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# West Hill Traffic Study

For West Hill Parish Council

Contact - Jon Tricker






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Version 3 (19/2/2019)

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# Chapter I

## Introduction

This Study commissioned by West Hill Parish Council explores traffic concerns in the village of West Hill, East Devon. These concerns relate to local peoples experience of the using the local roads as pedestrians, cyclists, bus users, motorists and also as place to live and take leisure.

PJA are a national consultancy with experience in transport, engineering and placemaking studies. With a local Devon office in Southernhay Exeter, we understand first hand the traffic issues associated with Devon villages and also the broader issues faced by the Highway Authority, Devon County Council.

### Context

The impact of traffic on smaller village communities, especially close to the edge of major areas of population like Exeter, is the main source of concern for many Parish Councils across the country. The erosion of pedestrian space, and the consequent reduction in pedestrian and informal activity and movement within villages has serious implications for the social viability of smaller communities.

Without informal connections and gathering public places, village life can retreat indoors and turn away from streets and public spaces. This in turn erodes the distinctive qualities of place and sense of community on which long term investment and confidence in Devon town communities depends. This is especially significant for the woodland village of West Hill. Located on several roads (West Hill Road, Bendarroch Road and B3180), the quality of the village lanes are increasingly eroded by growing traffic pressure.

The future success of West Hill partly depends on its unique qualities as a woodland neighbourhood and strong local community. However, West Hill is under pressure for development for some housing growth and other development at the village stores. In this context, the Parish Council has sensibly embarked on the preparation of a Neighbourhood Plan to guide and influence its future over the plan period.

Extensive local discussions have confirmed traffic as a key issue. Key concerns include poor permeability of the residential street network, continuity of footways, speed of traffic and distribution of pedestrian space compared to carriageway space.



### Scope of Study

In order to develop a robust strategy and produce a comprehensive study, we have undertaken the following stages:

**Stage 1** – Collated and presented information and traffic data about the Village, using a mix of methods. We have collected information on traffic speed, composition, pattern, volume. To assist with the collection of traffic data we worked with the Parish Council and local community to help collect this data. We have also build on the recent public realm work undertaken by LDA Design and prepare some placed based analysis of the village.

**Stage 2** – To engage with local people, we held a community workshop with a about 20 local people to help ascertain local issues and generate ideas. The workshop was fully facilitated by PJA staff.

**Stage 3** – We have develop a locally responsive strategy for dealing with traffic and its causes. We have drawn many ideas from the 'Traffic in Villages' publication which is produced for Dorset AONB, but provides good guidance for other areas. The design interventions are prepared as schematic design, drawing on best practice examples and sketch design to illustrate their benefits. The strategy reveals a number of related but independent street interventions projects which are then ready for detailed design and implementation by DCC or via Parish Council led design.



# Chapter 2 Analysis

## Historic Place

West Hill was historically a very rural area as shown on an OS map from 1901 (top right). It was a working landscape with farming, plantations and gravel pits being the main industries. In terms of built form, there was several farmsteads, the church, a Methodist chapel and a school. Unlike many Devon villages, there is no dense village core and the village in late Victorian times is really just a collection of farmsteads. However, all the main rural lanes are already in place by 1901.

By 1944, some low density housing had appeared, likely generated by increasing car ownership and usage. A new B-Road network is also apparent which includes West Hill Road and the B3180 (top left).

## Current Place

West Hill has grown significantly since 1944, now with a population of circa 1900 residents. The Woodland Village is now served by Church, primary school, shop / PO, and social club. The housing is mostly lower density detached dwellings, although there are some historic buildings scattered around.

West Hill forms a settlement in the East Devon Villages Plan (Revised 2017), published by East Devon, as Local Planning Authority. It is interesting to note, that part of the village excluded due to walking proximity to local services.



Maps depicting West Hill's development

The plan on following page maps our observations record though site visits. In all, we have mapped; gateways, key nodes (junctions), speed limits, on-street parking, footways (and absence of footways) and other local features.





- Key**
- Village gateway
  - Community Use
  - On-street parking
  - Speed Limit change
  - Village junction
  - Footway

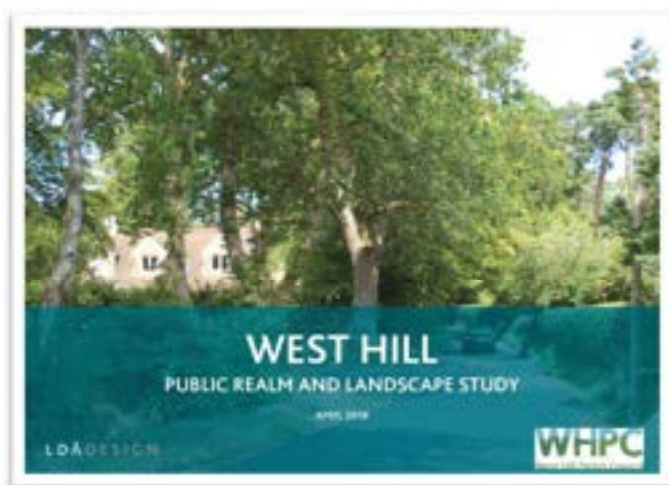
Existing Features

2Km Map Base

## Public Realm & Landscape Strategy

The Parish Council have recently prepared a Public Realm and Landscape study prepared by Exeter based LDA Design.

