

Callington to Saltash Safe Passageway Options Appraisal Report

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1 INTRODUCTION

1.1 Background

1.1.1 St Mellion Parish Council is promoting a proposal for a 'Safe Passageway' for cyclists between Callington and Saltash along the A388. Cornwall Council's Transport Strategy team has agreed to joint fund this study as the 'Safe Passageway' proposals for a direct and dedicated cycle path will interface with the planned town wide Saltash cycle network. It is important that a coherent set of proposals are developed, maximising potential benefits and opportunities.

1.1.2 Encouraging more trips by walking and cycling in particular is key to achieving the Connecting Cornwall goals to: tackle climate change; support economic prosperity; protect the environment; and encourage healthy lifestyles. The policy approach to achieve the switch is based on providing safe and efficient infrastructure and encouraging behavioural change. Given the rural nature of Cornwall and the often challenging topography, the strategy approach is based on supporting a change for those shorter journeys that are achievable on foot or cycle, particularly if safe and accessible routes are developed to assist this. It is also acknowledged that the dispersed nature of Cornwall often means that people have to undertake longer trips to reach their destination so walking and cycling needs to be properly integrated with bus and rail to facilitate car free travel for longer trips.

1.1.3 The scheme aims to provide a cycle route between Tavistock Road, Callington and Roods Corner on the A388. By ending at Roods Corner the route can connect into development proposals at Broadmoor Farm, which includes a number of transport proposals. These improvements include converting Stoketon Cross junction to a roundabout junction, providing the opportunity to divert southbound traffic heading to the A38 at the Rood's Corner junction (also to be improved) avoiding Carkeel village. A proposed traffic calming scheme between Carkeel village and Carkeel junction will also facilitate this re-routing by making it a slower and a less attractive route for motor vehicles. A pedestrian bridge over the A38 to the east of the Carkeel junction was installed as part of a Highways England scheme in 2015. The Broadmoor Farm development proposes to install another pedestrian/cycle bridge to the west of Carkeel connecting the Broadmoor Farm site to Saltash.

1.2 Scope

1.2.1 CORMAC Solutions' Engineering Design Group (EDG) were commissioned to undertake a high level assessment of two route options, investigate engineering constraints and opportunities and develop costings to recommend a preferred route. The following main activities were undertaken:

- Attend a project inception meeting with Client team and St Mellion Parish Clerk.
- Consider and assess the scheme proposals submitted by St Mellion Parish Council and an alternative quiet lanes route option.
- Identify necessary improvements required to provide 'safety and comfort for less-confident cyclists along both routes including cycleway provision (off-highway where possible), crossing facilities and signage.
- Identify existing routes and possible links to surrounding networks, links to schools, services, residential, employment and development sites without significant deviation or cost.
- Identify third party land requirements and key risks.
- Review potential synergies with other proposed schemes/initiatives in the area surrounding the two route options
- Identify signage and lighting requirements.
- Design improvement works in line with core design principles: convenience, accessibility, safety, comfort and attractiveness.
- Refer to and follow current cycling best practice and provide relevant examples of good practice.
- Outline engineering designs for the two route options and a route description to include costs to construction.
- OS based maps of route options showing connections to existing transport networks such as the road, rail and rights of way.
- Engagement with Parish Councils, Local Members.
- Produce final report documenting the above and including, routes, designs and costs (including fees) outlining conclusions and recommendations.
- Present draft report findings to public and amend report following feedback

