



**Buckinghamshire County Council**

## **Pitstone Feasibility Study**

Feasibility Study Report

LOC18043

25 July 2019

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# 1 Introduction

- 1.1 Pitstone Parish Council (PPC) has commissioned Transport for Buckinghamshire (TfB) to assess concept design proposals put together by the design consultants Hamilton-Baillie Associates (HBA) in 2015. These proposals included highway, pedestrian and cycleway improvements across the village. Following a workshop meeting with TfB in 2017, a revised scope was agreed with PPC where 5 sites were taken forward to the feasibility design stage.

# 2 Background

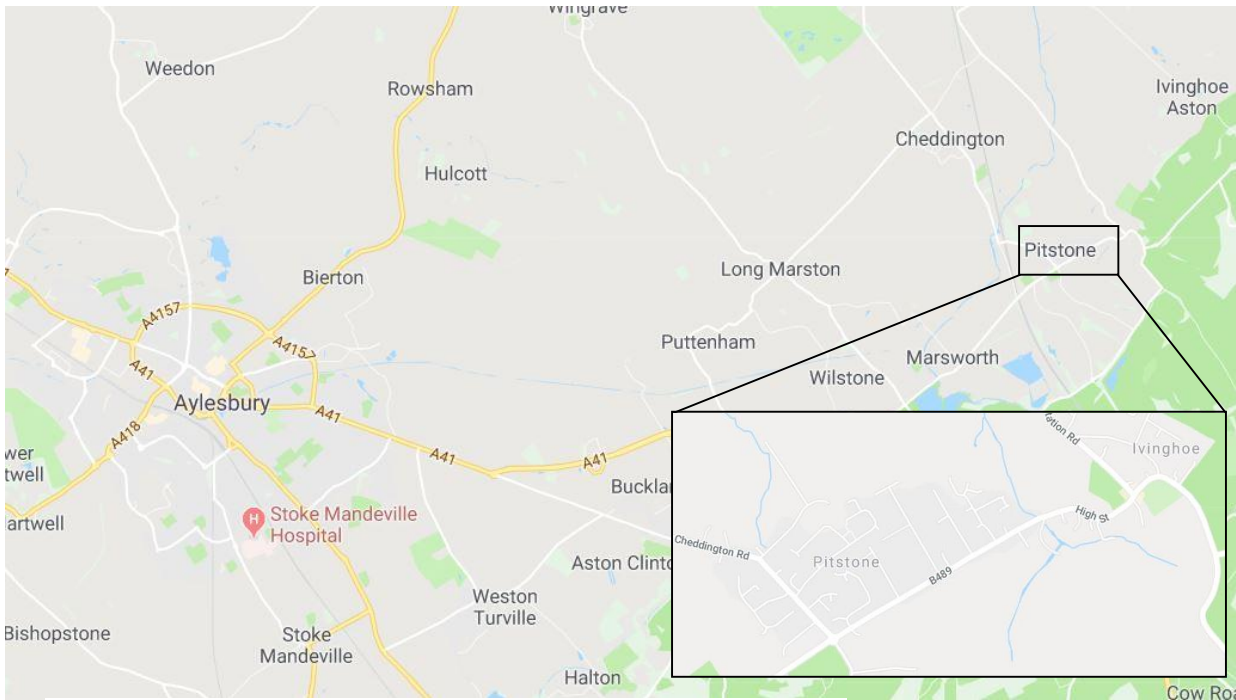


Figure 2-1 Location of Pitstone (Google, 2018)

- 2.1 Pitstone is situated in Buckinghamshire and is located approximately 7 miles east of Aylesbury Town Centre and about 6 miles south of Leighton Buzzard. It directly adjoins the village of Ivinghoe, and the two villages share some facilities.
- 2.2 In 2015, HBA produced a concept design for Pitstone and the neighbouring village of Ivinghoe. Two separate (but similar) documents were prepared and submitted for consideration for a traffic calming and highway improvement schemes.
- 2.3 The HBA report had been widely consulted within the community and received an overall positive public reaction. Pitstone Parish Council has therefore duly adopted the HBA proposal for the community to strive towards implementing.
- 2.4 Following this, it was recommended that a Feasibility Stage Road Safety Audit be undertaken by TfB on the concept designs to identify key areas of concern relating to the design ideas. This was undertaken, and the reports were submitted to the respective parish councils January/February 2017.



2.4.1 Following the request for taking the scheme forward, TfB held a joint Parish workshop to streamline the HBA proposal to be taken forward to feasibility design stage. TfB have then prepared a Project Initiation Document setting out the anticipated cost for taking all the proposals within the HBA report through feasibility design. Table 2-A below shows the HBA proposals

Table 2-A Summary of HBA proposals

Scheme Number	Scheme name	HBA proposal	Revised HBA proposal
1	Westfield Road Junction	<ul style="list-style-type: none"> <li>- Change priority at the junction</li> <li>- Narrow entry onto Marsworth Road with contrasting carriageway surface at entry.</li> <li>- Narrow median strip on Marsworth Road</li> <li>- Clear Cycleway crossing.</li> <li>- Trees planting either side of entry.</li> </ul>	No change
2	New development access on Marsworth Road	<ul style="list-style-type: none"> <li>- Contrasting carriageway material at junction centre.</li> <li>- Contrasting carriageway material at crossing points</li> <li>- Informal crossing points</li> <li>- Median strip on approaches to junction</li> <li>- Tree planting</li> </ul>	Removed from scope
3	Recreation Ground Roundabout	<ul style="list-style-type: none"> <li>- Reduced roundabout size to provide narrower entry and exit widths</li> <li>- Overrun area on central island</li> <li>- Informal courtesy crossing points</li> <li>- Artwork on central island</li> </ul>	Removed from scope
4	Cheddington Road and Vicarage Road	<ul style="list-style-type: none"> <li>- Widen footway to 2.5m for shared cycleway from 'The Crescent to the residential area north of the roundabout</li> </ul>	Removed from scope
5	Marsworth Road Cycle route	<ul style="list-style-type: none"> <li>-Relocating all parking onto south side</li> <li>- Provide shared cycleway</li> <li>- Removal of build-outs and speed cushions.</li> </ul>	<ul style="list-style-type: none"> <li>-Relocating all parking onto south side</li> <li>- Provide shared cycleway</li> <li>- Removal of build-outs and speed cushions.</li> <li>- On carriageway cycle lane option</li> </ul>
6	Marsworth Road Junctions	<ul style="list-style-type: none"> <li>- Align crossing 5m back from main road.</li> <li>- Contrasting carriageway material at crossing point and junction centre.</li> <li>- Contrasting carriageway material on edges of carriageway.</li> <li>- Shared use cycleway</li> <li>- Tree planting</li> <li>- New parking areas</li> </ul>	No change
7	Lower Marsworth Road	<ul style="list-style-type: none"> <li>- Widen footway on north side to create shared cycleway.</li> <li>- Limited number of clearly defined parking bays on south side and ensure there are passing places (2m).</li> <li>- Reduce apparent carriageway width (4.1m).</li> </ul>	No change

8	Brookmead School	<ul style="list-style-type: none"> <li>- Widen the footway on the school side</li> <li>- Install 'pencil' bollards, low benches and planting</li> <li>- Reduce carriageway width to minimum 4.5m.</li> <li>- Combination of different surface treatments to denote carriageway</li> <li>- Promotion of remote school drop-off</li> <li>- Surface treatment on of on-street parking on High Street to visually reduce carriageway width</li> </ul>	<ul style="list-style-type: none"> <li>- Consider low cost alternatives</li> <li>- Advisory 20mph speed limit</li> </ul>
9	Alternative School Access	<ul style="list-style-type: none"> <li>- Share cycleway along Marsworth Road</li> <li>- Improved path across field from Maud Jane's Close</li> <li>- Improved path from Chequers Lane</li> <li>- Potential new footbridge to enable access at the southern end of Brook Lane</li> </ul>	Removed from scope
10	Vicarage Rd / Upper Icknield Way(B488) Junction Improvements	<ul style="list-style-type: none"> <li>- Landscaping and planting measures including low level plants and trees.</li> <li>- Small area of contrasting surface treatment on B488.</li> </ul>	No change

2.4.2 This report investigates the feasibility of the six selected options above, the scope of which is limited to producing the following deliverables to accompany the report:

- o Layout plans for each element
- o Example cross sections, where appropriate
- o Budget estimates for future design and implementation of this scheme

2.4.3 It should be noted that scheme number 8 Brookmead School is a shared facility between Pitstone and Ivinghoe located near the boundary between the two villages. As such, the proposal for this site is included in both feasibility studies.

### 3 Review and Development of Options

- 3.1 As per the wishes of the Parish Council, TfB have investigated the six highway improvement and traffic calming schemes. The following options have been reviewed or developed and in accordance with the following standards and best-practice guidance:
- Design Manual for Roads and Bridges (DMRB)<sup>1</sup>
  - Traffic Signs Manual (TSM)<sup>2</sup>
  - Local Transport Notes (LTN)<sup>3</sup>
  - Traffic Advisory Leaflets (TAL)<sup>4</sup>
  - Sustrans Design Manual <sup>5</sup>
- 3.2 High level cost estimates have been produced for all options using the 2018 schedule of rates for TfB approved subcontractors. Where these schedules of rates did not cover a specific item, an estimated rate has been applied based on similar schemes. Refer to Appendix A for a summary of cost estimates.
- 3.3 It is assumed that no major utility diversions are required for any of the below options. An underground utility search (C2) was undertaken. Exact locations of utilities will need to be confirmed in the detailed design stage.
- 3.4 A feasibility stage (stage 1) Road Safety Audit (RSA) has been undertaken on the HBA concept design, prior to this feasibility stage. As only minor changes are made to the HBA proposals, the stage 1 RSA was not repeated for this stage. Future stages of this scheme should include a stage 2 RSA.
- 3.5 No speed surveys have been undertaken as part of this feasibility study. It is recommended to undertake a speed survey prior to implementing traffic calming features to assess the effects of these schemes.

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<sup>1</sup> Design Manual for Roads and Bridges Volume 6 Section 3 Part 5 TA 87/04

<sup>2</sup> Traffic Sign Manual Chapter 3 and 5

<sup>3</sup> Local Transport Note Traffic Calming 1/07

<sup>4</sup> Traffic Advisory Leaflets 07/93 Traffic calming regulations

Traffic Advisory Leaflets 12/93 Overrun areas

Traffic Advisory Leaflets 13/93 Gateways

Traffic Advisory Leaflets 09/94 Horizontal deflections

<sup>5</sup> Sustrans Handbook for cycle-friendly design

## 4 Trees, low level planting and Construction materials

### 4.1 Trees

- 4.1.1 Trees planting can have a very positive visual and environmental impact on an area. They brighten up the place and can help break up the often dominant nature of built up environments. Trees and landscaped areas provide a sense of place and pride for a community and provide habitats for a wide range of wildlife. They can increase the biodiversity of an area, helping to bring the countryside to the doorstep.
- 4.1.2 In 2006, a public consultation across the Aylesbury Vale area revealed people favour the planting of deciduous trees with autumn colour which are native to the UK. Greater use of semi-mature planting in urban areas will provide instant visual impact from new schemes and is far more resistant to strimmer damage, drought, disease and vandalism. While an exact tree species is not prescribed by either the county or the district council, according to AVDC Tree Management Strategy 2009-2017, it is the district councils' policy to restrict tree species planted in rural areas to native species only, unless special circumstances favour a particular species choice.
- 4.1.3 Deciduous trees in the autumn and winter months can cause drain blocking and flooding. Furthermore, as fallen leaves can be very slippery, there is an increased likelihood of cars skidding on the highway. While it is the highways authority's duty to maintain the highway and the drainage system, the parish council should be aware of the increased risk.
- 4.1.4 Typically, tree planting contractors supply trees in three standard sizes, measured by the girth diameter. A 'Heavy Standard' tree has a girth size between 12-14cm. These trees require protection in a public situation but will provide a greater initial impact. An 'Extra Heavy Standard' has a girth size of 14-16cm. These are more resistant to casual damage and generally the preferred minimum size in a public location. Semi mature trees are supplied with a girth diameter of 16-35cm. Trees of this size will provide good resistance to casual damage and provide excellent initial impact; however, they require specialist handling and greater attention during the establishment period.
- 4.1.5 Trees and planting features must be carefully selected to be in proportion with the scale of the streets and spaces in which they are planted. The planting should complement the buildings and should not obscure key visual links. The species and the shape of the trees chosen should seek to improve the visual quality of the street. Furthermore, sufficient space must be allowed for trees as they grow both underground and above ground. The selection of the exact tree species can be a highly subjective issue; therefore, it is recommended that the parish liaise with residents so that they can have their input considered prior to the construction phase.

- 4.1.6 Similar guidelines should be followed for low level planting and shrubbery. The species selected should have a natural low growing habit and under no circumstances should these be allowed to grow taller than 600mm as this compromises visibility. Furthermore, it is recommended that selected plants should provide quick establishment of groundcover to minimise bare soil and therefore reduce maintenance. TfB do not maintain low level planting. Any maintenance required shall be provided by the parish council, preferably by commissioning a competent contractor. It is also recommended that the parish council supply and install low level planting where feasible as this is the most cost effective solution.
- 4.1.7 Tree owners are required by both Common and Statute law to ensure their trees are reasonably safe and do not pose an unacceptable level of risk to visitors to the site or neighbours of the land on which trees are located. Once planted, trees require a vigorous maintenance programme, especially in the early years. These maintenance activities include regular inspections by a competent person, assessing the structural integrity of the trees, pruning etc. For the first 12 months, the responsibility to maintain the trees proposed in this report lies with the parish council. The highway authority will then take over the maintenance completely. Tree planning can only be provided by TfB approved contractors as tree pit construction and root growth could damage highway assets.
- 4.1.8 While TfB provide PPC with guidance regarding the size, location and general guidance relating to suitable species, it is recommended that the parish council hold an internal consultation with their residents in order to select a type of tree that works with all residents of Pitstone. Appendix D shows a list and images of suitable native tree species for Pitstone.

## 4.2 Coloured surfacing

- 4.2.1 Coloured surfacing is extensively used throughout the road network in the UK and is mainly used to demark areas used by busses and cyclists. Other applications include traffic calming and decorative road features. Evidence has shown that sites where coloured surfacing has been used in combination with traffic signs has led to a reduction of vehicle speeds and accidents. In conservation and rural areas, it is generally not recommended to apply coloured surfacing as these can have a urbanising effect. This problem can be alleviated applying 'light' surface colours such as a muted buff colour. In Pitstone, it is recommended to apply coloured surfacing in order to achieve a reduction in traffic speed and volume. This is done by visually reducing the carriageway width along Marsworth Road, highlight the western entry of the village on Marsworth Road, highlight various crossing pints and junction. Furthermore, for site 4 Marsworth Road cycle route – on carriageway only option, it is suggested to apply a contrasting carriageway surface to demark the cycle route. This is presented as an option for the PPC which will have a significant cost implication.
- 4.2.2 There are two methods of applying coloured surfacing. The more cost-effective method is to overlay the coloured surface on top of the existing surface, however, this requires the existing surface to be in a good condition. The second method is to replace the existing surface with a coloured wearing course. As this requires the removal of one road layer, it is more expensive. This method is recommended if the existing road surface is not in a good condition.
- 4.2.3 Coloured surfacing adds to the road maintenance costs. It is common for the surface colour to fade over time and while the surface material is still serviceable. Surface damaged depends on the traffic volumes, percentage of heavy goods vehicles and weather. It should be noted that due to budget restraints, TfB currently do not have an ongoing budget to maintain textured and coloured surfacing. There is a risk that ongoing routine maintenance may not be undertaken, or the damaged surface may be patched using a standard black material.
- 4.2.4 The exact materials used for the coloured surfacing depends on many factors such as material availability, amount of expected wear and the desired skid resistance. This will be confirmed in the detailed design stage.