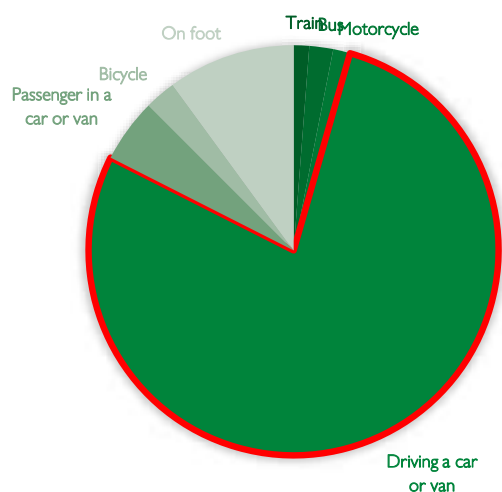
The study highlights a number of movement related observations including: Cul-de-Sac nature of the village, fragmented footpaths; both resulting in convoluted walk distances.





## Movement Patterns

We have reviewed 2011 Census – ‘Travel to Work Data’ to help our understanding of local movements. The data set includes an area larger than West Hill, so is not fully reflective of West Hill. As shown in the pie chart below, driving is a dominant mode.



## Traffic Flows

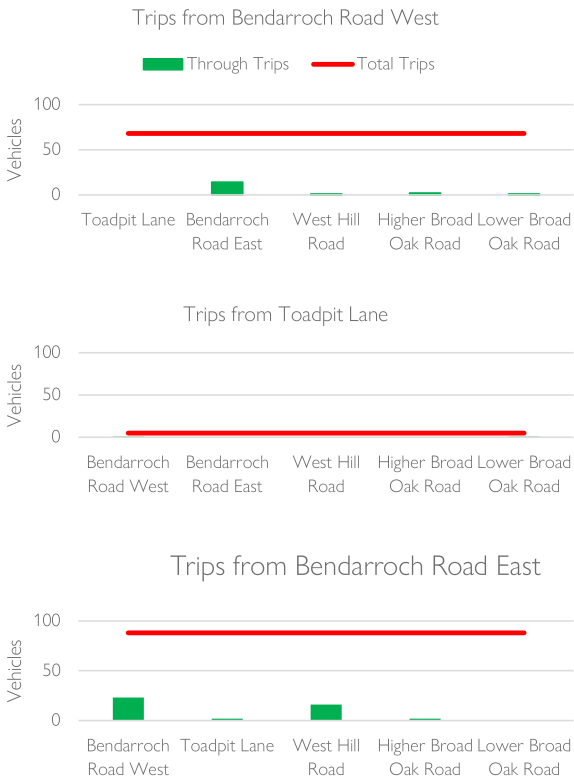
Traffic survey data has been obtained to inform the study. Firstly, Automatic Traffic Counts (ATCs) were installed at two locations (see red below) for a period of 1 week. ATC are able to record hourly bi-direction flows over a 7-day period. ATC also record vehicle classification and speed.

To supplement this data, local people recorded the registration plates of all vehicles entering and leaving the village, in a 1 hour AM peak period on a typical weekday. This data was used to calculate traffic volume, but was also analysed to determine through trips.



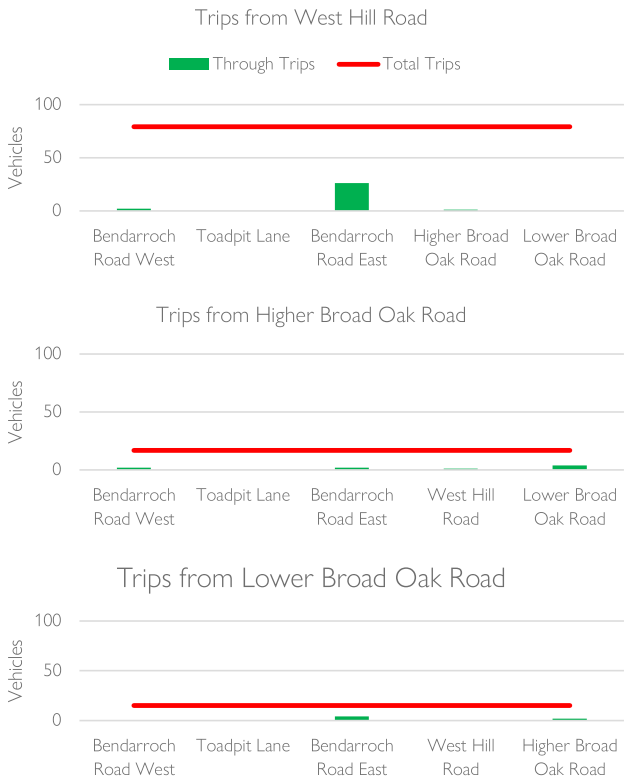
Northern Gateway Movements – 1 hr AM Peak