1.3 Report Structure

1.3.1 This feasibility report contains: -

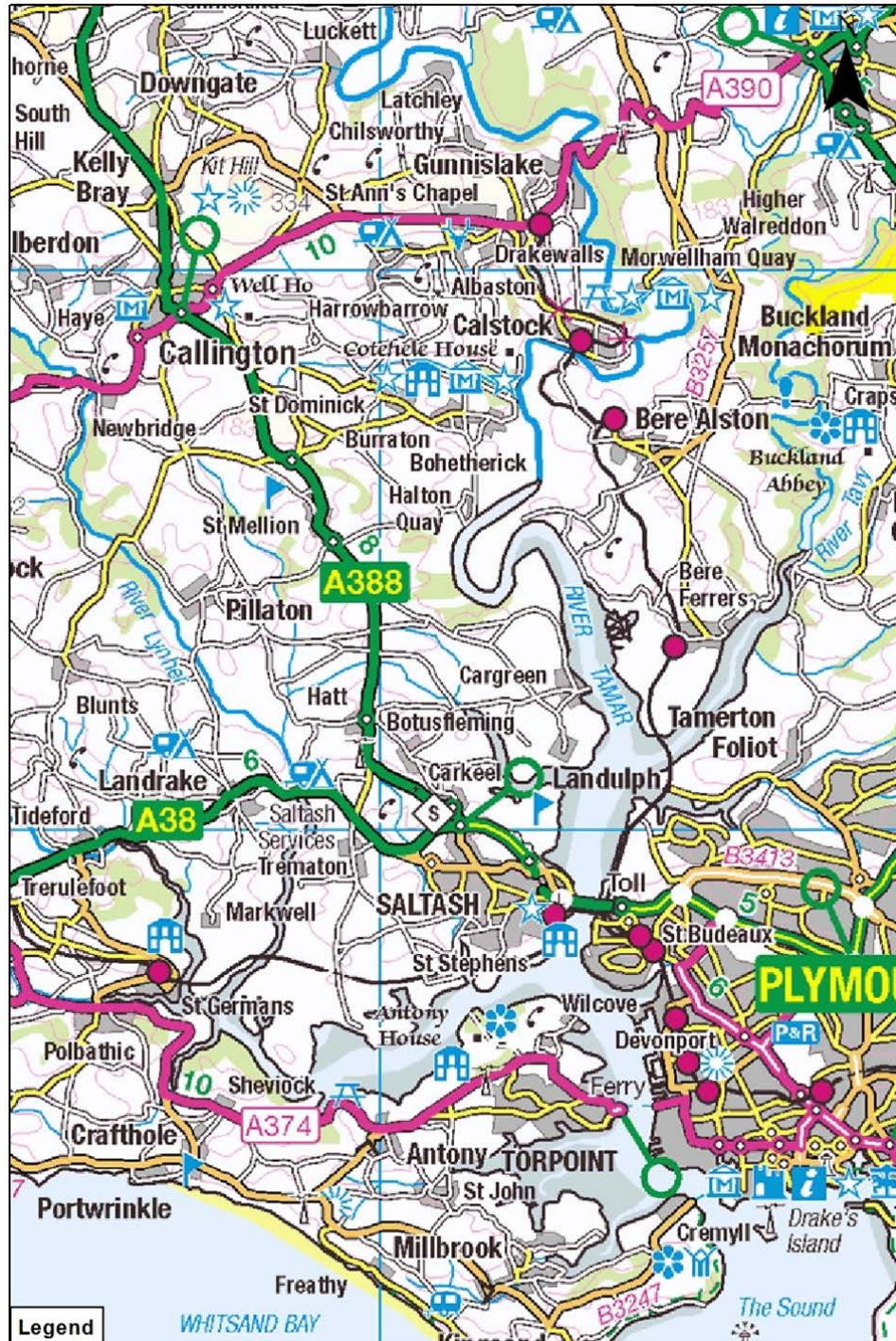
1. Introduction
2. Existing Situation
3. Option Assessment Method

4. Option Assessment
5. Public Presentation and Subsequent Assessment
6. Recommendations

2 EXISTING SITUATION

2.1 The Study Area

- 2.1.1 The study area is located between Callington and Saltash as shown on the location plan Figure 2.1 below:



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Figure 2.1 The Study Area

- 2.1.2 The extents of both routes, as agreed with the client, are the A390 in Callington and Roods Corner on the A388, just north west of Saltash. It is anticipated that from Rood's Corner current private developments and existing improvement schemes will provide the link to Saltash itself. The route options are shown on the drawing in Appendix F.