*Figure 4-1 Image showing common use of red coloured surfacing*

### 4.3 Grasscrete

4.3.1 Grasscrete has been proposed as the recommended material to construct the parking bays on the southern verge along Marsworth Road. This material helps retain the green space at the village as well as providing a reinforced area on which cars can park on. The parking bays are constructed of a voided reinforced concrete slab which is cast on site. The voids are then filled with top soil and seeds. Over time, grass then grows inside the voids. The grass is does not suffer from vehicle damage as the concrete slab offers some protection.

4.3.2 In this application, Grasscrete is used as Sustainable Urban Drainage System (SUDS). A conventional hard paved asphalt layby would significantly increase the rain catchment area which would lead to necessary upgrade to the downstream drainage network to prevent flooding. Due to vegetation growing on the layby surface, Grasscrete can retain up to 90% of the greenfield runoff rate.



*Figure 4-2 Image showing a Grasscrete parking area*

## 5 Site 1 - Westfield Road Junction

- 5.1 Site 1 is located at Marsworth Road junction with Westfield Road, in the western end of Pitstone.
- 5.2 Westfield Road is a new link provided as part of the redevelopment at Castlemead. It's width and form offer a potentially useful link between the Upper and Lower Icknield Ways. This presents an opportunity for an alternative through route around both Pitstone and Ivinghoe for east- and west-bound traffic between Tring, Marsworth and Dunstable.
- 5.3 The existing eastbound entry to Pitstone from the railway bridge provides a wide, straight road interrupted only by the traffic island, signs and gateway marking the village boundary. The majority of through traffic continues towards the Vicarage Road Roundabout.
- 5.4 To reduce east-west traffic through Pitstone and Ivinghoe, the HBA proposal recommends a change in priority and highway alignment to discourage drivers entering the village. In addition, HBA recommend marking the village entry by providing contrasting carriageway surfacing at the western entry and tree planting, contrasting carriageway surfacing on the carriageway edges and a median strip to make the carriageway appear narrower.
- 5.5 The Road Safety Audit conducted by TfB has highlighted several significant road safety issues for this site. There are serious concerns regarding the radius of the bend, camber combined with the approach speed. Furthermore, it was pointed out that the preliminary design changes the kerb alignment, and places street furniture and trees on the outside of this bend which would lie on the exit path of any northeast bound vehicle losing control. The Road safety auditor recommended to retain the existing highway geometry.





Figure 5-1 HBA concept design (HBA, 2015)

- 5.6 Marsworth Road near the junction with Westfield Road is 9m wide and at the end of a 1.2km with a 40mph speed limit. Due to these road characteristics, it is very likely 85<sup>th</sup> percentile speed at this location is higher than 40mph.
- 5.7 Changing the priority at this junction would involve creating an extremely tight radius of 15m. This is a serious safety concern as vehicles travelling from Lower Icknield Way into Westfield road and vice versa are not required to come to a stop. Changing the priority at the junction could cause vehicles to overshoot the junction and large vehicles to tip over. In addition, to ensure adequate visibility is achieved, the proposal would require a large area of vegetation to be cleared including trees with tree preservation orders (TPO). This would add an additional layer of legal and environmental complexity to this proposal.
- 5.8 DMRB TD 9/93 stipulates that the minimum curve radius that could be safely put in place would be 360m based on the current speed limit and superelevation of Lower Icknield Way. The HBA proposal falls far short of this requirement.
- 5.9 Another element to this proposal is to create a buildout with tree planting and coloured surfacing to visually mark the entrance to the village. Following a C2 underground utility search conducted by TfB, many high voltage underground services have been discovered, originating from an electrical substation located at the junction. This is in addition to gas mains, BT cables, water mains and drainage pipes. The current verge width at the HBA proposed locations are quite narrow (<1m). Due to the above factors, the possibility of planting trees at this location cannot be confirmed in this feasibility study as further surveys such as GPR (ground penetrating radar) and/or trial pit surveys are required. Undertaking these activities fall beyond the scope of this feasibility study. TfB recommend that this tree proposal is taken forward to detailed design where further surveys are conducted.

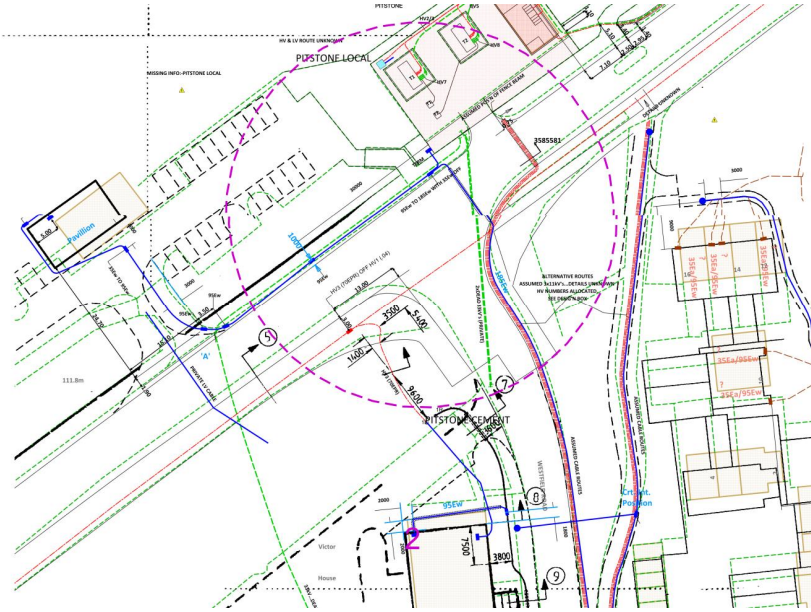


Figure 5-2 Services originating from substation on Marsworth Road

5.10 HBA proposed coloured surface treatment at the junction is feasible. This includes geometric surface treatment at the proposed give way line and a narrow median strip. This is however subject to the condition of the road surface at the time of construction. PPC should note that due to ongoing budget restrictions, TFB are unable to maintain coloured surface treatment. Any coloured surface treatment will be subject to routine maintenance. Repairs to the carriageway will likely be patched with black/grey asphalt surface course.

As an alternative to changing the priority at the junction, it is recommended only to implement the feasible elements of this scheme. This is limited to applying contrasting surface treatment, highlighting the cycleway crossing using surface treatment and tree planting near the junction.

5.11 It is estimated that that the feasible elements above will cost approximately £38,000. Refer to Appendix A and B for the general arrangement drawing and a breakdown of costs respectively.

## 6 Site 4 – Marsworth Road cycle route

6.1 A shared cycleway/footway facility has been proposed by HBA on Marsworth Road, between the junction with Cheddington Road and Brookmead School to improve cyclist's safety, especially for pupils who cycle to school daily. Currently on Marsworth Road, a footpath runs along the northern side of the road, the width of which varies from 1.4m to 3.4m. As with the footway, the width of the carriageway also varies significantly. The narrowest point is 5.5m wide, located near Rushendon Furlong while the widest section is approximately 7.2m wide near Queen Street. While the HBA recommendation focused on just widening the footway to provide a share path facility, TFB have also investigated the feasibility of providing an on carriageway only option (advisory and mandatory cycle lanes).

### 6.2 Shared cycleway



Figure 6-1 Minimum carriageway widths required for various road users (Manual for Streets, 2007)

6.2.1 To provide this facility, it is proposed to widen the footpath running along Marsworth Road to 3m to allow space for a shared space for cyclists and pedestrians, away from the carriageway. The remaining carriageway width once the footpath is widened is the most significant limitation to this scheme. In addition, street furniture on the footway such as light columns and bus shelters further restrict the effective width of the footway. While street furniture can be relocated to minimise widening works, it is not possible to reduce the carriageway width below 5.5m, as this would not allow larger vehicles to pass in opposite directions. Figure 6-1 shows the minimum carriageway widths required for various road users according to MfS.

6.2.2 Footway and carriageway measurements were taken and analysed to investigate the amount of widening works required. In total, the site was divided into eight sections to optimise the design. The shared path design is discussed below while Table 6-A summarises the findings.

#### 6.2.3 Vicarage Road Roundabout

6.2.3.1 A short 35m stretch of footway is located on the roundabout at Vicarage Road, measuring 1.2m wide. This section will be widened by 1.8m into the adjacent verge in the south.

6.2.4 Vicarage Road Roundabout to Old Farm

6.2.4.1 This section is located to the east of the stretch above. The current width is approximately 2m wide. To avoid widening into the carriageway, it was decided to widen this section to the north into the verge, however, this involves relocating a street light column.

6.2.5 Old farm to Plumm Property

6.2.5.1 This segment, east of Old Farm is approximately 18m long and 1.9m wide. It is proposed to widen the footway to 3m into the north verge. This requires relocating the adjacent electricity pole's cable stays slightly. In addition to the above, some vegetation must also be cleared.

6.2.6 Plumm Property to Restaurant

6.2.6.1 This is the first section where widening into the carriageway is required. This is because there is no verge located to the north and the footway width falls below 3m. the footway is built out into the carriageway by a maximum of 1m.

6.2.7 Woods Pizza to Queen Street

6.2.7.1 The section outside Woods Pizza to Queen Street junction has a 3.4m wide footway, therefore no widening works are required. In addition, it is proposed to remove two buildouts which formed the sheltered parking bays adjacent to the footpath.

6.2.8 Queen Street to Albion Road

6.2.8.1 The footway between Queen Street and Albion Road is also wide enough for a shared cycleway. As part of the shared path works, it is proposed to remove three buildouts which formed the sheltered parking bays on Marsworth Road.

6.2.9 Albion Road to Glebe Close

6.2.9.1 This section requires some footway widening of up to 1m into the carriageway. In addition, it is suggested to relocate the lighting column, post box, parish information board east, on the verge at Glebe Close.

6.2.10 Glebe Close to Brookmead School

6.2.10.1 The section between Glebe Close and Brookmead School poses some serious challenges as the footway and carriageway widths narrow to 1.5 and 5.5m. in addition, a large tree is located between Glebe Close and Rushendon Furlong. Widening the footway at this location would lead to damage of the protected tree. A pinch point located between Rushendon Furlong and Brookmead school prevents the 1.5m footway to be widened into the carriageway which is 5.5m wide. Taking the above factors into account, it was found that a shared path stretching the full length of Pitstone cannot be recommended as this cannot be achieved safely.

6.2.11 The cost for this option will cost approximately £61,500. Refer to Appendix A and B for the general arrangement drawing and a breakdown of costs respectively. arrangement drawing for this site.

Table 6-A Achievable shared cycleway widths along Marsworth Road

Section	Existing Width (m)	Existing Carriageway width (m)	Total widening required (m)	Constraints	Resolution
<b>Roundabout</b>	1.8	N/A	1.2	None	Widen to 3m
<b>Roundabout to Old Farm</b>	2	7.8	1	Light column	Relocate light column
<b>Old farm to Plumm Property</b>	2.4	7.2	0.6	Electricity pole cable stays, vegetation	Widen into verge
<b>Plumm Property to Woods Pizza</b>	2	6.5	1	None	Widen into carriageway
<b>Woods Pizza to Queen Street</b>	3.4	7	0	None	No Widening required
<b>Queen Street to Albion Road</b>	3	7	0	None	No Widening required
<b>Albion Road to Glebe Close</b>	2.0	6.1	1	Light column, post box, parish information board	Widen into footway and carriageway, relocation of street furniture
<b>Glebe Close to Brookmead School</b>	1.5	5.8	1.5	Narrow carriageway, large tree with TPO, Carriageway pinch point at 66 Marsworth Road	No widening

### 6.3 On carriageway cycle route

- 6.3.1 In addition to a shared path, an on-carriageway only option was assessed based on *Sustrans Handbook for cycle-friendly design*.
- 6.3.2 Sustrans recommends that the minimum width of an on carriageways cycle lane should not fall below 1.5m where the speed limit is 30mph. As with the option above, the minimum carriageway width may not be reduced to less than 5.5m to allow larger vehicles to use this area. There are two types of on carriageway cycle lanes. A mandatory cycle lane is a lane which motorists are not permitted to use by law. In addition, motorists may also not park in mandatory cycle lanes, even if there are no yellow lines present on the cycle lane. They are usually delineated by a solid white line and require a traffic regulation order (TRO) to be undertaken. This is an exercise which can be a long and costly process. As the name suggests advisory cycle lanes only 'advise' motorists not to drive in the lane and are delineated by a broken white line. If there are no waiting restrictions (in the form of yellow line(s)) present, cars may park on it. While mandatory cycle lanes are the preferred option for cyclists, physical restrictions such as the roads width may prevent the highway authority from implementing them. A parking ban can be enforced on advisory cycle lanes through the use of yellow lines along the cycle route. Both, mandatory and advisory cycle lanes can only be in one direction. Both options were considered for Marsworth Road. It is anticipated that the use of linin as above will visually narrow the carriageway. As an option this effect can be amplified through the use of contrasting carriageway surfacing.

### 6.3.3 Mandatory cycle lanes

6.3.3.1 It became quickly apparent that a mandatory cycle lane is not feasible for the whole stretch of Marsworth Road. As the minimum recommended width for a one-way cycle lane is 1.5m, implementing a two-way system would take up 3m of carriageway width. Given that the widest section of Marsworth Road is about 7.2m wide, a two-way system is not feasible, however, a shorter stretch of cycle lane is feasible. Based on the current carriageway widths, this lane would commence at Vicarage Road roundabout and terminate at Ridgeway Close. This option is not recommended due to the short length of the cycleway facility.

### 6.3.4 Advisory cycle lanes

6.3.4.1 As larger vehicles may use the advisory cycleway in order to pass other vehicles, the usable carriageway width for motorists essentially remains the same although they are not advised to use it. It is not advised to continue two 1.5m wide cycle lanes from the roundabout to the school as the narrowest section of the road is only 5.5m. This means the remaining carriageway width is only 2.5m which will lead to motorists constantly using both sides of the cycle lane. Sustrans recommends that the central part of the carriageway should be between 3m and 5.5m. As discussed previously, to facilitate the cycle lane, it is proposed to remove all buildouts and speed cushions between Vicarage Road and Brookmead School. Furthermore, it is recommended to remove the centreline as a traffic calming measure. Marsworth road has been divided into three sections which are further discussed below.

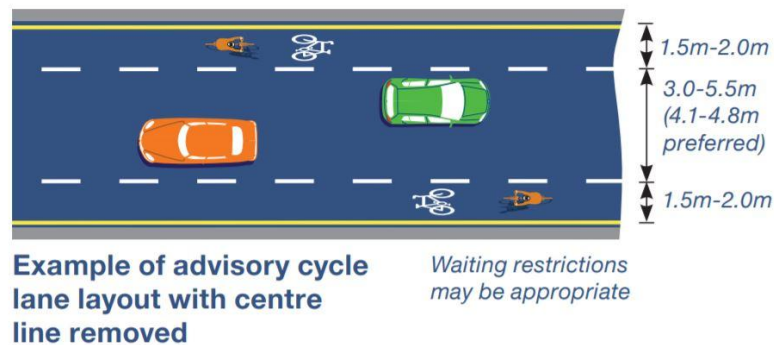


Figure 6-2 Extract from Sustrans showing advisory cycle lane

### 6.3.5 Vicarage Road roundabout to Albion Road

6.3.5.1 This section of Marsworth Road is generally not wide enough for two full size (1.5m) cycle lanes. To provide a cycleway facility on both sides of the road it is recommended to mark out an eastbound 1.5m wide cycle lane and reducing the westbound lane to 1m. This leaves between 4.5m to 4.85m of carriageway for motorists. On this stretch, four sets of speed cushions and five buildouts are removed.