Bendarroch Road West – 68 veh (26% thru)  
Toadpit Lane – 5 veh (40% thru)  
Bendarroch Road East – 88 veh (49% thru)

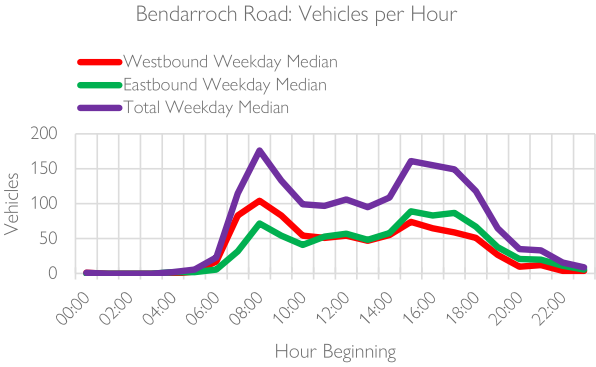
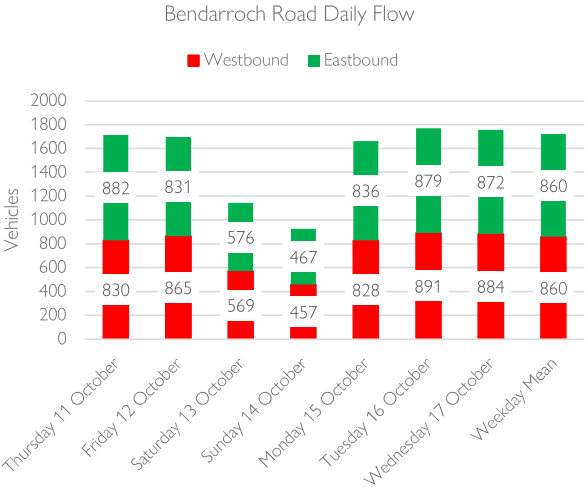


Southern Gateways – 1 hr AM Peak

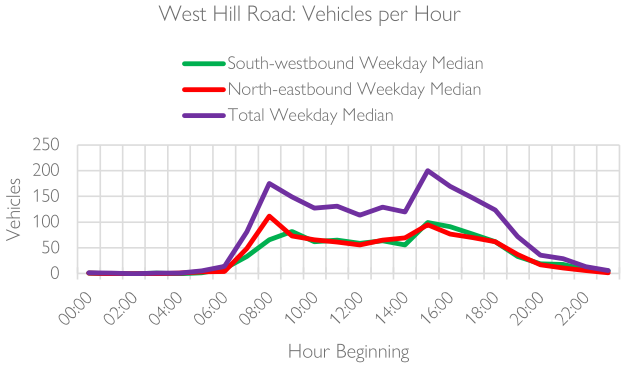
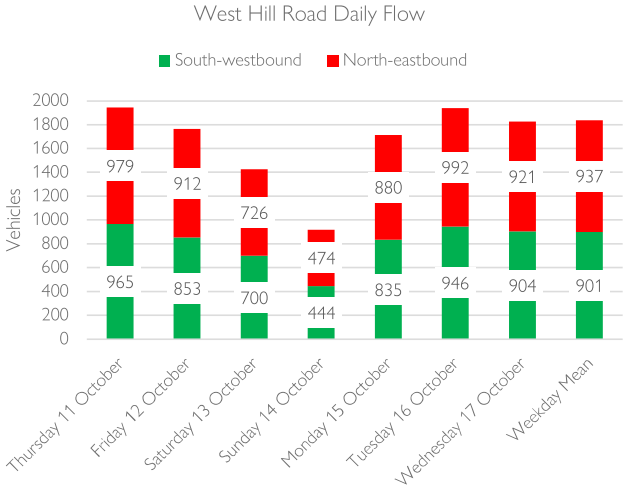
West Hill Road – 79 veh (37% thru)  
Higher Broad Oak Road – 17 veh (53% thru)  
Lower Broad Oak Road – 15 veh (40% thru)



Bendarroch Road



West Hill Road



## Traffic Flow Conclusions

Traffic flow data has indicated that overall total flow patterns are not untypical for a village context, such as West Hill. Daily flows on Bendarroch Road and West Hill Road are typically 1500 – 2000 per day. The overall patterns of daily flow with a morning and evening peak is very normal, as is, reduced traffic on the weekend esp. the Sunday.

Surveys of traffic movement patterns have indicated that some through traffic is evident, however overall numbers remain low in actual terms. However, the percentage through traffic is circa 50% on some gateways. This warrants some consideration and will be considered further in the strategy section of this study.

## PIA

5 Year Data Personal Injury Accident data does not reveal any significant trends for the village area. 20 year data has also been considered and this shows a number of clutters on the B3180.



## Speed

Traffic speed is noted as the single largest concern from talking with local people. The Parish Council currently monitor speeds at a number locations through a speed watch initiative.