2.2 Existing Highway Layout

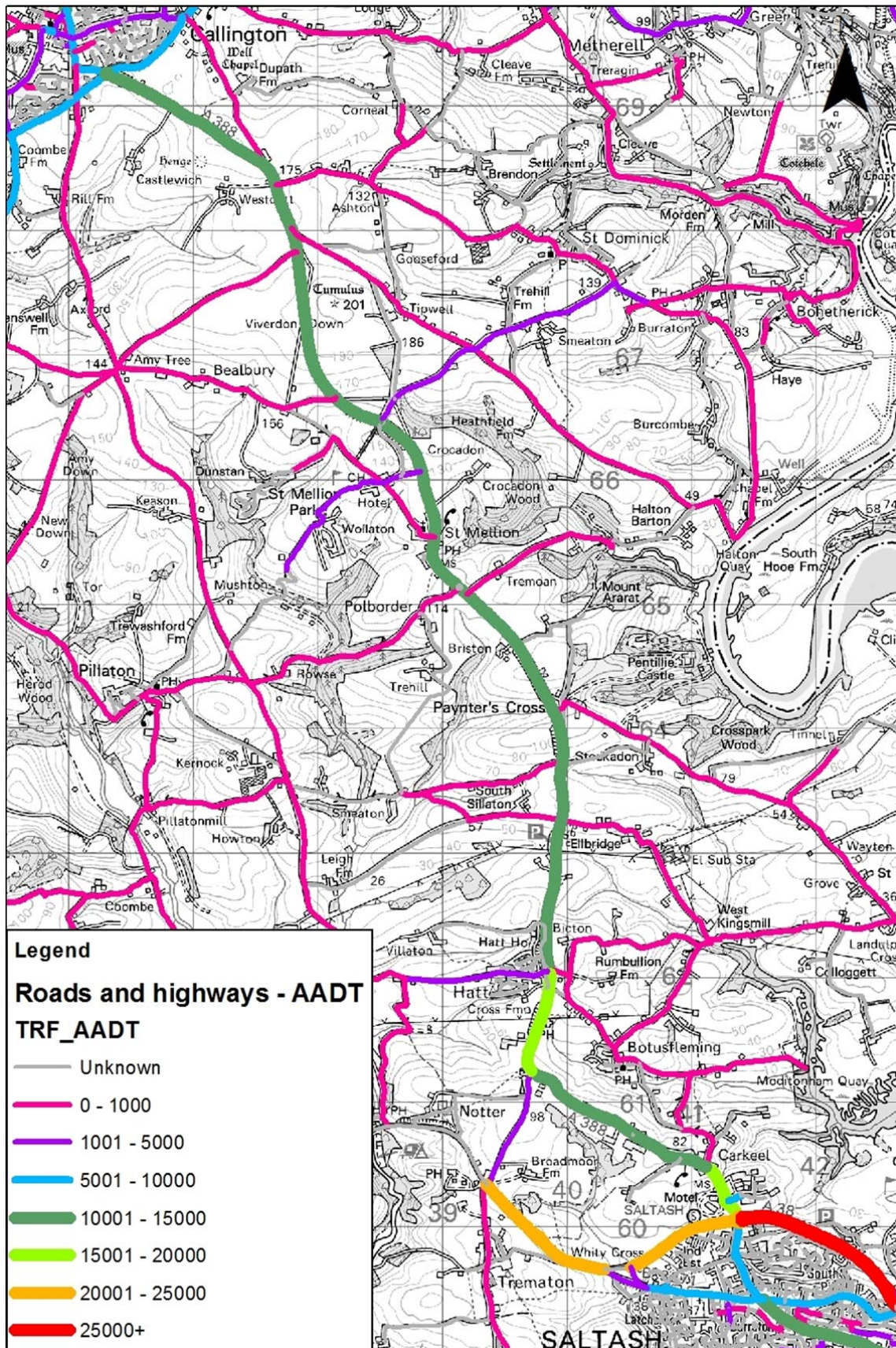
- 2.2.1 The A388 is the main road between Callington and Saltash. It passes through the village of St Mellion approximately half way between the two towns. The road has one lane in each direction. Sections of the proposed safe passageway are on rural quiet unclassified lanes. The rural quiet lanes are narrow, with no footways.