### 6.3.6 Albion Road to Ridgeway Close

6.3.6.1 As discussed previously, the carriageway widths tend to reduce the further one approaches the school. At Albion Road, it was decided to terminate the westbound cycle lane while the eastbound lane tapers from 1.5m to 1m over a length of 25m. This cycle lane width falls below the minimum recommended width, however, this is used only for a short section.

### 6.3.7 Ridgeway Close to Brookmead School

6.3.7.1 The final stretch of the eastbound cycle lane is 1m wide and leaves between 5.9m and 4.5m of apparent carriageway width.

## 6.4 Relocation of parking bays

6.4.1 In addition to an improved cycleway facility, it is proposed to relocate existing parking bays located on the northern side to the southern side verge. It is proposed to construct the new parking area of GrassCrete in order to avoid upgrading the drainage network. In total, a length of 112m of parking area is removed and 132m of parking bays are constructed on the southern verge. Individual sets of parking bays have been designed in accordance to MfS. Refer to appendix A for general arrangement drawing which shows the locations of the proposed parking bays.

6.4.2 The advisory cycle lane will cost approximately £21,200. If it is decided to highlight the cycle lane with coloured surfacing, the cost will increase to £64,900. Refer to Appendix A and B for the general arrangement drawing and a breakdown of costs respectively.



## 7 Site 6 – Marsworth Road Junctions

- 7.1 To increase the visual awareness of junctions in Pitstone along Marsworth Road, HBA recommended to apply geometric surface treatment at the junctions, apply contrasting carriageway material on edges of carriageway and plant trees on the junction bellmouths. To improve pedestrian safety, it is recommended to set back pedestrian crossing points 5m where possible.
- 7.2 A C2 utility search was conducted for this site. Several utility chambers were found on junctions, which limits the feasibility of tree planting. In addition, visibility requirements outlined in DMRB TD9 and MfS must be achieved for this to be feasible. The contrasting carriageway surfacing proposed by HBA is feasible at all junctions provided the carriageway surface at the time of application is in a good condition. Refer to section 4.2 for further information regarding the maintenance and requirement for coloured surfacing.
- 7.3 Queen Street
- 7.3.1 The junction serving Queen Street is the westernmost junction with the narrowest entry and tightest kerb radius. Due to lack of space at the junction, it is not possible to plant trees at this location. In addition to the above, offsetting the informal pedestrian crossing at the junction 5m back is feasible. It is however not required or recommended as the junction radii are quite small. This automatically causes drivers to slow down as they turn into Queen Street. A setback of 5m would also not follow the existing pedestrian desire line.
- 7.4 Albion Road
- 7.4.1 Albion Road is located east of Queen Street. It has significantly larger kerb radii and crossing point is already set back approximately 5m. This junction also has utility chambers installed on both sides. It is deemed feasible to plant trees on all four sides of the junction. To ensure the tree roots do not damage utilities at the junction, root barrier should be installed
- 7.5 Glebe Close
- 7.5.1 Glebe close is also wider than Queen Street junction with more space for tree planting. The existing informal crossing is set back approximately 2m. The utility search has revealed two utility chambers are located on either side of the junction. However, a large area is available for tree planting at this junction. It is therefore feasible to plant trees at this junction as per the HBA recommendation.
- 7.6 Rushendon Furlong
- 7.6.1 This is the last of the four junctions for this proposal. According to the C2 stats search, there are currently three utility chambers at this location. The crossing is set back approximately 3m. Despite the proposed location being in a hardstanding area, it was found that tree planting at this junction is feasible using a tree pit, provided a root barrier is also used.
- 7.7 The above works will cost approximately £102,500. Refer to Appendix A and B for the general arrangement drawing and a breakdown of costs respectively.



## 8 Site 7 Lower Marsworth Road

- 8.1 The aim of this section is to consider closing off Marsworth Road at between Rushendon Furlong and Brookmead School. A 'Buses Only' link would ensure that bus services are not affected by the closure while reducing traffic significantly. Furthermore, the feasibility of a limited number of parking bays and visually narrowing the carriageway through the use of contrasting carriageway surface is considered.
- 8.2 It is important to take into account the strategic importance of the road prior to making significant changes the B489 Marsworth Road. Currently, Marsworth Road is a classified 'B Road' and plays an important role in moving goods and people from Aylesbury to Dunstable. The classification of roads such as the B489 falls under the jurisdiction of the Department for Transport. TfB therefore do not have the authority to stop the B489 near Brookmead School in order to reduce the traffic volumes.
- 8.3 Additionally, this proposal requires the provision of two turning heads large enough to allow large vehicles do a 'U' turn on either end of the closure. Due to the lack of space on Marsworth Road, it is unlikely that this is feasible without significant land take.
- 8.4 As an alternative, it may be feasible to declassify Marsworth Road from the western village entry to the junction with the B488 and classifying either Vicarage Road or Westfield Road (once adopted). This process on its own (without stopping the road) may lead to a reduction in traffic volumes through the village as vehicles passing through may choose to follow the main classified route instead of driving through the Pitstone. This, however, this is beyond the scope of this feasibility study and requires close liaison and the approval by the Department for Transport (DfT).
- 8.5 While the above elements of this proposal require further study, the feasibility of the remaining elements is discussed below:
- 8.6 It is suggested to allocate a limited number of parking bays where possible on Marsworth Road between Rushendon Furling and Brookmead School. In addition, it is suggested to visually narrow the width of the carriageway to 4.8m through the use of contrasting carriageway surfacing. This overlaps with the scope of Site 6 and has been excluded from this site.
- 8.7 As established previously, it was shown that the final section of Marsworth Road is relatively narrow. According to MfS, the recommended width of parking bays designed for cars is 2m. Due to the narrow width of the carriageway between Rushendon Furling and Brookmead School it is not feasible to create full width parking bays on carriageway at this location.
- 8.8 Although not recommended, consideration was given to a limited number of footway parking bays. This is where vehicles partially mount the kerb meaning parking bays only occupy 1m of the carriageway. This could damage to the kerbs and footway and be an inconvenience to local people, especially to wheelchair, prams and pushchair users as this would leave about 0.6m to 0.8m of space on the footway. In addition, the viability of this proposal can be ruled out if Site 4 – Marsworth Road cycle route is taken forward to construction as the proposed cycle route takes up a considerable amount of carriageway itself.

## 9 Site 8 – Brookmead School

- 9.1 Site 8 is an area in front of Brookmead School on the B489 and located at the boundary between Pitstone and Ivinghoe. Despite the schools Ivinghoe location, Pupils from both villages are registered at this school. Since the school is a vital part of both communities it will be discussed in both reports.
- 9.2 HBA recommended to extend the footway on the school side, and deploy a combination of bollards, low benches and planting to define a gathering space and create a shift in the alignment of the carriageway. The width of the carriageway is reduced to the minimum for very slow two-way traffic, and the whole space is clearly defined by paving and street furniture to discourage short-term parking.
- 9.3 The parish councils have asked TfB to look into low cost alternatives to the HBA design to achieve a reduction of speed and possibly traffic volume near the school. This will be achieved by applying a contrasting carriageway surface and an advisory 20mph speed to limit improve safety and the profile of the area. In addition to the above, the TfB proposal includes coloured surfacing in the area outside the school entrance and repainting of the “SCHOOL KEEP CLEAR” marking and a line across from the entrance to visually narrow the carriageway. The SCHOOL KEEP CLEAR line is also moved towards the centre of the carriageway to narrow it further.
- 9.4 An advisory 20mph speed limit is not a legally enforced speed limit, it is there only to advise drivers to slow down to 20mph. The legally enforced limit will stay at 30mph. As it is not a requirement to display the speed limit for 30mph roads, it is expected that many motorists will not exceed 20mph thus reducing the present risks to pedestrians and school children. The proposed bollards outside the school area will add a further layer of protection while being low cost and easy to install.
- 9.5 The cost for the works described above is expected to be in the region of £23,700. Refer to appendix A for the general arrangement drawing for this site.

## 10 Site 10 – Vicarage Road junction with B488

- 10.1 Site 10 is located at Vicarage Road junction with the B488, to the south-east Pitstone. The junction is a T-junction at the southern end of Vicarage Road and connects to a south-west to north-east section of the Upper Icknield Way (the B488).
- 10.2 Due to changes on Westfield Road, which aims to divert drivers around the village via Westfield Road and Upper Icknield Way, PPC have expressed their concern that the increased traffic volume on the B488 will cause difficulties for drivers attempting to pull out from Vicarage Road into the B488. This risk is exacerbated by the fact that this junction is difficult to see in advance for vehicles travelling along the B488.
- 10.3 The Full HBA recommendation has been adopted for this site which involved raising the profile of the junction with low-level planting on all sides of the junction. In addition to the above, it was recommended to plant 4 trees with enough set-back so as to not cause issues with the required visibility splays. To complement the proposed vegetation, a small area of contrasting surface treatment is proposed at the junction. The effectiveness of the contrasting surface treatment is diminished by the fact that the carriageway level in the south-western section is lower than the junction. This makes the contrasting surface difficult to see in advance by north-eastbound drivers.
- 10.4 A C2 stats search has revealed that the only affected utilities in the area are BT cable and a water main. Despite this, tree planting at the junction is feasible as there is sufficient space to position the trees to avoid underground utilities. It is however, recommended to carefully select the tree species to control the growth of the roots in order to avoid damage to utilities. Alternatively, a tree root barrier which forces root to grow down may be used to ensure utilities are not damaged. The exact location of tree planting was also chosen to comply with DMRB TD9 to meet visibility requirements at the junction.



Figure 10-1 Extract from the HBA report showing the proposal at Vicarage Road

- 10.5 TfB can therefore conclude that the all elements of this scheme are feasible. the extent of low level planting was defined such that it is within the highway boundary.
- 10.6 The cost for the above works is estimated to be in the region of £14,200. Refer to Appendix A and B for the general arrangement drawing and a breakdown of costs respectively.

## 11 Conclusion

- 11.1 TfB have completed a feasibility study on the Hamilton Bailly Associates proposals attached in appendix C. The scope of this feasibility study includes five highway and cycleway improvement schemes in Pitstone. Where the feasibility study has shown elements of a scheme not to be feasible, an alternative proposal has been put forward.
- 11.2 Alongside the feasibility study, TfB have prepared 4 no of general arrangement drawings as well as high level cost estimates using the 2019 The schedule of rates for TfB approved subcontractors. These can be found in appendix A and appendix B respectively. The proposals for each site is summarised below.
- 11.3 Site 1 - Westfield Road:
- 11.3.1 Site 1 is located at Marsworth Road junction with Westfield Road. The feasibility of changing the priority at the junction, construction of a buildout to create a narrow entry, provision of contrasting coloured surfaced and tree planting was studied. TfB have concluded that changing the priority at the junction was not feasible due to highway geometry and visibility requirements. Furthermore, the feasibility of tree planting could not be confirmed at feasibility stage due to closely spaced underground utilities at the proposed location. Further surveys such as GPR (ground penetrating radar) and trial pit surveys are required. It was found that the application of contrasting carriageway surfacing in order to visually narrow the carriageway and village entry is feasible.
- 11.4 Site 4 – Marsworth Road Cycle Route
- 11.4.1 The proposal for this site was to investigate the feasibility of widening the footpath on Marsworth Road in Pitstone in order to create a shared cycleway/footway facility. This involves removing existing buildouts and parking bays located along the northern side of the road as well as speed cushions. It was found that widening was only feasible from Cheddington Roundabout to Glebe Close. In addition to above, the feasibility of an 'on-carriageway' only option was investigated. For this option, it is proposed to retain the original footway width, remove existing buildouts and speed cushion and install 'advisory cycle lanes'. It was found that it is feasible to provide an eastbound cycle lane from Cheddington Roundabout to Brookmead School, however, due to the narrow road geometry near lower Marsworth Road, the longest length of westbound cycle lane feasible is from Cheddington Roundabout to Albion Road.
- 11.4.2 In addition to the proposed cycleway facilities described above, it was found feasible to relocate the parking bays on Grasscrete laybys located on the southern side of Marsworth Road.
- 11.5 Site 6 - Marsworth Road Junctions
- 11.5.1 The agreed proposal at this site involved improving the visual appearance of the junctions at Marsworth Road by applying coloured carriageway surfacing and planting trees. Due to a lack of space at Queen Street, the tree planting element is feasible at this junction.

#### 11.6 Site 7 – Lower Marsworth Road

11.6.1 The proposal at lower Marsworth Road is to consider closing off Marsworth Road at between Rushendon Furlong and Brookmead School. Furthermore, the proposal included creating a limited number of clearly defined parking bays on the southern side and applying a contrasting carriageway surface in order to visually narrow the carriageway. This proposal requires requesting the DfT to declassify Marsworth Road and classify either Vicarage Road or Westfield Road. TfB recommends undertaking a separate feasibility study.

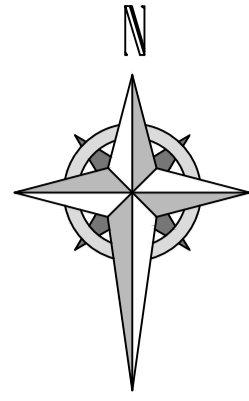
#### 11.7 Site 8 – Brookmead School



11.7.1 For the area by Brookmead School, low cost solutions are proposed. These include an 20mph advisory speed limit, coloured surfacing and road marking improvements to visually narrow the carriageway.

#### 11.8 Site 10 – Vicarage Road junction with B488

11.8.1 The proposal for site involves increasing the visual impact of the junction between the B488 and Vicarage Road as it is difficult to see when driving on the B488. All elements of this proposal were found to be feasible. This includes coloured surfacing, tree and low-level planting to frame the junction.