PJA have obtained speed surveys sourced using a GPS device in a moving car and following existing road users. The GIS plot shown overleaf highlights a number of points where speeds are well in excess of 30mph esp on some of the straight approach lanes to the village. In contrast, the analysis also highlights the lower speeds observed near the speed cushions on West Hill Road and other highway features like tight bends with poor forward visibility.



Table 1

mph	no. exceeding this speed	% of all vehicles exceeding this speed
35	120	7.9
36	92	5.4
37	53	3.5
38	35	2.3
39	22	1.4
40	16	1.0
41	10	0.7
42	8	0.5
43	6	0.4
44	5	0.3
45	5	0.3
46	1	0.1
47	1	0.1
48	0	0.0

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# Chapter 3 Workshop

A workshop was held in the village in November 18 with about 20 invited local people, including the Parish Council and interested parties. The purpose of the workshop was to;

- Present the project aims and our initial analysis
- Identify the issues local people felt were important
- Present ideas for West Hill based on experience in other similar places
- Identify the ideas of local people.

The workshop was structured using a PowerPoint presentation which is available from the Parish Council upon request. Records of issues and ideas were recorded on A1 plans and post it notes.

## Key Outcomes

The diagram (overleaf) illustrates the outcomes of the workshop using a series of icons to describe the type of problems (shown red or pink) or opportunity (shown green).

### *Summary of Problems*

- Traffic speed and impact on pedestrian movement
- Junction visibility at some historic side roads
- Usage of mini roundabouts and corner cutting
- Traffic behaviour and usage of recently installed speed tables
- Traffic issues associated with school drop off / school buses
- Inconstant street lighting affecting pedestrians at night
- Pedestrian safety in narrow lanes and pinch points
- Cycle safety generally, esp. young people

### *Summary of Opportunities*

- Virtual footway on Bendarroch Road
- Missing pedestrian connectivity / school access to the south
- Extra street lighting
- Reconsider priority at some junctions
- Install further traffic management
- Downsize any large junctions
- Walking & Cycle events or campaigns



- Vehicle Issue
- Loading
- Public Realm
- Walking/Cycling

Note - As described on the previous page, identified issues or problems are shown in pink or red. The type of icon relates to the type of issues. Suggested opportunities are shown in green.

Workshop Issues & Ideas

2Km Map Base

# Chapter 4

## Strategy

### Study Approach

We have aimed to prepare a report which explores ways to ameliorate the impact of vehicles, and to retain and enhance the coherence and quality of the village. The study highlights, examines and illustrates a range of small and larger scale measures, capable of implementation over time as resources permit, that would together influence traffic speeds and change driver expectations, enhance walkability, improve safety, minimise noise and physical damage, and maintain the distinctive qualities and coherence that underpins the attractive character of the village.

Traditional traffic engineering measures, such as signage, road markings and speed limits, have had limited effect in addressing the impact of growing traffic in places like West Hill. Conventional traffic engineering responses are unlikely to address the fragile balance between traffic and the village context. A more locally responsive strategy, drawing on the distinctive characteristics of the community, is therefore a logical step for the Parish Council.

In seeking fresh approaches, West Hill is not alone. Across the UK, as well as in other parts of Europe, new ideas and principles are being explored and tested. These draw on a growing understanding of safety and driver psychology, as well as on practical experience gained in other rural town areas. The study builds on recent best practice and policy advice in this field, tempered by the reality of increasingly limited budgets available to highway authorities. It will take account of local development issues and the aspirations of the many partner organisations with an interest in West Hill. Above all, it is intended to inspire and encourage greater involvement and participation by residents in the design and management of the roads and streets in West Hill, and to understand how these might protect the village's special qualities. Much of our work will include the principles and design interventions suggested in the 'Traffic in Villages' publication.

Based on our analysis of West Hill and the views of local people expressed at the workshop, we have developed a series of highway design interventions, designed to better integrate traffic with the village and minimise the impact of vehicles. We recommend that 4 types of interventions are appropriate;

- **Gateways** – mark the transition from faster moving rural roads to 'village lanes', through a design feature and signage.
- **Slow & Steady Village Lanes** – create the conditions for slower traffic through physical intervention and local campaigns to reduce vehicle speed and better cater for other uses, like walking, cycling, socialising and horse riding.
- **Focal Areas** – mark points of interest like the village centre, school and church with physical interventions to highlight their importance in the local community .
- **Lanes for People** – in the busiest areas and places of interest, create the conditions for pedestrian priority over general traffic in order to readdress the balance between traffic and place function.

Each of these themes is now illustrated with case studies in order to highlight possible design opportunities.

# Case Studies – Gateways

## Jevington, East Sussex

Like West Hill, Jevington is a small rural village with many historic lanes. Proposed gateway interventions here include using buff coloured surface dressing and stone setts to highlight changes in road environment. In places these features can also integrate adjacent lane uses. In contrast to carriageway changes, Jevington also has more subtle gateways, like the leaping horse.

## Blundell's, Devon

A recent highways scheme in the Conservation Area at Blundell's, Tiverton has created a 20mph zone which is reinforced with a series of highway tables to reduce traffic speed and highlight areas of informal pedestrian crossing. Much of the surrounding pavements have been improved to create better public realm and a enhanced sense of place.