Photo 2.1 – Typical section of the A388 between Callington and St Mellion

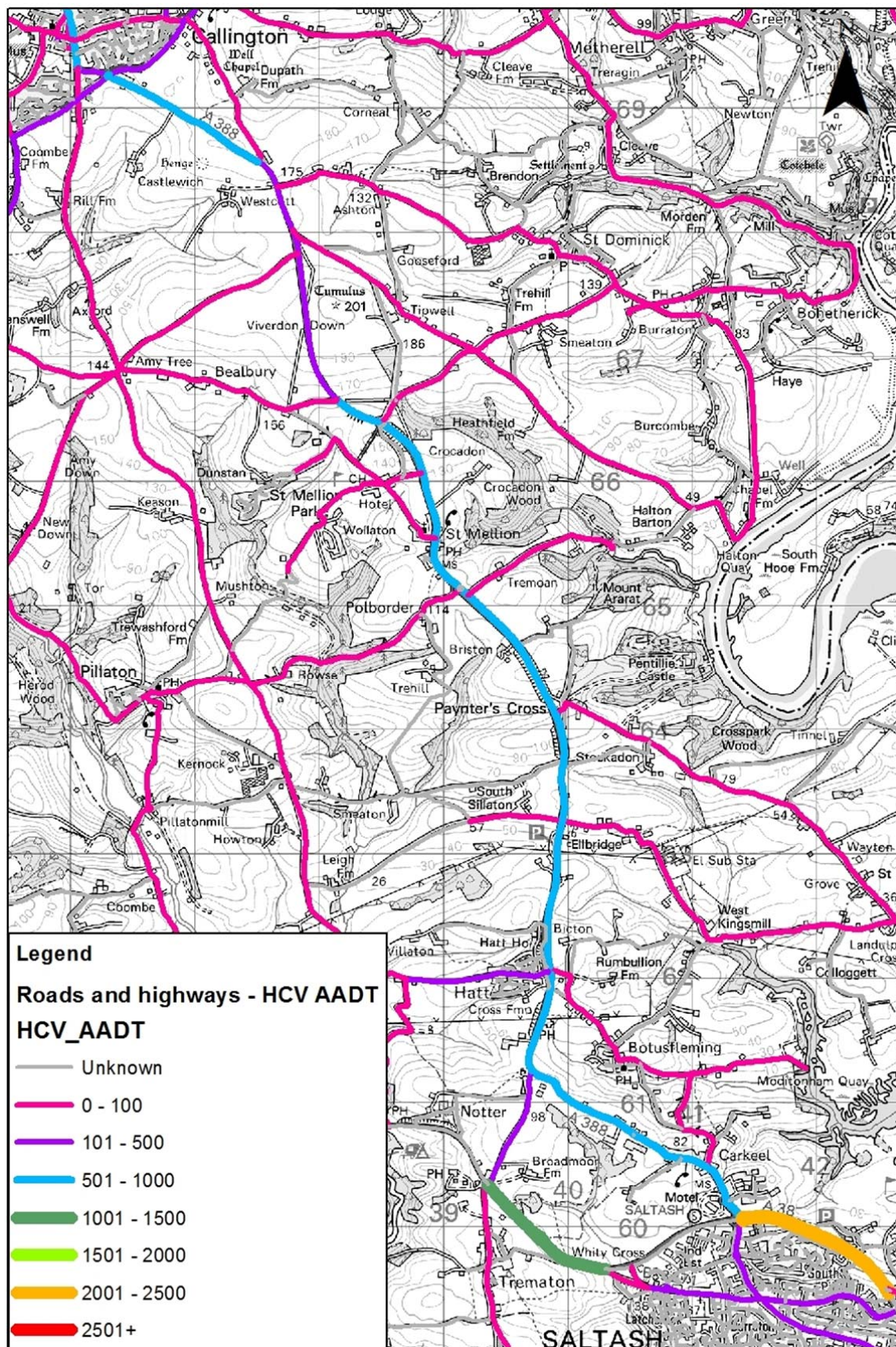
2.3 Traffic Flows

- 2.3.1 Existing traffic flow data is shown in figure 2.2 and 2.3 below. The Average Annual Daily Totals (traffic flows) data held on Cornwall Council's GIS system indicates flows vary greatly within the overall study area, ranging from very low (0-1000) on the side road network up to over 15000 vehicles per day as recorded by the automatic traffic counters in St Mellion.
- 2.3.2 Heavy Commercial vehicles make up approximately 4% of the traffic on the A388 which adds to the discomfort of cyclists using this road.