## **APPENDIX A Drawings**




- Notes:**
- Do not scale from this drawing
- Legend:**
-  Proposed contrasting carriageway surfacing
  -  Proposed tree planting



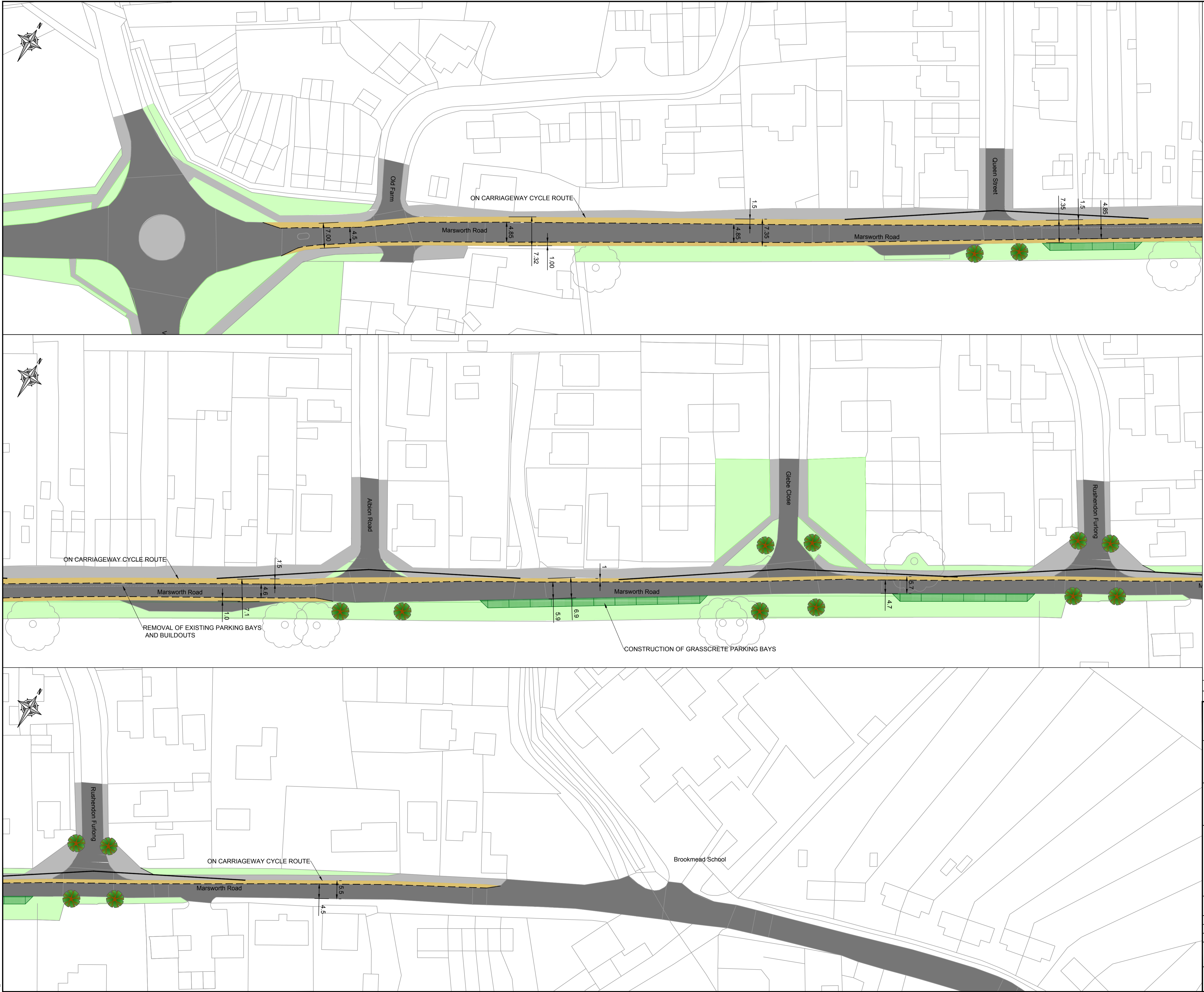
Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd
P01	JUL 19	FIRST ISSUE	MA	KA	KA	PS




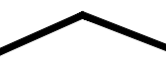
  


	County Hall, Walton Street, Aylesbury, Buckinghamshire, HP20 1UY	
	Client	
Pitstone Parish Council		
Project		
Pitstone Feasibility Study		
Drawing title		
1. Westfield Road Junction		
Drawing status		
Feasibility		
Scale	1:500	DO NOT SCALE
Project No.	LOC18043	Rev
		P01
Drawing number		
LOC18043-DWG-SITE-1		
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing.		

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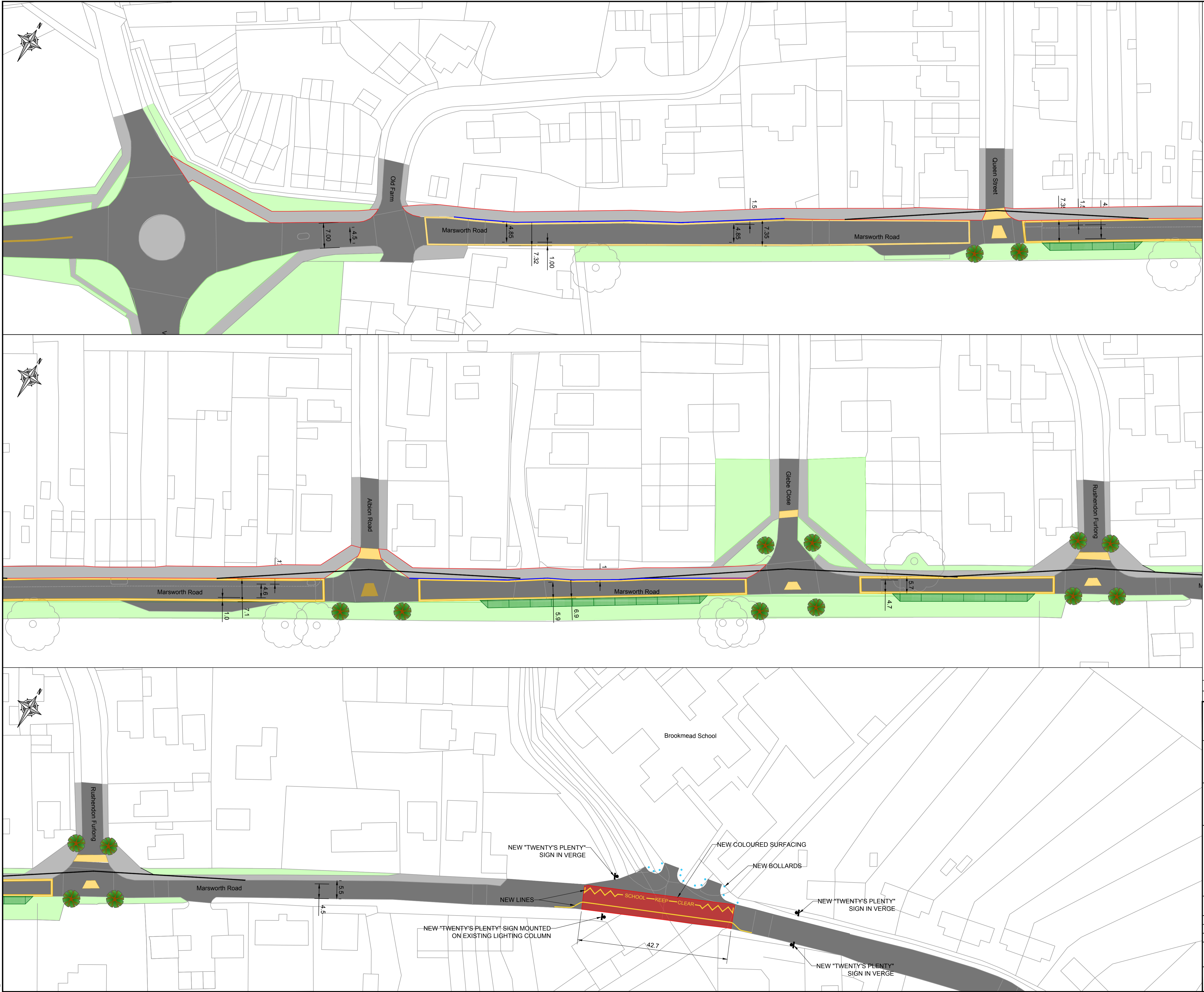


- Notes:**  
 1. Do not scale from this drawing
- Legend:**
-  Proposed contrasting carriageway surfacing
  -  Grasscrete parking area
  -  Proposed tree planting
  -  Visibility splay (area of highway in which visibility must not be compromised)

P01	JUL 19	FIRST ISSUE	MA	KA	KA	PS
Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd
			County Hall, Walton Street, Aylesbury, Buckinghamshire, HP20 1UY			
Client			Pitstone Parish Council			
Project			Pitstone Feasibility Study			
Drawing title			<b>5. Marsworth Road Cycle Route</b> On carriageway cycle way option Feasibility			
Drawing status			1:500 LOC18043			
Scale			DO NOT SCALE			
Project No.			Rev <b>P01</b>			
Drawing number			LOC18043-DWG-SITE-5, 6, 7, 8			
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing.						

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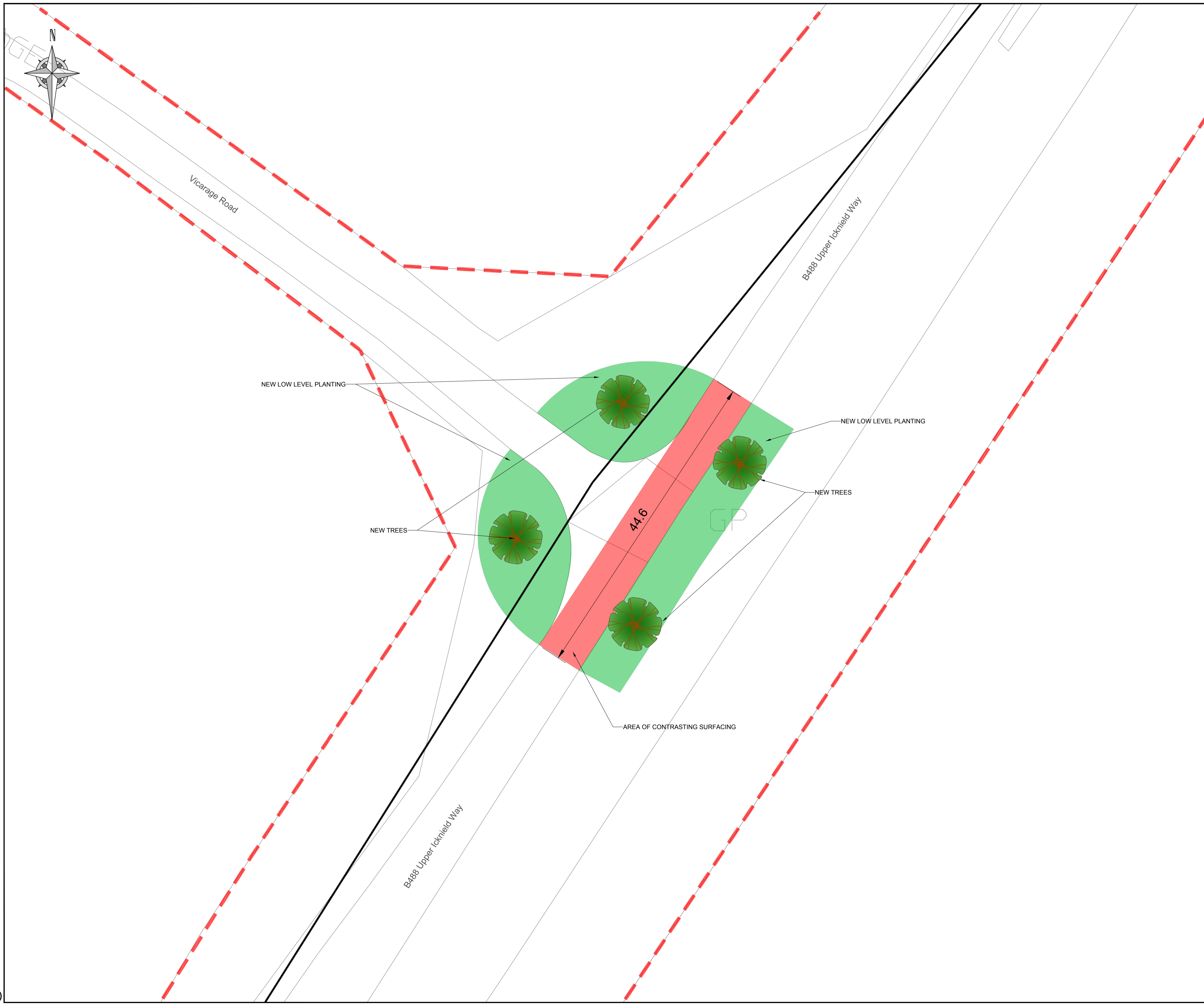




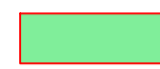

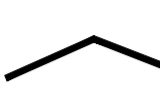
- Notes:**  
 1. Do not scale from this drawing
- Legend:**
- Proposed shared cycleway boundary
  - Proposed kerb extension
  - Proposed contrasting carriageway surfacing
  - Grasscrete parking area
  - Proposed tree planting
  - Visibility splay (area of highway in which visibility must not be compromised)

Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd
P01	JUL 19	FIRST ISSUE	MA	KA	KA	PS
			County Hall, Walton Street, Aylesbury, Buckinghamshire, HP20 1UY			
Client: Pitstone Parish Council						
Project: Pitstone Feasibility Study						
Drawing title: 5. Marsworth Road Cycle Route 6. Marsworth Road Junctions 7. Rushendon Furlong and School 8. Brookmead School						
Drawing status: Feasibility						
Scale: 1:500			DO NOT SCALE			
Project No. LOC18043			Rev P01			
Drawing number: LOC18043-DWG-SITE-5, 6, 7, 8						
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing.						

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- Notes:**  
 1. Do not scale from this drawing
- Legend:**
-  Proposed contrasting carriageway surfacing
  -  Proposed tree planting
  -  Area of proposed low level planting
  -  Highway boundary
  -  Visibility splay (area of highway in which visibility must not be compromised)

Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd
P01	JUL 19	FIRST ISSUE	MA	KA	KA	PS

	County Hall, Walton Street, Aylesbury, Buckinghamshire, HP20 1UY		
	Client		
Pitstone Parish Council			
Project			
Pitstone Feasibility Study			
Drawing title			
Vicarage Road junction with Upper Icknield Way			
Drawing status			
Feasibility			
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Project No.	LOC18043	Rev	P01
Drawing number			
LOC18043-DWG-SITE-10			
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing.			

## APPENDIX B Cost estimates

### B.1 Cost summary

Site Number	Site Name	Cost estimate
1	<b>Westfield Road</b> <ul style="list-style-type: none"> <li>○ Coloured carriageway surface</li> <li>○ Tree planting</li> </ul>	<b>£38,200</b>
4	<b>Marsworth Road Cycle Route Option 1</b> <ul style="list-style-type: none"> <li>○ Footway widening for shared footway/cycleway</li> <li>○ Removal of buildouts and parking bays</li> <li>○ Removal of buildouts</li> </ul>	<b>£61,500</b>
	<b>Marsworth Road Cycle Route Option 2</b> <ul style="list-style-type: none"> <li>○ Advisory cycle lanes</li> <li>○ Coloured carriageway surface</li> <li>○ Removal of buildouts and parking bays</li> <li>○ Removal of speed cushions</li> <li>○ Removal of buildouts</li> </ul>	<b>£64,900</b>
	<b>Marsworth Road Cycle Route Option 3</b> <ul style="list-style-type: none"> <li>○ Advisory cycle lanes</li> <li>○ Removal of buildouts and parking bays</li> <li>○ Removal of speed cushions</li> <li>○</li> </ul>	<b>£21,200</b>
6 and 7	<b>Marsworth Road Junctions</b> <ul style="list-style-type: none"> <li>○ Tree planting at junction</li> <li>○ Coloured carriageway surface to narrow width of road</li> <li>○ Grasscrete parking bays on verge</li> </ul>	<b>£102,500</b>
8	<b>Brookmead School</b> <ul style="list-style-type: none"> <li>○ Advisory 20mph speed limit</li> <li>○ Coloured carriageway surface</li> <li>○ Lining improvement to visually narrow carriageway</li> <li>○ Installation of bollards</li> </ul>	<b>£23,703</b>
10	<b>Vicarage Road junction with B488</b> <ul style="list-style-type: none"> <li>○ Tree planting</li> <li>○ Coloured carriageway surface</li> </ul>	<b>£14,200</b>

## B.2 Assumptions

- B.2.1 All budget cost estimates within this report are initial budget estimates based upon recent Transport for Buckinghamshire experience and recent similar schemes. All costs will include a value for fees associated with the design, procurement, supervision and progression of a scheme. This will vary depending on a scheme complexity. Costs also include consultation as required.
- B.2.2 Prior to quotations for works being undertaken, TfB must be commissioned to complete the detailed design and obtain quotes from TfB Supply Chain Partners. On completion of this stage, TfB would issue a quote for the implementation of the works.
- B.2.3 The cost estimate has been based upon work being undertaken in the year 2019. For future years, a rate of inflation may need to be applied.
- B.2.4 A percentage contingency of has been applied to all costs within the budget estimate. The percentage contingency is varied to reflect the complexity of the work. This is representative of a feasibility stage budget estimate and reflects the nature of many of the unknown features that will/may be identified through further detailed design and implementation. Contingency would reduce following the detailed design as the risks are identified and resolved. TfB reserve the right to review the detailed design and construction costs.
- B.2.5 All works costs include an allowance for appropriate traffic management to ensure the works are undertaken in a safe manner. Where necessary a Temporary Traffic Regulation Order (TTRO) has been allowed for to accommodate a road closure to complete the works.
- B.2.6 Where necessary, the estimates allow for a single consultation exercise. In the case of statutory consultations an informal consultation exercise is recommended prior to the costlier statutory stage. Therefore, it is recommended that the parish could undertake a degree of informal consultation (supported by TfB) to identify any risks that could be mitigated prior to the statutory process.