Jevington (above)



Blundells

# Case Studies – Slow & Steady

## West Meon, West Sussex

Experience from West Meon highlights how conventional approaches to highway design incorporating white lines can signal to the driver that they have full charge of the road. Treatments including removal of central white markings, buff surface dressing and reduction in carriageway space can all help create a more balanced street scene which reduces speed and improves driver awareness of other more vulnerable road users.

## Buriton, Hampshire

Schemes in Buriton similarly show the benefits of removal of formal traffic control and installation of other features such as down sized informal junctions, rumble devices and footway extensions to transform street character.





# Case Studies – Slow & Steady

## Halberton, Devon

This Devon village has been treated with a series of 'Give Take' installations to help manage speed and regulate traffic flow. The scheme has allowed the reallocation of some carriageway space for footways, either traditional with a kerbed edge (top right) or virtual footways (top left) formed at carriageway level. Crossing points are also highlighted.

## Tedburn St Mary, Devon

The central crossroads of the small Devon hamlet of Tedburn St Mary has been enhanced through a 'Give Take' arrangement. The scheme has allowed installation of footways which have improved side road visibility, reduced speed and significantly improved pedestrian safety.



Halberton



Tedburn St Mary

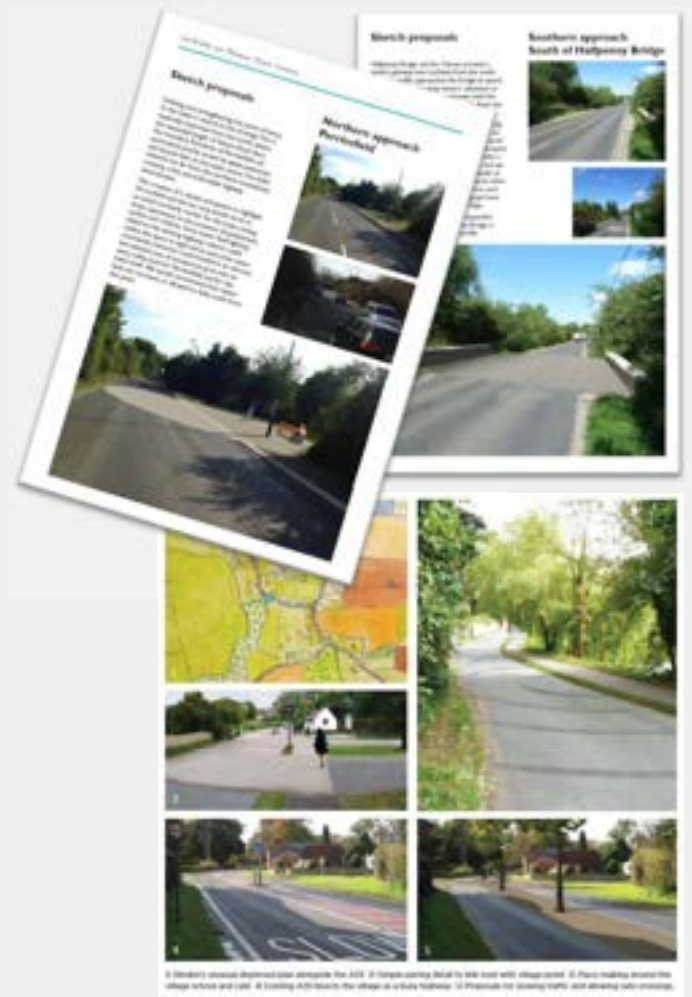
# Case Studies – Focal Areas

## Lechlade, Gloucestershire

Proposals for Lechlade highlight how natural features or important buildings can be highlighted using 'place markers'. In Lechlade, the view from the existing bench is celebrated using a circular highway treatment, which helps form a new pocket space. Other projects include marking the important river bridges with 'place markers' (top right).

## Slindon, West Sussex

Slindon highlights how traditional highway engineering approaches can be undone through clever traffic engineering techniques, like central median strips, rumble devices arranged in concentric circles and treatments to unify public spaces with highways.



# Case Studies – Lanes for People

## Lechlade Town Centre

Proposals in Lechlade showcase the benefits of a more equitable distribution of street space, between pedestrians and vehicles. Proposals include new wider footways and highlighted crossing points. Some are designed on diagonals to better serve the pedestrian desire line.



## Strategy Proposals

This section presents the traffic management strategy for West Hill, which draws on the experiences of other places highlighted in the case studies and tempered by the views of local stakeholders gained through the workshop.

The overall strategy is shown in a schematic form and a series of annotations explain how each design intervention will be formed and the purpose.

The strategy is further illustrated by a series of feasibility design exercises to illustrate how these highways principles could be applied at 5 different points around the village.

**A – Bendarroch Road Gateway** – this intervention will seek to highlight the transition in road character from fast moving rural road to village lane. The gateway will also mark the current change in speed limit through a highway narrowing scheme. This narrowing could be formed of kerbed edges and include features to the sides to house any traffic signage.

