians to cross the carriageway, and new dropped kerbs will make it easier for parents with buggies to cross. However, the walkway between New Road and Pine Grove includes steps, which means it is not fully accessible. Further design, including consideration of the impact on property accesses, would be required to improve accessibility.

Cost estimate: £3,000

4.13 Option 13 – Do Nothing

With no reported accidents in the last three years, for which a pattern of behaviour has been identified, works in purely casualty reduction terms could not be justified when compared to other locations. However, there are concerns within the community regarding driver behaviour and safety, which are supported by surveys and observations, which the options seek to address.

4.14 Other options considered:

- **Traffic Signals** – The option to install traffic signals at the bend on Pine Grove has been explored. Due to the road geometry, i.e. the bend, there would be no visibility between the stop lines, leading to potential for head on conflict, where currently there is uncertainty which can encourage drivers to be cautious. Further constraints are the limited highway space for traffic signals equipment, including detectors, and the accesses to Daneswood Close and residences from Pine Grove.
- **Vehicle Activated Signs (VAS)** – The viability of using VAS to warn motorists of the approaching bend on Pine Grove was considered. A site meeting was held with Surrey County Council’s VAS supplier and although it would be feasible it was decided that due to the road layout we would not recommend as motorists would be likely to rely on vehicle activated signs for information to negotiate the approaching hazard.
- **Cushions and humps** – the roads are too narrow to install sets of cushions and round top humps are no longer used.

4.15 Summary

Option	Description	Cost estimate	Comment
1	20mph Limit	£15,000	Recorded speeds support a lowering of speeds via signing.
2	20mph Zone	£55,000	Recorded speeds support a lowering of speeds via signing. May be re-assessed at a later date.

Option	Description	Cost estimate	Comment
3	One Way Systems	£10,500	Likely to result in increased speeds on the one way road and increased traffic on adjacent roads.
4	Road tables	A £145,000 B £50,000 C £30,000	Recorded speeds support a lowering of speeds via signing. May be re-assessed at a later date.
5	Priority Give Ways	£12,500	Limited available locations. Impact on parking.
6	Road Table in Princes Road near Manby Lodge	£20,000	Reduced speeds near to school access and improved pedestrian facilities.
7	Junction Realignment	Princes Road/ Pine Grove £9,000 Pine Grove/ Dresden Way £8,000 Queens Road/ Princes Road £8,000	Narrowing of junction mouths to reduce entry speeds and improve pedestrian facilities (junctions of: Princes Road/Pine Grove; Pine Grove/Dresden Way; Queens Road/Princes Road).
8	Stopping up of Pine Grove and/or Princes Road	N/A	Not feasible to create a turning area within highway limits.
9	HGV Restriction	£15,000	Potential to improve amenity for residents and reduce conflict on narrow roads.
10	Signs and Road Markings	£3,000	Improved warning of hazards at the bend on Pine Grove.

Option	Description	Cost estimate	Comment
11a	Parking Controls (Double Yellow Lines)	£3,000	Would address issue of footway parking but could result in increased speeds. Could be considered as part of Option 5.
11b	Parking Controls (Parking Bays)	£3,000	Potential to provide a traffic calming effect.
12	Crossing Point of Pine Grove at New Road	£3,000	Improved pedestrian facilities.
13	Do Nothing	N/A	Would not address local concerns.

5. RECOMMENDATIONS:

It is recommended that the following options (in priority order) are appropriate to be progressed, and likely to provide benefits for residents and road users of The Triangle:

- Option 6 – Road table in Princes Road near Manby Lodge, to reduce speeds near to school access and improve pedestrian facilities
- Option 7 – Junction realignment to reduce entry speeds and improve pedestrian facilities
- Option 1 – 20mph limit to highlight nature of the mainly residential road layout
- Option 9 – HGV restriction to improve amenity for residents and reduce conflict on narrow roads
- Option 10 – Signs and road markings to improve warning of hazards at the bend on Pine Grove
- Option 12 – Crossing point of Pine Grove at New Road to improve pedestrian facilities

It is also recommended that the following options be explored, potentially as part of the Elmbridge Parking Review:

- Option 11a (possibly incorporating Option 5) – Parking Controls (Double Yellow Lines) to address issue of footway parking
- Option 11b – Parking Controls (Parking Bays) to provide a traffic calming effect