## **APPENDIX C Pitstone - Hamilton Baillie Associates Report**

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# PITSTONE, BUCKINGHAMSHIRE

Place making and connections for an expanding village



hamilton-baillie  
ARCHITECTS

Version 02  
December 2015

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This report was prepared by Hamilton-Baillie Associates Ltd  
December 2015 v. 02  
For Pitstone Parish Council



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## Introduction

Most villages develop and grow around a kernel of a church, a market square or a cross roads. New housing and activity may expand the size and shape of the settlement, but the core of most villages can be easily identified. Pitstone is an exception. Originally a tiny hamlet centred around St. Mary's Church End at the southern end of Vicarage Road, Pitstone's expanded northwards along the relatively new Marsworth Road. The construction, and more recent redevelopment of a major cement works underpinned this expansion. As a result, Pitstone is a somewhat fragmented village without a clear centre or focal point. The long, straight Marsworth Road, linking Pitstone to the neighbouring village of Ivinghoe, serves as both the main spine of Pitstone as well as a boundary, separating the main areas of housing from the newer developments at Castlemead.

Such fragmented settlements are particularly vulnerable to the pressures generated by traffic growth. The busy roads that link the disparate parts of the village also form part of the local highway network, linking the surrounding settlements of Aylesbury, Leighton Buzzard, Dunstable and Tring. Standard highway features have further eroded the identity of Pitstone. Drivers are less aware of the village context, resulting in a streetscape dominated by fast-moving traffic and vehicles. The opportunities

for walking and cycling are limited, resulting in greater dependence on cars for local journeys.

This study forms part of a set of initiatives by the Parish Council to address these issues. New housing, business, educational and recreational developments offer the opportunity to extend and strengthen the village centre. A Neighbourhood Plan is well advanced in preparation, offering an opportunity to improve the existing streetscape, and to strengthen the connections within Pitstone, especially along the spine of the Marsworth Road. The report is intended to supplement the Neighbourhood Plan, identifying the critical locations where small-scale changes and interventions could help to rebalance the relationship between traffic movement and the pedestrian and cycling routes essential to any coherent village.

A similar exercise is also underway for the adjoining parish of Ivinghoe, and the two studies are intended to be complementary. Although very different in character, both villages share a need to address the impact of growing traffic and speeds, and to retain and strengthen a sense of place. Access to Brookmead School, at the joining point of the two villages is one of a number of common themes. This study aims to expand the palette of measures available to developers and

the highway authority, and to build consensus and confidence amongst the local community around ways to improve safety, access and the quality of life in Pitstone. Both sites provide a starting point for a wider set of measures aimed at creating a safe, low-speed village environment.



Marsworth Road, Pitstone





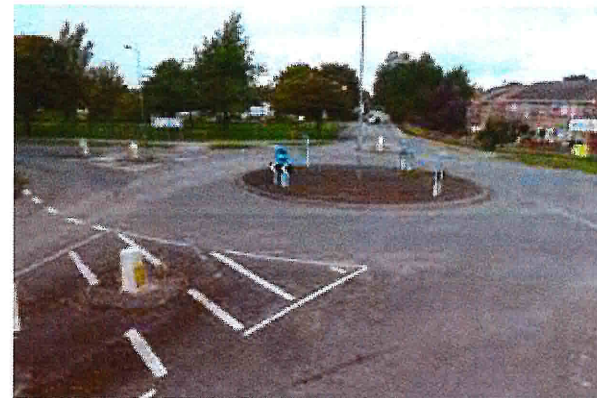
## Pitstone and Ivinghoe

Pitstone and Ivinghoe lie on undulating chalklands at the foot of the Chiltern Hills. Marsworth Road, the main spine of the village, forms part of the B 489 and the Lower Icknield Way. Cheddington Road provides access from the north, with Vicarage Road linking south to the parallel Upper Icknield Way. The routes converge at a large roundabout adjoining the main recreation area. The junction carries around 8-9,000 vehicles per day\*, and its size and configuration dominates the heart of the village. Marsworth Road leads into the winding High Street of Ivinghoe to the east. To the west the new developments at Castlemead have been built around a new route, Westfield Road, connecting Pitstone to the Upper Icknield Way.

A new shared bicycle route has been constructed from Castlemead as far as the roundabout. From this point onwards the opportunities for safe cycling are limited. Marsworth Road presents the only direct and continuous route through to Ivinghoe and to Brookmead School. The existing cross-section and alignment of Marsworth Road is not conducive to cycling. The pavement is

too narrow for two-way shared use, and the width and arrangement of the carriageway with sporadic roadside parking discourages on-road cycling. Despite conventional speed humps, speeds remain high along the long, straight uninterrupted road\*. Almost all the residential areas of Pitstone are accessed from the north side, including four to five side roads off the main route. The southern edge includes a wide grassed verge, used for some informal parking and for a bus stop. Overall, Marsworth Road and the large roundabout feel outside the context of a village, and traffic speeds appear higher as a result.

The proximity and shared facilities of Pitstone and Ivinghoe add to the need for safe, direct and comfortable connections along Marsworth Road and Ivinghoe High Street. Around 80% of the Brookmead School pupils arrive from the Pitstone direction. The school's figures suggest a relatively high dependency on cars and buses, adding to the pressure for space outside the school entrance. The dominance of traffic in both villages erodes the connectivity and coherence that underpins successful communities.



Recreation Ground Roundabout

\* Traffic data from Pitstone PC mVAS monitoring (Dec 2014-August 2015) and Transport for Bucks records (2015)





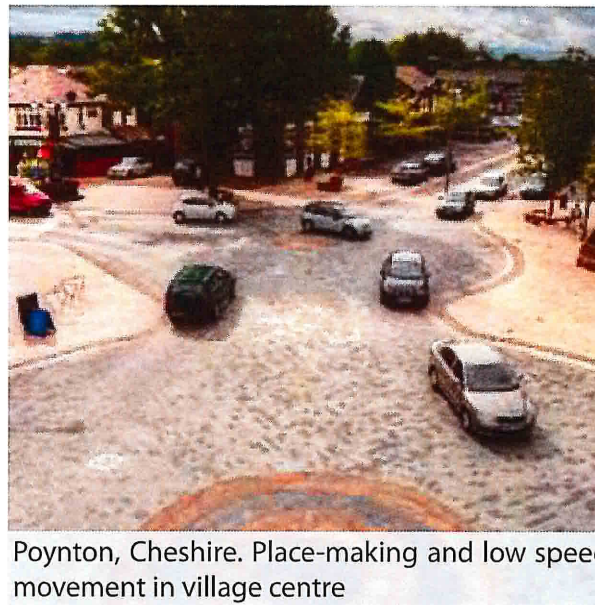
## The policy context

Pitstone Parish Council's initiative to address traffic issues is well timed. The emerging Neighbourhood Plan provides a framework for directing developer contributions to address broader traffic and transport issues in the village. Co-ordinating the maintenance programme and future highways improvements of Transport for Buckinghamshire with locally initiated ideas offers a means to supplement private investment and enhance the public realm and streetscapes of Pitstone.

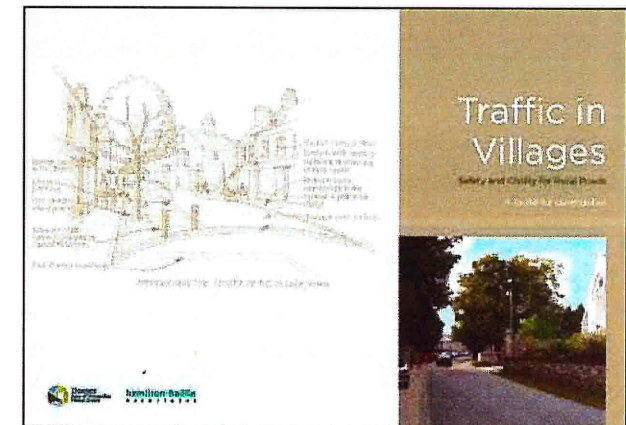
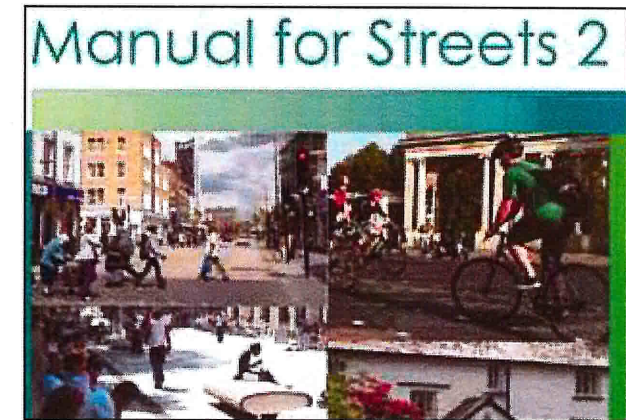
Policy and best practice for traffic in towns and villages are rapidly evolving as more is understood about driver behaviour and the significance of rural roads. The publication of Manual for Streets 2 in 2011 reflected a significant shift in policy towards place-making, and the importance of matching streets to their context and purpose. Guidance such as Traffic in Villages, launched by the CIHT in 2012, builds on the growing body of precedents to identify key design principles. Buckinghamshire, in common with many progressive highway authorities, is seeking ways to reduce clutter, simplify streets and reduce car dependency by fostering opportunities for walking, cycling and public transport.

A key policy for highway design and traffic in villages, reflected in Manual for Streets 2, aims to

match the form and context of roads and streets to reflect their role within the highway network. Wherever possible, through traffic should be directed away from village centres. Where streets are required to serve a strategic role whilst forming part of the public realm of a village, the mixed-use context of a village should be apparent to drivers from the change in scale and transition from the higher speed highway, from the emphasis on place-making and pedestrian routes, and from a combination of visual cues and psychological signals.



Poynton, Cheshire. Place-making and low speed movement in village centre





## Pitstone – Initial observations

Pitstone benefits from generous amounts of open space and recreation areas. It also enjoys open views south of Marsworth Road towards the Chilterns. As a result, there are few of the familiar clues of buildings framing and enclosing streets to alert drivers to the village surroundings. Traffic approaching from the west along the B489 passes no clear transition or change in scale of the road until the main roundabout, apart from an artificial set of roadside gates positioned with little reference to the context. There are few buildings, entrances or signs of activity until the main roundabout. The result is an unusually linear village, with few recognizable landmarks or places. This linearity continues along Marsworth Road, emphasized by the open countryside to one side. Few of the side turnings are immediately

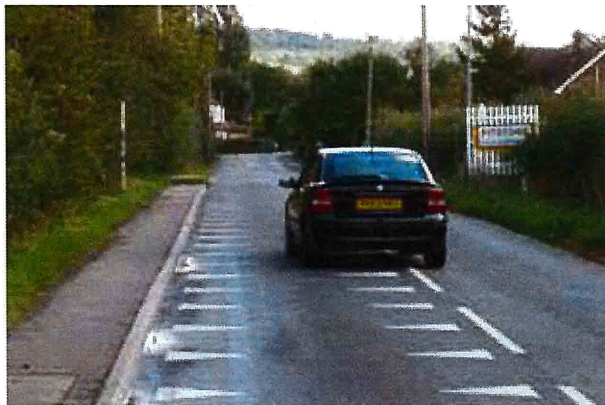
apparent, making junctions such as Queen Street and Glebe Road harder to exit.

Access from the north along Cheddington Road is more contained, although the village entrance also relies on artificial white gates and extensive “dragons’teeth” road markings. Vicarage Road, like Marsworth Road, has housing mainly on just one side, although mature planting helps to contain and reduce the scale of the approach. With the Memorial Hall and Pitstone Green Museum set back from the road, it is the mature landscaping and trees of the Recreation Area that characterize the centre of the village.

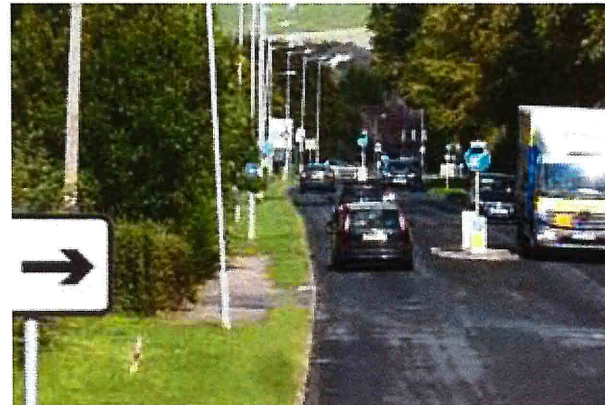
The outline development plans under consideration in the Neighbourhood Plan

provide an opportunity to address the absence of village features in Pitstone. Educational and sports facilities to the west, and the L-shaped area of housing and other facilities surrounding the recreation area offer scope to fill some of the open gaps on the village approaches. Future development and new housing also present a means to tackle many of the practical issues facing Pitstone. These include the lack of a continuous bicycle route along Marsworth Road, and the disruptive size and scale of the large roundabout.

Pitstone is undergoing a period of growth and change, in which the planning and design of its public realm will determine its long-term character.



Cheddington Road entry



Marsworth Road – a wide highway approach



The large Recreation Ground roundabout

## Design principles

The proposed strategy to allow Pitstone to benefit from future development and investment builds on a combination of measures aimed at reducing speeds, discouraging through traffic, and strengthening the connections and coherence of the village. They also aim to reduce highway signage and clutter, and to minimise the maintenance costs for the highway authority. The measures draw on principles that have been employed elsewhere in the UK and mainland Europe to closely align highway engineering with good urban and landscape design. Such principles help to foster lower speeds and to promote safety, efficient traffic movement and civility through maximising driver awareness of his or her surroundings.

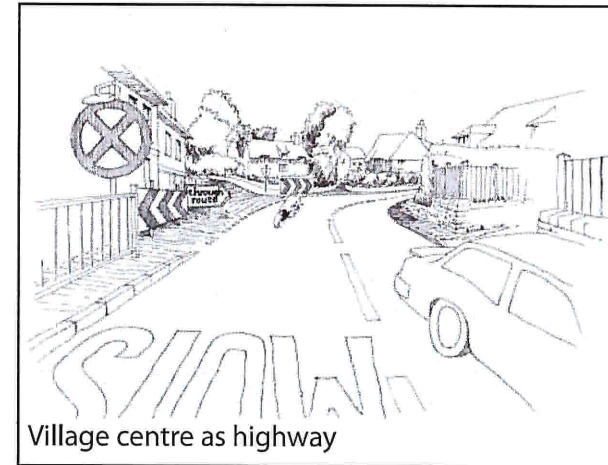
Clear entry points or gateways at the main thresholds to Pitstone are essential to distinguish the lower-speed village context from the higher-speed approach roads. Such thresholds require a definite change in scale and character in the road environment to clearly mark the transition, ideally closely aligned with signage and changes in speed limits. Where the village boundary is contiguous with an adjoining community, as is the case between Pitstone and Ivinghoe, then a distinctive place or recognizable event is necessary to reinforce the entry point.