The gateway could include a signed 'Zonal Treatment' for the whole village like 'Quiet Lanes Status'. This status is appropriate for lanes with shared use by walkers, cyclists, horse riders and motor vehicles. They direct motorists to drive slowly and carefully and be prepared to stop, allowing people extra time to make room for you to pass them in safety. There are some conditions for this type of treatment and this would require DCC involvement.

**B – Bendarroch Road** – create slow & steady traffic conditions by installation of rumble devices at regular intervals, formed using buff coloured high friction surfacing in repeated bands. However, any noise associated with rumbles would need to be considered further through careful design and consultation.

Better mark the start of 20mph zone via reviewing the location of signs and carriageway roundels. As a general principle, the scheme could include removal of some or all road markings to improve the rural character and slow traffic.

**C – Bendarroch Road / School Lane Junction** – install a focal area treatment scheme to highlight this important junction and node (arrival point). This intervention could be formed of buff textured surface dressing laid over the whole junction space. Areas to the side could highlight pedestrian comfort zones to better enhance pedestrian usability. The scheme could include integration of an improved bus shelter and bench. [See Sketch Design 1]

**D – School Lane** – create conditions for 'slow and steady speed' and 'lanes for people' through use of virtual footway linking Bendarroch Road with West Hill Road. The footway could be formed of a simple white line with a textured material highlighting the footway zone. The footway would need to be over-runnable to allow access to driveways or for larger vehicles to pass each other. Care in the design of this treatment is needed to ensure that pedestrian visibility is maintained. In practice this means virtual footways will only work on straighter sections of highway.

**E – Bendarroch Road / West Hill road junction** - install focal area treatment in form of buff textured dressing laid over the whole junction space in a similar style to Project C. Highlight pedestrian comfort zones to northern side to enhance pedestrian usability. Maintain the characterful directional fingerpost sign. Consider removal of some existing road markings. [See Sketch Design 2]

**F – West Hill Road (northern gateway)** – Retain existing 'Give – Take' arrangement and install colour treatments / signage in line with other gateway treatments e.g. project A.

## Strategy Proposals (Cont)

**G – West Hill Road (School lane – (Bendarroch Road section))** – create slower and steady conditions by removal of central white line and installation of rumble devices. Given the twisting nature of this section of village lane, it is not considered viable to install a virtual footway. Instead, it is suggested that pedestrian are safer by choosing an approbation side of the lane to walk along where visibility is maximised. For example avoiding the inside of tight bends.

**H – War Memorial** – to better mark this important village public space, we advise installing a 'Give – Take' arrangement to give priority eastbound (out of village). This feature will help slow traffic and also allow reduction of West Hill Road carriageway space. This in turns, allows the spectacular expansion of the grassed area to create a larger public space and one which has less surrounding roadspace. Additionally, we advise closing the existing highway on northern side and forming a new footpath and hard surfaced public space. This creates an opportunity for further benches and possible public art to mark this village space. [See Sketch Design 3].

**I – West Hill Road** – we advise creating a more characterful street scene through removal of central white hazard line. Consider buff surface dressing to footways to soften these features and create contrast with carriageway space. Consider marking focal areas such as the very largest trees through circular textured treatments [See Sketch Design 5].