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Figure 2.2 –Annual Average Daily Traffic Flows (2 way)



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Figure 2.3 – Heavy Commercial Vehicles Annual Average Daily Traffic Flows (2 way)

2.4 Traffic Speed

- 2.4.1 Almost the entire length of the A388 from Rood's Corner to Callington is national speed limit (60mph). There are 2 exceptions to this. One is the village of Hatt, including the roundabout on the A388 which has a 30 mph limit. The other is the village of St Mellion where there is a 30mph limit on the A388, enforced by speed cameras.
- 2.4.2 The quiet lanes are national speed limit except for:
- 40mph where the St Germans Road comes into Callington
 - 30mph where the lane comes into St Mellion from Amy Tree
 - 30mph where the Vollards Lane come into Hatt

2.5 Collisions

- 2.5.1 The recorded collisions from within the study area have been obtained from Cornwall Council database of collisions reported to the Police STATS19 system. In the 10 year period between 01/01/2007 and 31/12/2016 there were 165 collisions recorded. The collision map and data is available in Appendix A. These consisted of:
- 2 Fatal
 - 19 Serious
 - 103 Slight
 - 41 Damage only
- 2.5.2 Of the 165 collisions only 1 involved a bicycle and resulted in damage to the bicycle and slight injury to the cyclist. The collision occurred at the roundabout on the south side of Callington at the junction of the A390 (Southern Road) with the A388. It was caused by a car turning left at the roundabout cutting across the path of a cyclist who was coming up on the near side.

2.6 Existing Cycle Provision

- 2.6.1 There is little cycle provision along the A388 between Callington and Saltash. However, there is a popular shared use cycle / footway between Callington and Gunnislake. In Saltash there are also several shared use cycle / footways including the Tamar Crossing.
- 2.6.2 To the south of Callington is Dupath Lane. This is a quiet lane providing a cycle friendly connection with the A388. It is signed by 'No access to A390 except for cyclists' signs.

- 2.6.3 Both entrances to this road have grasscrete to deter vehicles. To avoid cycling on this surface a cycle lane has been provided. Sometimes vehicles block this at the northern end as shown in Photo 2.2 below. This route connects with the Callington to Gunnislake shared use route on the other side of the road. At the point where Dupath Lane joins the A388, which is shown in Photo 2.3, access from the lane onto the A road is well provided for. However, for northbound cyclists it is difficult to cross the carriageway here to join Dupath Lane.
- 2.6.4 600m to the south of Rylands Corner a turn off to Tipwell provides a quiet lane route to St Mellion for cyclists heading south. This is shown in Photo 2.4. However, northbound cyclists cannot use this route as the most northerly section of the quiet lane is one way and is only for vehicles leaving the A388.
- 2.6.5 Vernigo Cross lies between Callington and St Mellion to the east of the A388. As shown in Photo 2.5, 2.6 and 2.7 south of Vernigo Cross is a closed off section of old road (still surfaced) which can be used by cyclists. This old road is 500m long and is designated as a bridleway. It can be used by southbound cyclists but is currently harder to access for northbound cyclists as they would have to cross the main carriageway to access this route. Photo 2.9 shows the old road to Vernigo Cross on the right hand side. This is difficult for northbound cyclists to access as they have to cross the main carriageway.



Photo 2.2 - Northern entrance to Dupath Lane.



Photo 2.3 showing the cycle provision where Dupath Lane joins the A388.