The principle of place-making is vital in reducing the linear characteristics of roads in villages, and forms a key design principle. Wherever possible, buildings, intersections, and the activity and movement they generate can be emphasised to inform and alert drivers to the village context. Visual clues in the form of planting, changes in paving and dimensions and kerb positions all add to the legibility of the streetscape and road network.

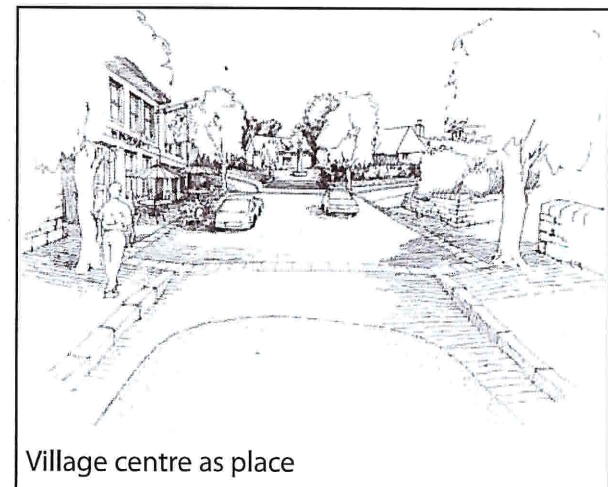
Driver speeds are also strongly influenced by the apparent width of the carriageway. Reducing the visual width can be an important tool for reducing speeds and increasing driver awareness, without physically limiting traffic flows. Any on-street parking spaces should be clearly defined to help reduce apparent carriageway widths as well as discouraging inappropriate parking.



Reduced visual width and defined on-street parking. Petersfield, Hants



Village centre as highway



Village centre as place



## Proposed interventions

The recommended strategy for Pitstone focuses predominately on the main linear spine of the Marsworth Road. Whilst measures will also be helpful in Cheddington Road, Vicarage Road and Westfield Road, Marsworth Road presents the most critical challenge and opportunity for any new developments, and for strengthening the connectivity and coherence of the village. It seems essential that the existing shared bicycle path be extended to serve Brookmead School, and that the character and perceptions of this linear spine from Castlemead to Ivinghoe be modified to a form more appropriate to the village context.

The strategy also promotes the link via Westfield Road and the Upper Icknield Way as an alternative through route to avoid the village centres.

The plan on page 8 illustrates the recommended approach. In addition to minor alterations to the general street section, the strategy identifies a number of key locations where modifications are required. These include a new village entry at the junction with Westfield Road and the potential access points to any new developments. Changes to the recreation ground roundabout are necessary to ease crossings and highlight the centre of the village. Between the roundabout and the boundary with Ivinghoe, a number of minor interventions are proposed along Marsworth Road to reduce speeds,

highlight the presence of the village and allow the bicycle route to be extended as far as the school. These interventions focus on the two relatively narrow bottlenecks at either end of the street, as well as the sequence of T-junctions with the main residential streets.

In addition to the measures for Marsworth Road, alterations are required to enhance the connections north and south of the roundabout. These will help improve connections to the Memorial Hall, the recreation grounds, as well as the residential and educational areas served by the Cheddington Road. Finally the connection of Vicarage Road with Upper Icknield Way requires some minor modifications to improve safety and to serve as a southern entry point, particularly in light of any increased traffic volumes on this parallel route to the Marsworth Road.

In combination these various measures create a long-term strategy to strengthen the identity, distinctiveness and coherence of Pitstone, whilst providing the practical improvements to access, safety and connectivity. The measures are likely to be undertaken over a number of years, and will help reverse the fragmentation of Pitstone and enhance the quality and practicality of the village's public realm.



Vicarage Road junction with Upper Icknield Way

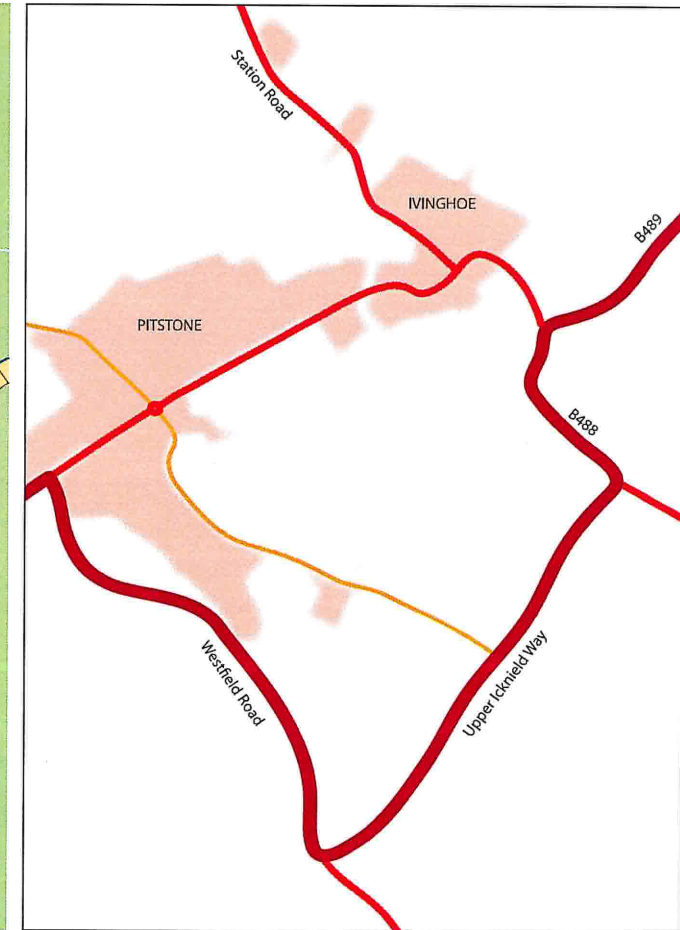


The scale and barrier effect of roundabout can be reduced





Proposed interventions



The potential alternative route



## Westfield Road Junction

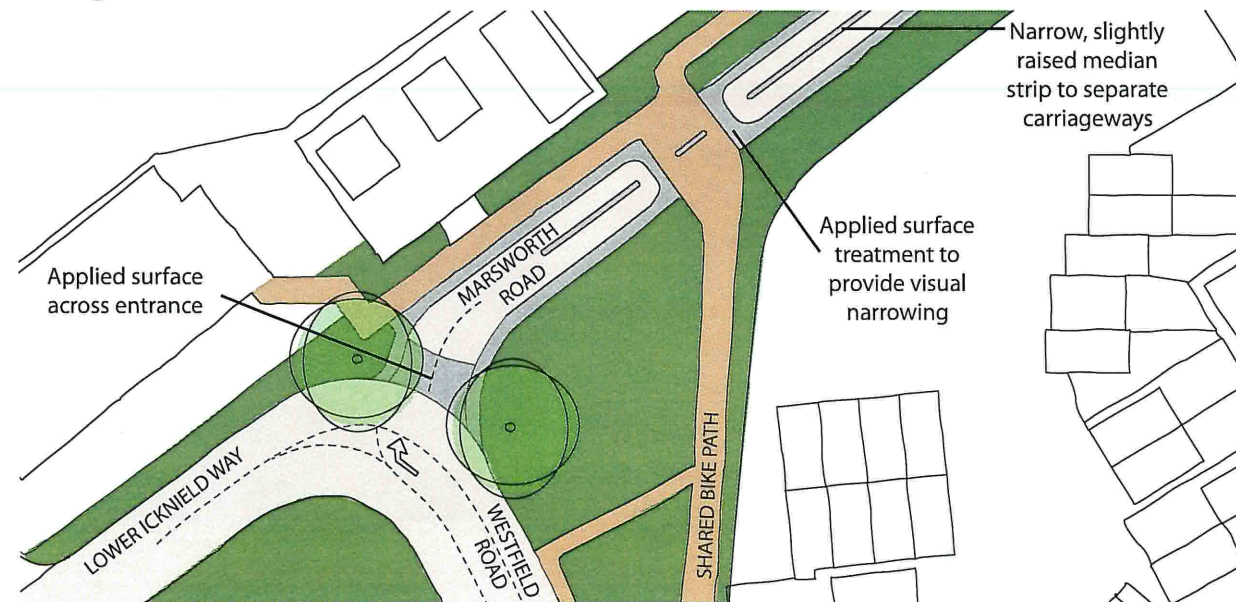
Westfield Road is a new link provided as part of the redevelopment at Castlemead. Although not fully complete, its width and form offers a potentially useful link between the Upper and Lower Icknield Ways. This presents an opportunity for an alternative through route around both Pitstone and Ivinghoe for east- and west-bound traffic between Tring, Marsworth and Dunstable.

The existing eastbound entry to Pitstone from the railway bridge provides a wide, straight road interrupted only by the traffic island, signs and gateway marking the village boundary. The majority of through traffic continues towards the Vicarage Road roundabout.

We would recommend a change in priority and alignment at this point, to channel the main route into Westfield Road. The turning into Marsworth Road and the centre of Pitstone would form a distinctive change in scale. Paving combined with new trees to frame the entrance mark the approach to the Pitstone, and we would recommend the insertion of a narrow median strip to reduce the apparent carriageway widths. To maintain and improve the connection for Castlemead, we would recommend a clearer and more generous crossing of the bicycle route across Marsworth Road, providing an additional signal to alert drivers to the lower speed context.



Existing village entrance from west

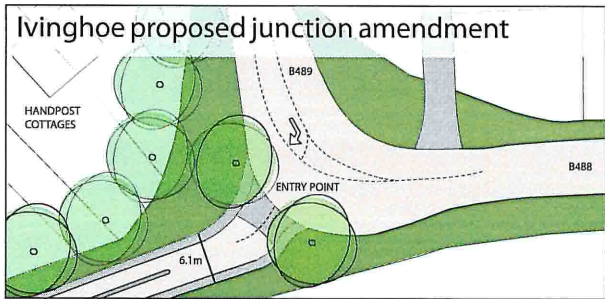


Existing Westfield Road junction





Ivinghoe existing junction



Ivinghoe proposed B488 junction

The revised junction at Westfield Road creates a clear entry to Pitstone and transition from highway to the lower-speed village scale.

A complementary arrangement is proposed by Ivinghoe Parish Council for the junction of the B488 and B489 at Handpost Cottages.



Westfield Road Junction, proposed



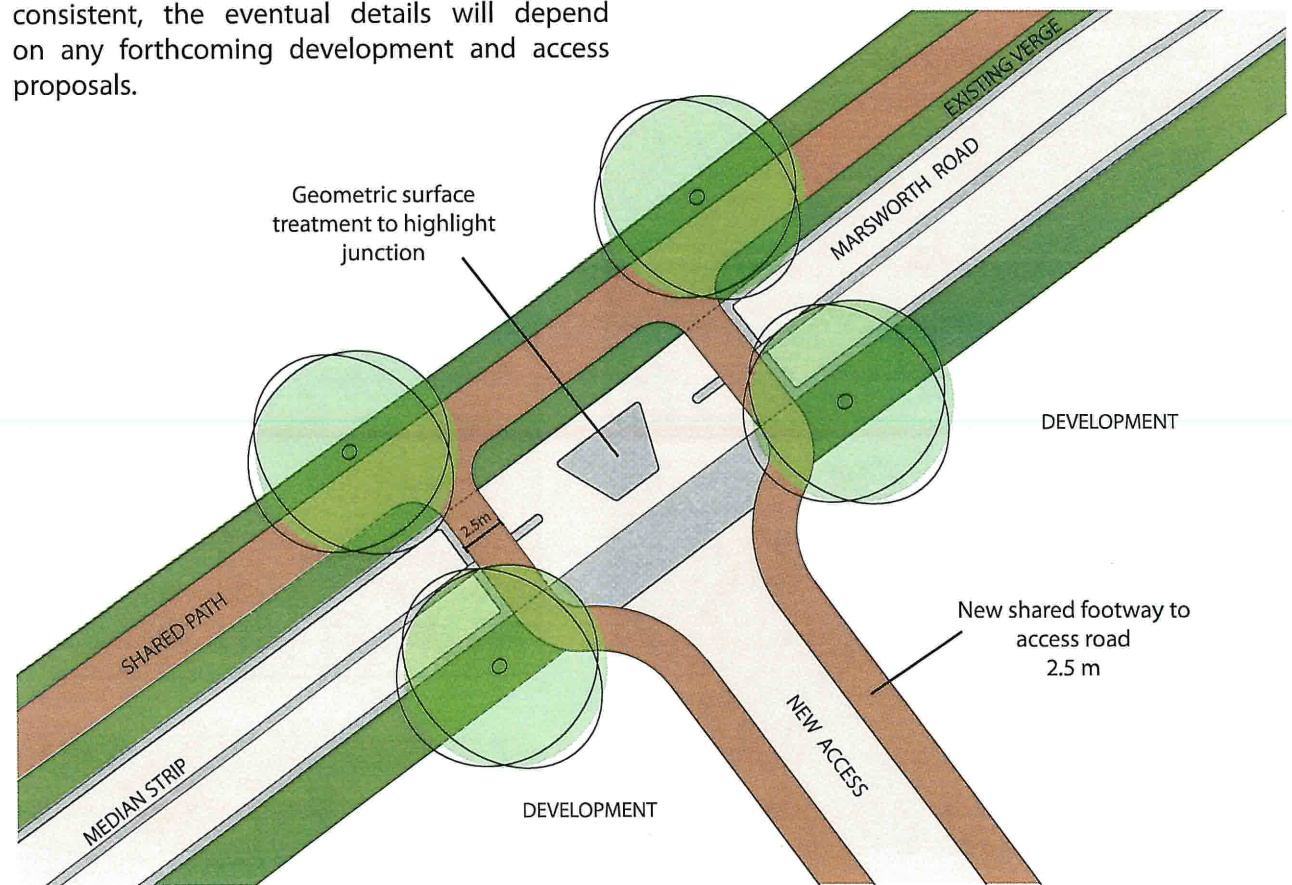
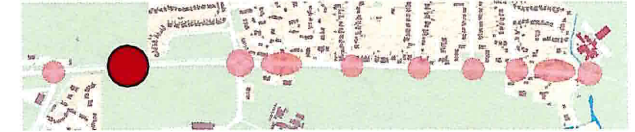
## New development access

The outline development plans for Pitstone indicate the future development of land to the south of Marsworth Road.

Any proposed access to such development sites provides an opportunity to reinforce the essential transformation of Marsworth Road from a wide, linear highway to a low speed village environment. It is also essential that the pedestrian and bicycle network of any new development integrates with the existing shared path.

To this end we recommend that any new junction includes measures to increase its visibility and provide strong emphasis to the pedestrian and bicycle connections to any new development. A simple geometrical shape of applied surface treatment, framed by a pair of courtesy crossings, interrupts the linear continuity of Marsworth Road. New trees add to the “place” characteristics of the access point, alerting drivers to the significance of the junction, helping to slow traffic approaching the roundabout. Highlighting such junctions as recognizable places is an essential element to reduce the apparent scale of the highway network and to minimise its barrier effect on the various parts of the village.