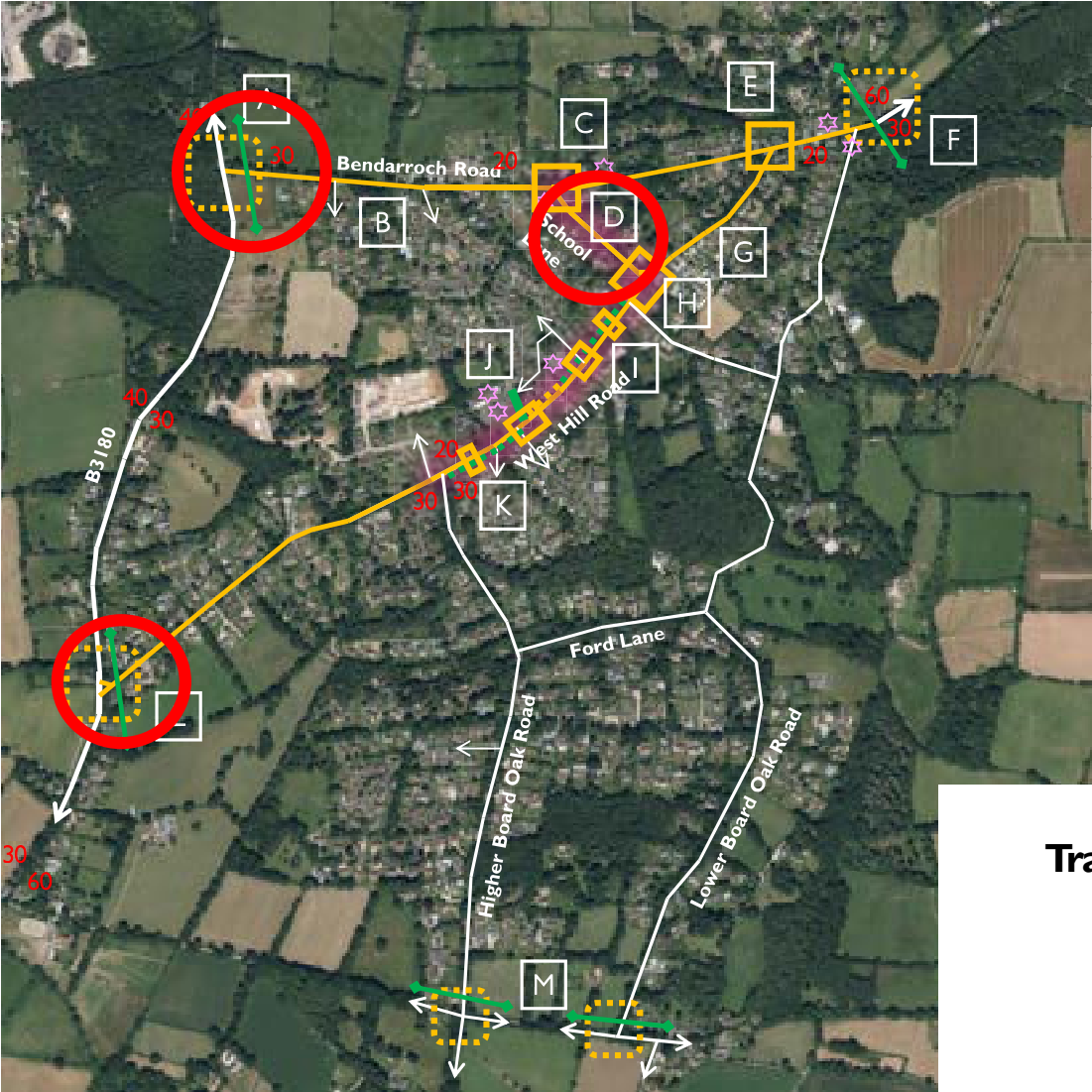
**J – Village Hall Link** – Install a new footpath link to better connect the Village Hall / school site to West Hill Road and surrounding neighbourhoods, esp those to the south and west. The footpath should include strong axial tree planting to enhance legibility of the route and make better use of the grassed area in the village hall car park. To better connect this new important feature and provide improved continuity to the existing footpath, install a 'Give – Take' arrangement allowing a large footpath extension. This feature will usefully allow the footpath to be connected either side of the large Oak tree, where there is currently a footpath break. The scheme could include pedestrian courtesy crossings over West Hill Road to better link with the southern footway. [see Sketch Design 4]

**K – West Hill Road (western section)** - create slow & steady traffic condition through installation of rumble devices at regular intervals. Better mark start of 20mph zone. Consider marking focal points as necessary.

**L – West Hill Road Gateway (western gateway)** - highlight transition and change in road character through a highway narrowing intervention, using similar techniques to other gateways.

**M – Southern Gateways** - highlight transition and change in road character through a highway narrowing intervention.





**Design Interventions**

- Gateway treatment
- Focal Area treatment
- Slow & Steady Lanes
- Lanes for People
- Zonal Sign