Photo 2.4 – Quiet lane north of Vernigo Cross



Photo 2.5 – Closed off road south of Vernigo Cross



Photo 2.6 – The closed off road to Vernigo Cross



Photo 2.7 – Cyclists can access through the gap on the left

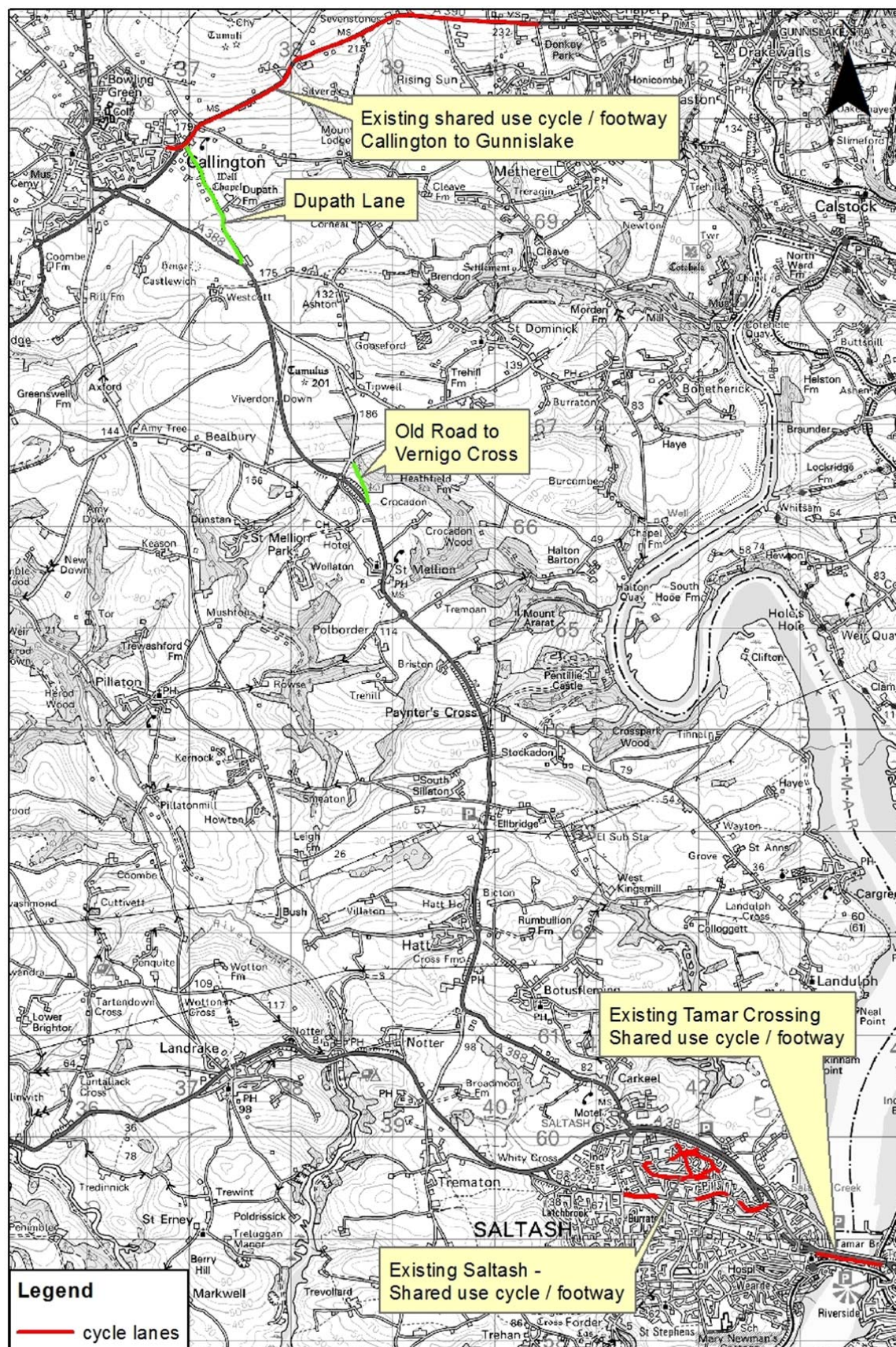


Photo 2.8- Heading south on the A388 a warning sign alerts drivers to the potential presence of cyclists near where the old road from Vernigo Cross joins the A388 from the left.



Photo 2.9 – Looking north on the A388 this photo shows the point where the old road to Vernigo Cross meets the A388, just north of the entrance to Crocadon. This is very overgrown and is above and slightly to the right of the warning sign.