The approach also helps to overcome the challenge of ensuring that any developments south of Marsworth Road integrate with the east-west shared path running principally along the northern side. Whilst the principles remain consistent, the eventual details will depend on any forthcoming development and access proposals.

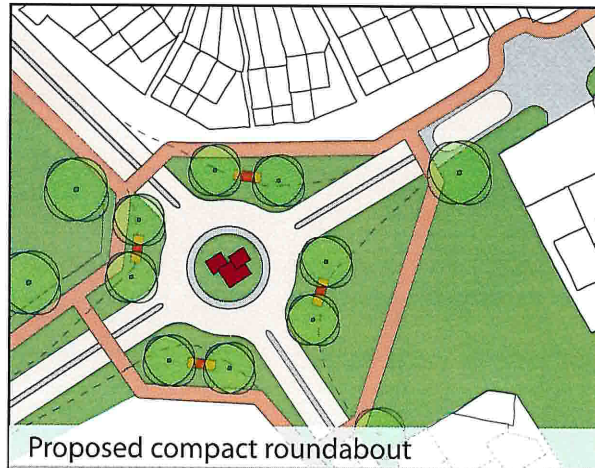
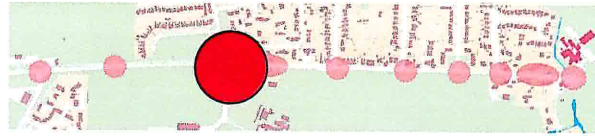




## Recreation Ground Roundabout

The large roundabout at the junction of Marsworth Road with Cheddington Road and Vicarage Road plays a pivotal role in defining the character of Pitstone and the expectations of drivers. The existing arrangement involves wide, sweeping approaches and a large circulation area around a featureless asphalt circle. The resulting geometry encourages higher entry and exit speeds, and requires unusually wide pedestrian crossings on each of the arms. Designed to maximise traffic speeds and throughput, the roundabout physically and psychologically separates the parts of the village.

Were traffic volumes significantly lower, it would be possible to create an informal village square using a roundel or similar advisory marking to allow low-speed, free-flowing traffic and pedestrian movement without formal priority. However, the volumes of traffic are likely to remain such that a circulatory island is still required. For this reason we would recommend the modification of the existing arrangements in line with “continental” roundabout principles. This involves a reduction in scale, and the minimum of flaring of carriageways at exits and entry points. The central island is slightly enlarged with an over-runnable area to increase deflection, and the notional median strips separating the carriageways help to reduce speeds further. Combined pedestrian and bicycle crossings remain approximately in their existing positions, but are given much greater visibility



and prominence. A minimum 5 metre setback allows drivers to respond to pedestrians before negotiating entry into the roundabout.

It is important to give this key junction a distinctive identity, and there may be opportunities to animate and frame the space by adding planting, seating, public art etc. in the additional surrounding areas. Traffic speeds can be further reduced and the village identity strengthened by creating a strong vertical element in the central circle. Although access to underground services will still be necessary, there is an opportunity to site a significant piece of public art relating to Pitstone at this focal point.



Lengthy wide crossings to each arm.



Existing sweeping approach lanes



Existing featureless central circle





Compact low-speed, framed roundabout with central feature



## Cheddington Road and Vicarage Road



Proposed cycle links from roundabout



New path along Cheddington Road



Vicarage Road – Widen footway to 3m. to reach Memorial Hall



In addition to extending the shared bicycle path across Cheddington Road and further east along Marsworth Road, the re-alignment of the roundabout provides an opportunity to extend the shared path north and south along Cheddington Road and Vicarage Road. This would allow a continuous link to “The Crescent” and the residential areas to the north. To the south a widened or additional path would serve the Memorial Hall and Pitstone Green Museum.

On Cheddington Road it makes sense to route the extended path slightly away from the existing footway, passing behind a two trees and staying closer to the natural desire line. On Vicarage Road, a length of wooden fencing may need to be repositioned in order to allow the extended path to wind along the boundary of the recreation area.

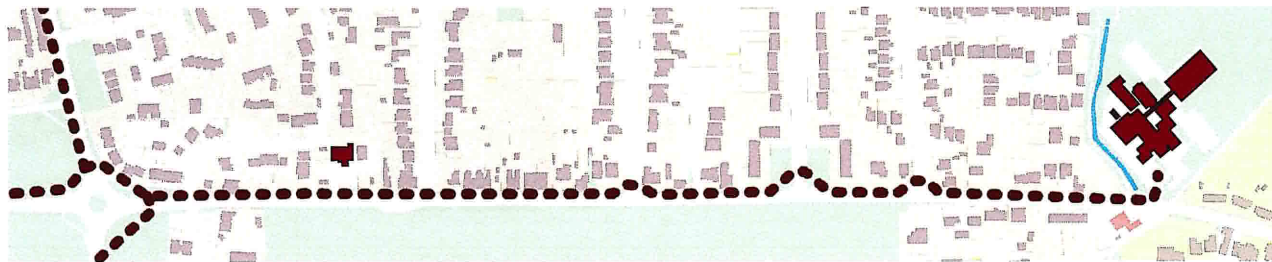
It would be advisable to extend all the existing paths linking the crossings on each of the four arms to be widened to a minimum of 2.5 metres to accommodate bicycles and pedestrians.



## Marsworth Road – Extending the shared path

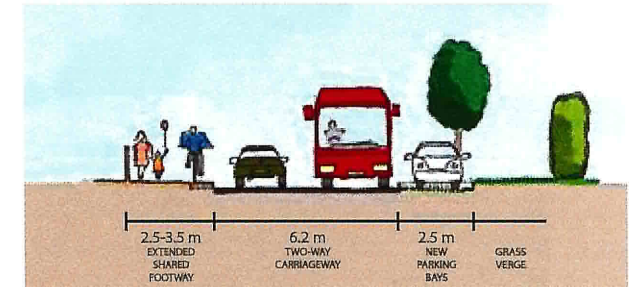
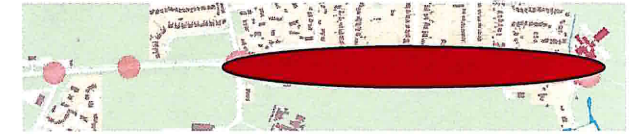
One of the most critical challenges for Pitstone is to modify the arrangement of Marsworth Road east of the roundabout. The existing arrangements do not allow sufficient space for safe or comfortable cycling, and the current alignment requires speed cushions to counteract the straight, uninterrupted carriageway, in turn making crossing Marsworth Road or exiting the side junctions more difficult.

Whilst a broad highway verge to the south of much of the road would offer space for a bicycle path, we would not recommend this option. It would require additional road crossings at either end. More importantly the route needs to connect directly with the residential areas on the north side. In order to achieve an adequate shared route along Marsworth Road, it is necessary to modify and extend the footway on the north side, removing and simplifying the verge arrangement where necessary, and relocating all parking onto the grassy verge on the south side.



Such a programme will not be easy. Extensive discussions and explanation will be necessary with the residents fronting Marsworth Road to ensure that the north side is kept clear of obstruction. Where necessary, minor kerb extensions will be required to maintain a preferred width of 3 metres, with a minimum of 2.5 metres, for the shared path. The carriageway width can be reduced to 6.1 metres to allow slow two-way traffic including buses. For much of its length, the footway provides sufficient width, but particular attention is required for two narrower bottlenecks. The first involves a 50 metre length close of Forge Flats, and the second involves the final 100 metres of Lower Marsworth Road approaching Brookmead School.

We would recommend the use of reinforced grass surfacing for the new parking bays on the north side of the road in order to maintain the soft edge to the hedge and landscape. All existing speed cushions, build-outs and road markings can be removed.



Marsworth Road – proposed section with shared path



Rushendon Furlong



Reinforced grass paving to parking areas





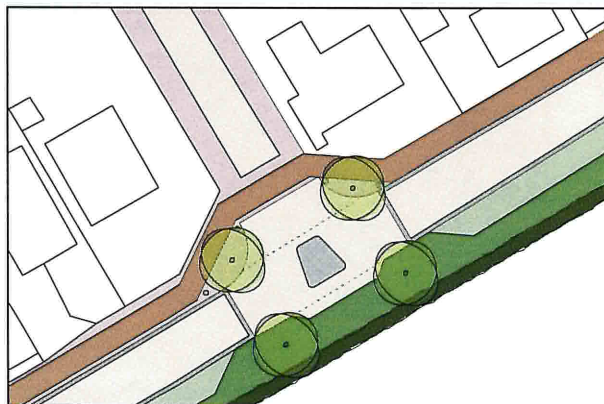
Marsworth Road with extended shared path. Forge Flats



## Marsworth Road Junctions



Queen Street



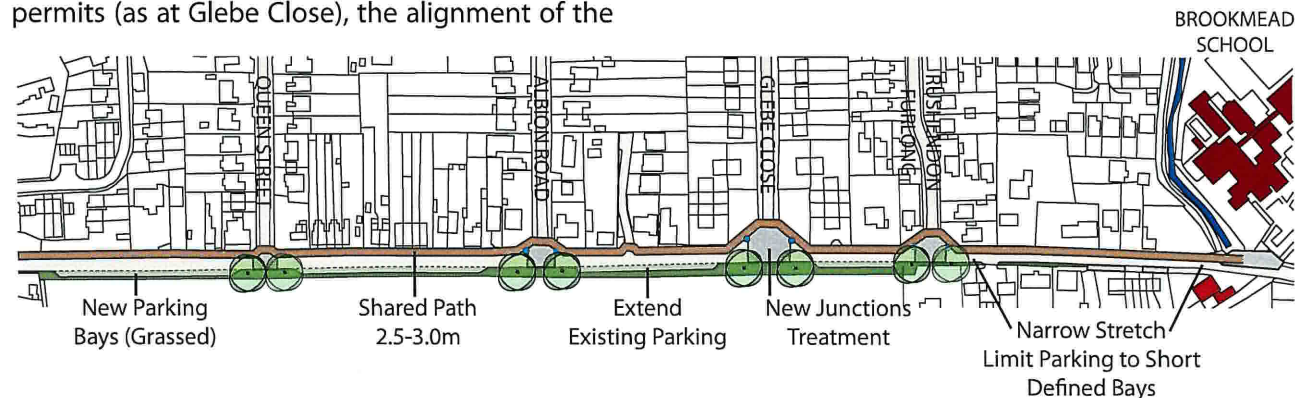
Typical junction treatment to form distinctive place

The modification of Marsworth Road to create a low-speed, continuous link for pedestrians, cyclists and traffic requires some changes to the four principle junctions serving Queen Street, Albion Road, Glebe Close and Rushendon Furlong. Each of these junctions varies in size and context, with Queen Street the most limited for space and sight-lines, located alongside the forecourt for a small convenience shop, Mason's Stores.

The recommended treatment of these junctions involves two overall principles. The first is to allow the continuity of the shared path to be emphasised across the mouth of each junction, to increase awareness of drivers turning into, or exiting, the various side roads. Where space at the junction permits (as at Glebe Close), the alignment of the

crossing should be set back some 5 metres from the mouth to maintain a short, simple crossing without excessive diversion.

The second principle involves increasing the visibility of each of the junctions to serve as a sequence of places along the length of Marsworth Road. Using surface treatments and vertical elements such as trees to emphasise the place qualities of each junction helps to reduce the speed profile of the route. A sequence of highly visible events at each of the intersections helps to reduce the linearity of the carriageway, permitting safer crossings to parking spaces, increasing the safety of the shared path, and allowing easier exiting from the side roads.







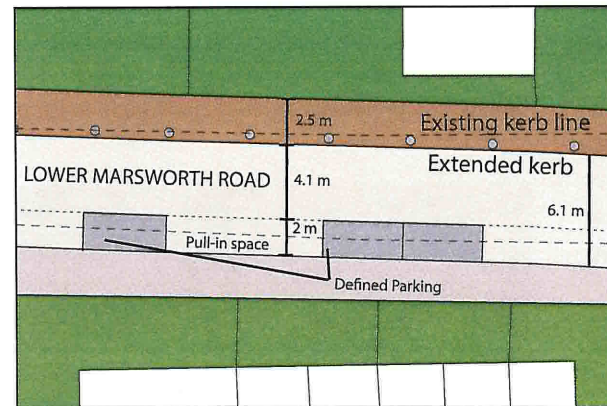
Marsworth Road junction treatment. Glebe Close



## Lower Marsworth Road

The final 100 metres of Marsworth Road, between Rushendon Furlong and the School, presents a particular challenge if the proposed shared footway is to extend to Brookmead. Not only is the existing pavement narrow along the northside, but the stretch is under particular pressure from school-related parking. There are limited off-street opportunities for residents' parking, with most cars often left straddling the kerb and carriageway.

It is essential that the narrowness of the street is made clear to drivers along this stretch, and that the north side is protected from parking on the extended 2.5 m. shared footway. This may require the insertion of carefully positioned bollards to maintain pavement continuity. Along the south side, a limited number of parking bays can be created tight against the highway boundary, in short blocks that can help slow traffic and allow passing places and eye-contact negotiations between drivers. The intention is to minimise expectations for short-term parking and to reduce the apparent width of the carriageway. This is achieved by clearly defining the few parking bays, and using any gaps as passing spaces.



Parking has to be removed from north side



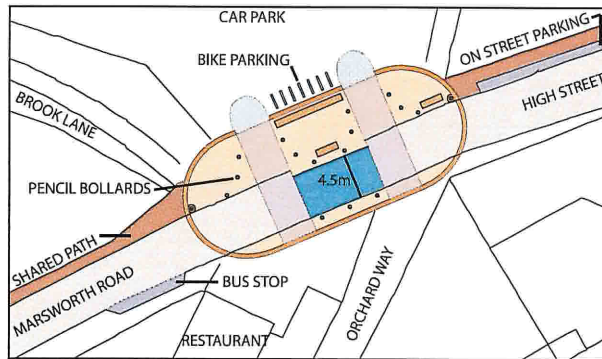
The approach to Brookmead School



Carefully define parking bays on south side



## Brookmead School



Existing school frontage and gathering space

The existing streetspace fronting Brookmead School is always going to be under pressure. Despite determined initiatives by the school management to minimise reliance on private cars, the delivery and especially collection of pupils combines to create significant congestion and difficulties. There are some alternative options for remote temporary parking, courtesy of the May Fu Restaurant and Memorial Hall in Pitstone, but distance and the existing arrangements of Marsworth Road limit their usefulness.

At present passing drivers perceive a widening of the highway space outside the school and a largely undifferentiated combination of carriageway, footway and private space. Despite the opening up of the highway surroundings, the school remains surprisingly invisible, with little to indicate to passing traffic the significance of the space for the local community. The space lies on a dip where a small watercourse is bridged, with the unusually angled restaurant in the former Bell pub and the mouth of Brooke Lane defining the western end, and a narrow footpath and the unadopted Orchard Way converging at the eastern end.

Whilst needing to retain the entrance and exit to the school car-park, it is important to create a distinctive identity to the area fronting the school, an identity that recognizes the space as a gathering point for parents and children rather than a stretch of highway or parking opportunities. Any measures should emphasise the narrowness of the carriageway, and establish expectations of very low passing speeds. Our initial proposals would combine the access ways into the school with a widened footway, constraining passing traffic to the southern side. Surface treatment, bollards and some secondary lighting combine to differentiate the space and protect a limited area of public space from further erosion by traffic and parking.