**Other Features**

- Footway
- Local Services
- 20 Signed Speed limit

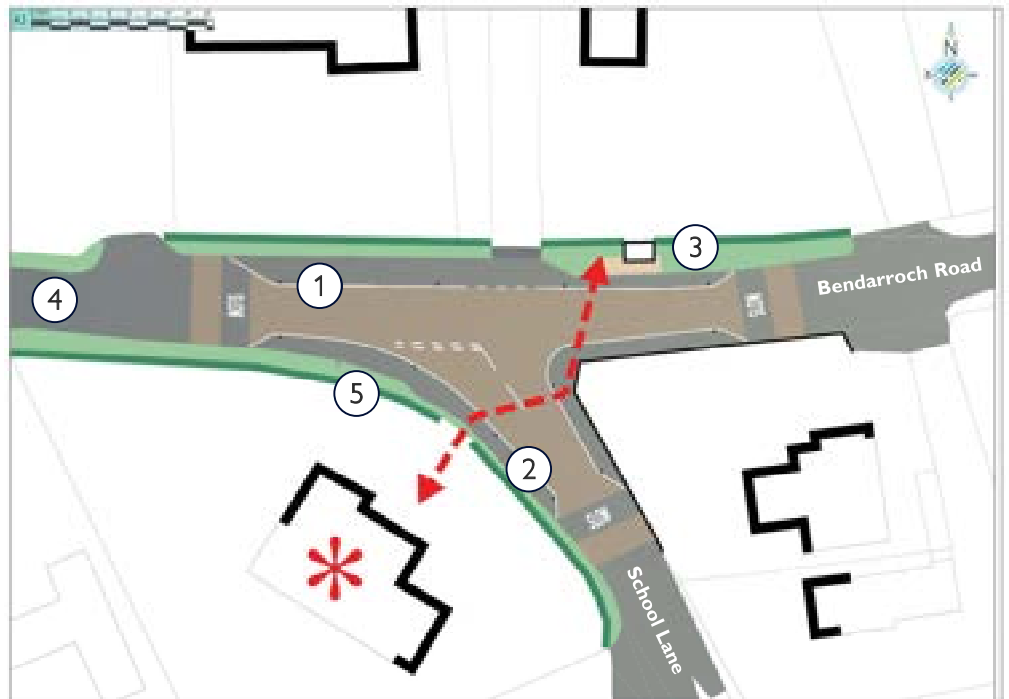
**Traffic Management Strategy**

2Km Map Base

## Sketch Design I - Bendarroch Road / School Lane



1. Install focal area treatment in form of buff textured dressing laid over the whole junction space with white markings to edge. Consideration of highway studs, timber bollard or setts may also be considered.
2. Highlight pedestrian comfort zones to sides to enhance pedestrian usability and safety.
3. Integration of bus shelter and bench with new paved area adjacent to bus shelter.
4. Consider removal of some or all wider road markings.
5. Installation of new white finder post sign.



## Sketch Design 2 - Bendarroch Road /West Hill Road



1. Install focal area treatment in form of buff textured dressing laid over the whole junction space. Consideration of highway studs, timber bollards or setts may also be considered.
2. Highlight pedestrian comfort zones to northern side to enhance pedestrian usability and safety.
3. Highlight and maintain characterful fingerpost directional sign.
4. Consider removal of some or all road markings



## Sketch Design 3 - West Hill Road (War Memorial)



1. Form larger village green through closure of northern highway.
2. Install 'Give Take' arrangement with priority eastbound (out of village).
3. Opportunity for further benches (south facing) and possible hardspace and public art installation
4. Highlight pedestrian crossing over School Lane, via a courtesy crossing.



## Sketch Design 4 - West Hill Road (School / Hall Link)



1. Install a new footpath link from Village Hall / school site to West Hill Road. Consider strong axial tree planting to new footpath to enhance legibility of route and enhance the grassed area in adjacent to the car park.. [Note a further option for the footpath includes coming closer to the village hall frontage]
2. To better connect this new feature and provide improved continuity to existing footpath, install a 'Give – Take' arrangement allowing footpath extension.
3. Provide pedestrian courtesy crossings over West Hill Road better linking to southern footway.





## Sketch Design 5 - West Hill Road (Western Section)



1. Create slow & steady traffic conditions through rumble devices at regular intervals.
2. Better mark start of 20mph.
3. Consider marking focal points as necessary.



## Sketch Design 6 - School Lane



1. Virtual footway formed on southern side of School Lane. The main carriageway is treated with buff high friction surface with solid white line to the edge (there is no kerb or upstand). This will discourage drivers from entering the virtual footway, unless when two cars need to pass.
2. Access to all driveways is maintained. Grass verges are unchanged.
3. The virtual footway will link to the existing kerbed footway at the southern end of School Lane.



## Sketch Design 7 - Bendarroch Road Northern Gateway



1. Use buff high friction surfacing to reduce junction geometry on the minor arms.
2. Opportunity for public art perhaps drawing on historic West Hill industries, like plantations.
3. Change of speed limit reinforced with 30 roundels and buff banding. Quiet Lane status start / end signs (see below)
4. Buff banding repeated
5. Opportunity for place markers



## Sketch Design 8 - West Hill Road - Southern Gateway



1. Retain current gateway junction with triangular green. Consider relocating white finger post sign to centre to reinforce village character.
2. Buff banding on 'slow' marking on B3180 to highlight 30mph speed limit in this section
3. Quiet Lane status start / end signs (see below). Opportunity for public art.
4. Place markers to highlight larger trees.



# Chapter 5

## Next Steps

This report has presented a compelling highway design proposal for the village of West Hill, which will help the village on many fronts. A proposal which seeks to minimise the impact of traffic on this woodland village community, whilst improving pedestrian conditions and delivering better public realm.

The proposals have been developed with input from local stakeholders. To progress the proposals to reality, there are a number of suggested onward steps.

**Step 1 Outline Design** - the project would benefit from further outline design of proposals in AutoCAD to ensure safe operation and testing of the spatial requirements. A Stage 1 Road Safety Audit would also be required and further DCC input.

**Step 2 Public Consultation** - Although much of the concern about traffic issues arose from the Neighbourhood Plan consultation, the design scheme would benefit from a detailed public consultation exercise in order to gain the views of local people on the specific design concepts. This could take the form of a manned exhibition in the village with exhibition boards and methods to record community feedback.


**Step 3 Further Technical Assessment** - In order to help inform funding initiatives, the scheme would benefit from a detailed cost estimate prepared by a Quantity Surveyor with a specialism in highways and public realm works. Preparation of a package of delivery stages (i.e. identification of phasing parcels), would also be helpful at this stage.

**Step 4 Detailed Design, Approvals and Delivery** - Once funding is in place, then final technical design and approvals could be gained. This would include the following steps;

- Detailed Design (either Parish Council consultant or DCC led)
- Stage 2 - Road Safety Audit
- Accessibility Audit
- DCC Maintenance Audit
- DCC Section 278 Approval (if Parish Council led design)
- Contract preparation / Tendering
- On-site works
- Post construction monitoring & Stage 3 Road Safety Audit.

END

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