- 2.6.6 The extent of the existing cycle provisions within the study area are shown in Figure 2.4.

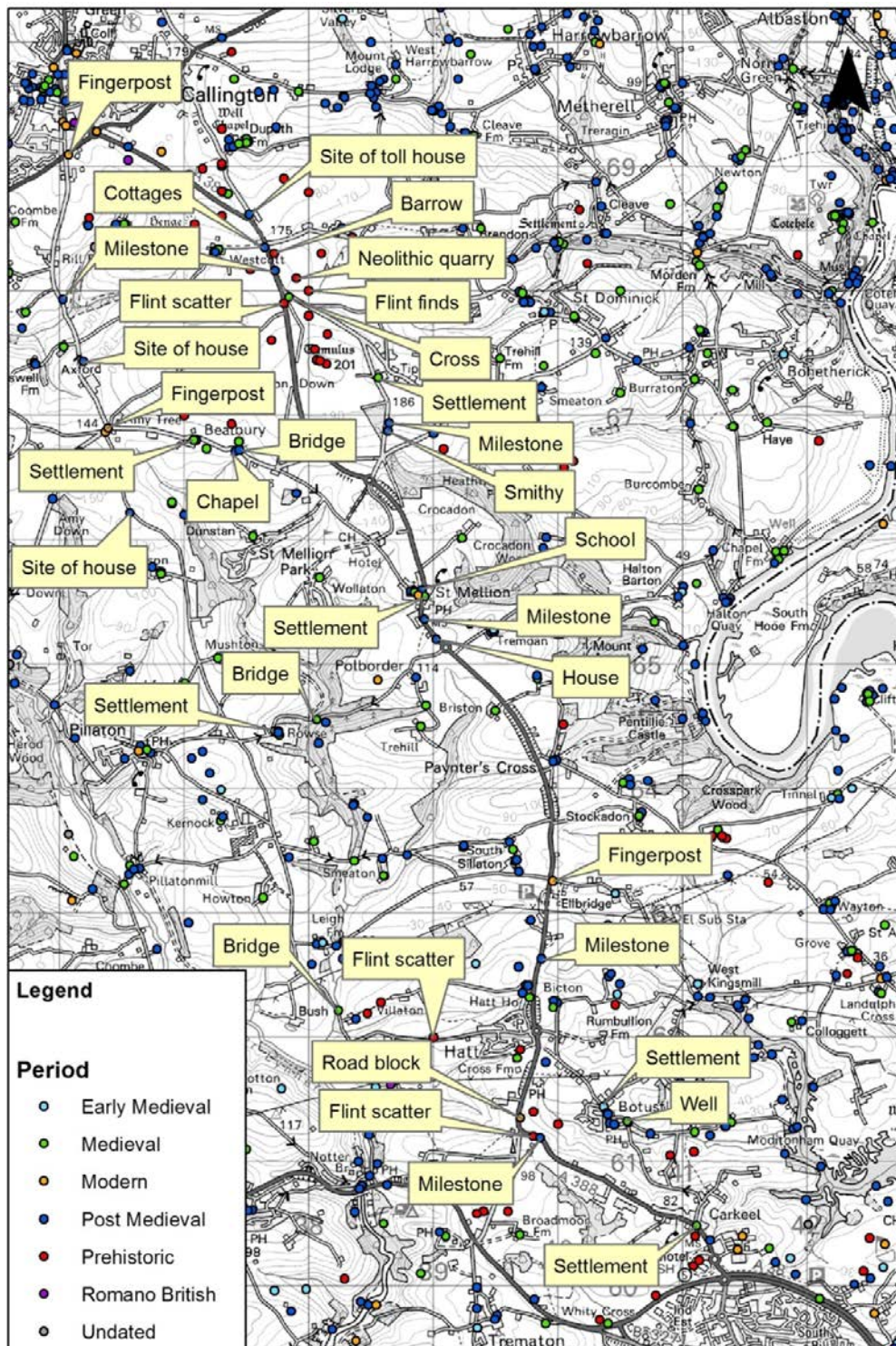


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Figure 2.4 Existing Cycle Provision

2.7 Historic Environment

2.7.1 As shown in Figure 2.5 below there are many historic sites and monuments along both routes, but none which would be adversely impacted by the scheme.