Brookmead School – proposed extended forecourt and entrances

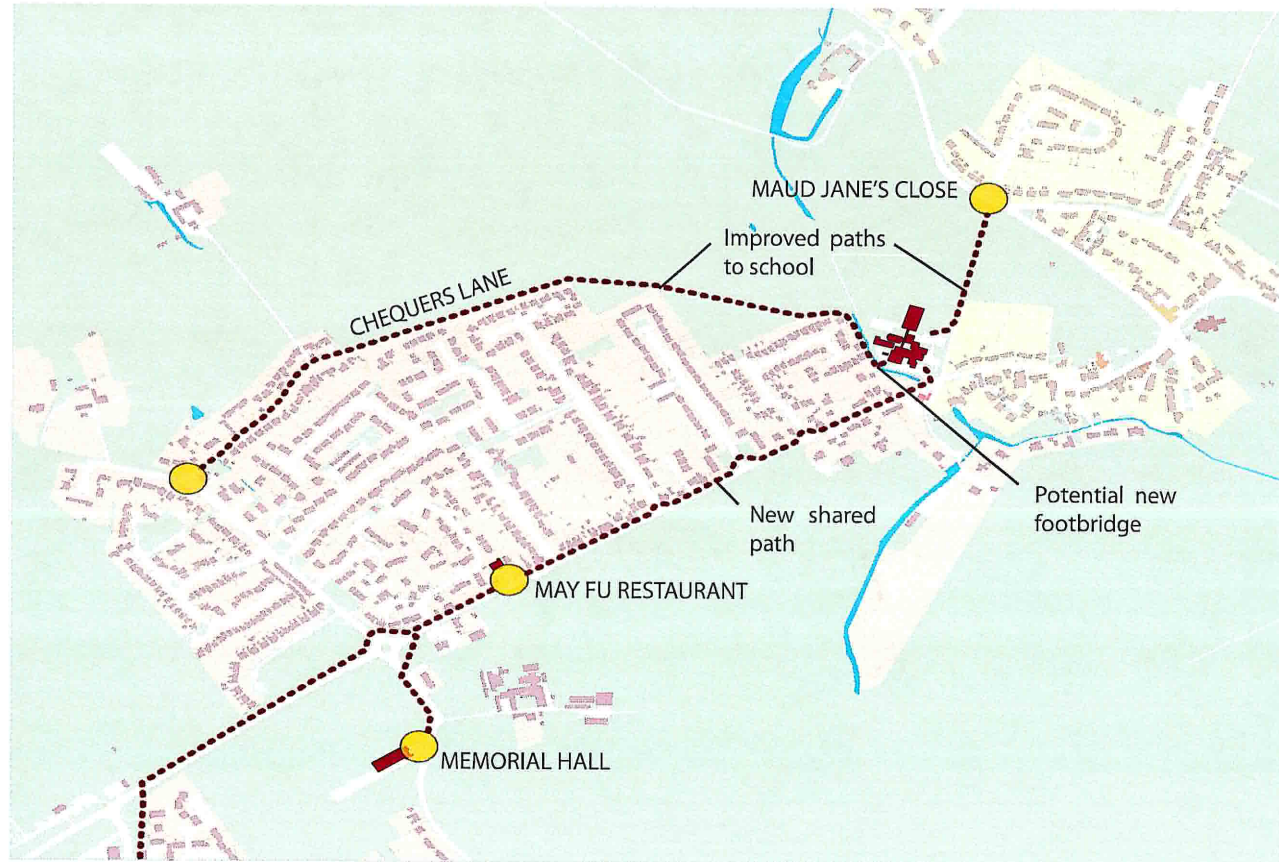


## Enhancing alternative access to the school

The Marsworth Road will continue to provide the principal access to the school, and it is essential that an enhanced pedestrian and bicycle path is extended along this route. At the same time a number of additional routes for pedestrian access could continue to be enhanced to reduce pressure on the immediate school forecourt, and to promote other opportunities to walk to school from the adjoining villages.

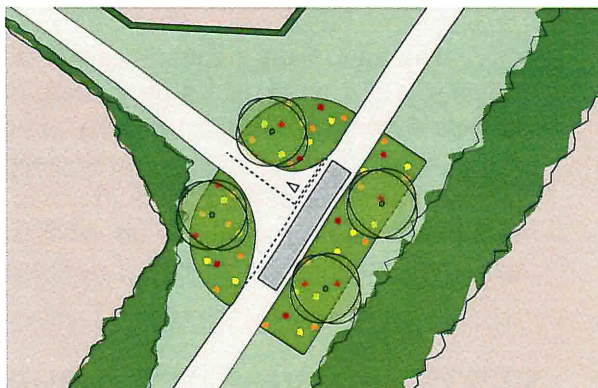
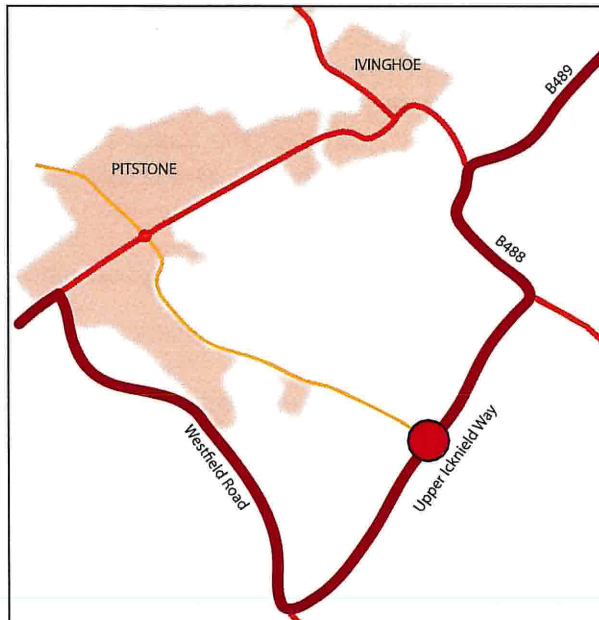
Firstly, the unmade footpath linking Chequers Lane to Brookmead School along the northern boundary of the village should be carefully managed and improved wherever opportunities arise. The potential development off Rushendon Furlong would present one opportunity to improve and promote this link. At the same time there is a strong case for an additional footbridge and entry to the school at the southern end of Brooke Lane.

Brookmead School requires additional places where pupils might be dropped off without adding pressure to the main forecourt. For those arriving from the north, a bus stop and space around Maud Jane's Close could be used to allow pupils a short walk across the western boundary of Ivinghoe's open space. Again, small-scale developer contributions could allow the path to be improved for all-weather use.



School access routes

## Wider traffic safety



Additional measures to highlight junction

In combination, the proposed modifications to the streetscapes in Pitstone, especially along the Marsworth Road, aim to improve road safety for pedestrians, cyclists, cars and all road users. This is likely to be achieved as a result of reductions in traffic speeds as well as a heightened awareness of the village context. Tighter geometry at junctions, reduced visual widths of carriageways, and a sequence of distinctive places all contribute to such reductions.

One additional junction on the edge of the village would benefit from measures to improve safety and ease traffic flows. A T-junction connects the southern end of Vicarage Road with the Upper Icknield Way (the B488). The junction can be difficult to spot for drivers on the relatively fast main road approaches, and residents have concerns that any additional traffic on this route may increase difficulties for traffic exiting Vicarage Road.

Although the basic sightlines are adequate, there would be safety benefits from landscape and planting measures to highlight the position of the junction for drivers on the B488. These could include an area of distinctive low-level planting in the immediate surroundings of the junction, with four additional trees to frame the location.

It will also be helpful to introduce a small area of contrasting surface treatment to help improve the visibility and draw drivers' attention to the intersection.



Existing junction difficult to identify



Existing Vicarage Road junction



## Materials, costs and timescales

The proposed measures for Pitstone are likely to form part of a long-term plan associated with development proposals. Contributions from developers combined with public sector investment from a number of funding sources will determine both the timescales as well as the priorities and the extent of the programme.

There are a number of significant factors affecting costs for any work in the public highway. These include:

- The location and condition of any underground services
- The condition of the road surface and sub-base
- The choice of materials and finishes
- The extent of traffic management and disruption necessary.

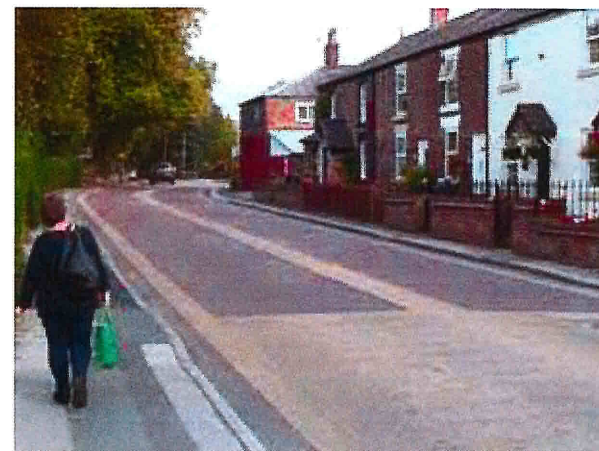
Recent schemes across the UK indicate that an average square metre cost of £140-£190 can be anticipated for the type of proposals outlined here. Of the various interventions described, the modification to the roundabout is likely to be the most significant element at around £200,000 – £230,000. Other smaller schemes are more likely to require between £20,000 and £30,000.

For the majority of the schemes outlined, we have presumed that applied surface treatments will be used, rather than blocks or setts. This is in order to work within the likely skills range of contractors as well as reducing maintenance costs for the highway authority. Co-ordinating measures with the highway maintenance and replacement programmes will reduce overall costs significantly.

Within the local network of streets in Pitstone, there are few opportunities for temporary closures or diversions. This means that work will need to be carried out within operational streets, and the traffic management can add as much as 25% to overall costs.

The modifications in the western end of Pitstone are more likely to be funded and programmed as part of a ten year development programme. The works associated with Marsworth Road and access to Brookmead School are more likely to be publically funded, and we would recommend a rolling programme of measures, starting at the school and working westwards, over a five year period.

The opportunity to remove and simplify the streetscape offers opportunities to reduce the maintenance burden borne by the highway authority. A lower speed environment at the core of the approach allows for a reduction in elements such as signs, road markings, speed humps and build outs. Lower speeds also reduce the long-term impact on, and maintenance costs of, the highway infrastructure. Locally organised and voluntary input forms an increasingly significant component of streetscape schemes in the UK. It is anticipated that much of the enhancement and maintenance of the footpath network and public spaces could be organised and carried out on a local level.



Simple low cost applied surfaces. Poynton



## Conclusions

Pitstone is not an easy village in which to rebalance the relationship between traffic and the public realm. Its position and layout alongside busy roads, and its fragmented and linear form make it especially difficult to maintain and enhance the essential informal connections and pedestrian routes necessary for a thriving and coherent community. The lack of a clear centre or identifiable boundaries, and the high volumes of traffic, have combined to present a formidable challenge to a Parish Council clearly determined to protect and enhance the quality of life in Pitstone.

This report intends both to address some of the underlying disadvantages and to build on the opportunities presented by potential development. It aims to complement, support and benefit from any changes in neighbouring Ivinghoe, and minimise traffic volumes and speeds. The approach draws on established principles for creating a distinctive identity and clear transitions from the wider highway network to generate lower speeds with greater emphasis on pedestrian and bicycle routes. Reducing the apparent width and scale of the streetscape combined with the principles of place-making underpin all the proposals.


Implementation will take many years, and will require a strong local consensus to be maintained over the long-term. This means addressing difficult decisions, such as the pattern of parking on Marsworth Road. It requires the continuing cooperation and support of the County Council and of Transport for Bucks as highway authority. This report provides the starting point for building such a consensus, and for preparing a strategy to guide all future public and private sector investment in the streetscape. Whilst each of the individual interventions can be refined and worked up in detail to suit the local circumstances, all of the measures combine to transform the long-term traffic environment of Pitstone through lower speeds, a stronger identity and enhanced connections.

The report is intended to supplement and inform the emerging Neighbourhood Development Plan, and to serve as a guide for negotiations and discussions with developers, planners, transport planners and highway engineers. Together with this broader plan, it aims to set out a long-term vision for Pitstone, a vision based on maintaining the strategic and local role of the street network while helping to build a coherent, safe and well-connected village community.





## APPENDIX D List and images of native trees


Photo	Common Name	Latin Name	Ultimate Crown Spread	Ultimate Height	Time to Ultimate height	Soil in order of preference	Planting suggestions
	Field Maple 'Eant'	<i>Acer campestre</i> 'Elegant'	4-8m	<12m	20-30yrs	Sand, Clay, Chalk, Loam	<p><i>B. ermanii</i> is a medium-sized tree, sometimes multi-stemmed, with peeling cream bark on the trunk, papery brown bark on the branches; coarsely toothed, ovate leaves turn yellow in autumn; male catkins open with the leaves</p>





<p>Common Hornbeam</p>	<p><i>Carpinus betulus</i> <i>'Fastigiata'</i></p>	<p>8m+</p>	<p>12m+</p>	<p>40-50yrs</p>	<p>Chalk, Clay, Sand, Loam</p>	<p>'Fastigiata' is a medium-sized deciduous tree; crown narrow when young, becoming compact and ovoid. Leaves ovate, ribbed and finely serrate, turning yellow in autumn. Fruiting catkins conspicuous, to 8cm in length</p>
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	<p>Hawthorn Paul's Scarlet</p>	<p><i>Crataegus laevigata</i></p>	<p>8m+</p>	<p>4-8m</p>	<p>10-20yrs</p>	<p>Chalk, Clay, Sand, Loam</p>	<p><i>Crataegus</i> are deciduous trees and shrubs, usually with spiny branches, lobed or toothed leaves, and clusters of creamy-white flowers followed by red or black fruits. Some have fine autumn colour</p>
	<p>Golden Upright Beech</p>	<p><i>Fagus sylvatica 'Dawyck Gold'</i></p>	<p>4-8m</p>	<p>12m+</p>	<p>40-50yrs</p>	<p>Chalk, Clay, Sand, Loam</p>	<p>'Dawyck Gold' is a dense, fastigate, small deciduous tree with bright golden-yellow young foliage, becoming yellow-green in summer, yellow and brown in autumn. Flowers inconspicuous; fruit bristly</p>

	<p>Common Oak/ English Oak</p>	<p><i>Quercus robur</i></p>	<p>8m+</p>	<p>12m+</p>	<p>40-50yrs</p>	<p>Loam, Sand, Clay, Chalk</p>	<p><i>Q. robur</i> is a large deciduous tree developing a magnificent, broad crown, the leaves with shallow, rounded lobes, turning reddish-brown in autumn. Inconspicuous yellow-green catkins among the young leaves</p>
	<p>Rowan, Mountain Ash</p>	<p><i>Sorbus aucuparia</i> 'Sheerwater Seedling'</p>	<p>2.5-4m</p>	<p>8-12m</p>	<p>10-20yrs</p>	<p>Loam, Sand, Chalk</p>	<p>'Sheerwater Seedling' is a medium-sized cultivar with an upright habit; the branches ascending to form an oval shaped crown. It provides autumn colour as the pinnate leaves turn fiery colours and from the large trusses of orangey-red berries</p>





<p>Small Leaved Lime</p>	<p><i>Tilia cordata</i> 'Rancho'</p>	<p>8m+</p>	<p>12m+</p>	<p>40-50yrs</p>	<p>Chalk, Clay, Sand, Loam</p>	<p><i>T. cordata</i> is a medium-sized deciduous tree with a spreading or rounded crown, and glossy dark green, heart-shaped leaves to 8cm in length, turning yellow in autumn. Small, fragrant creamy-white flowers are borne in spreading clusters in summer</p>
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