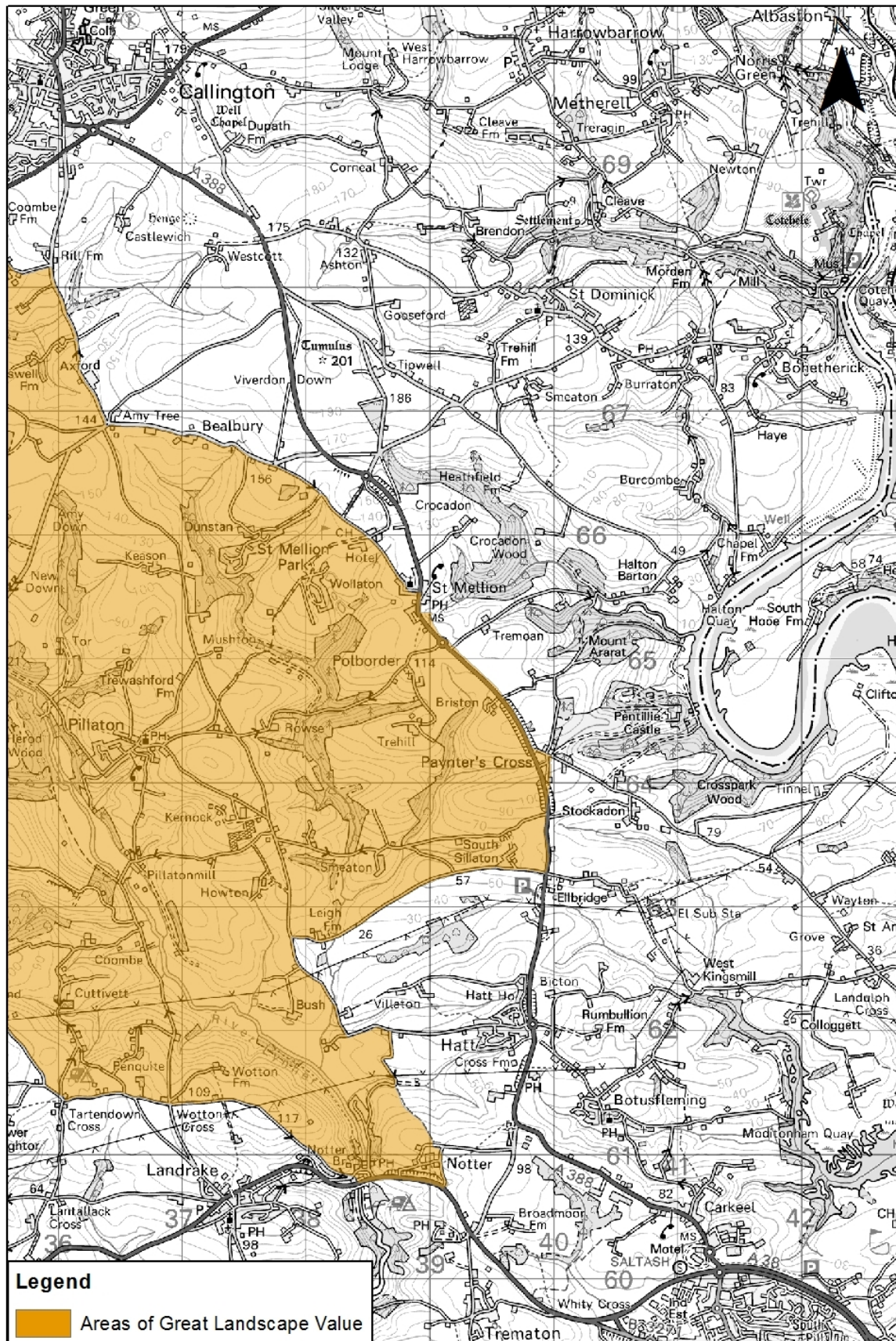


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Figure 2.5 – Sites and Monuments Record

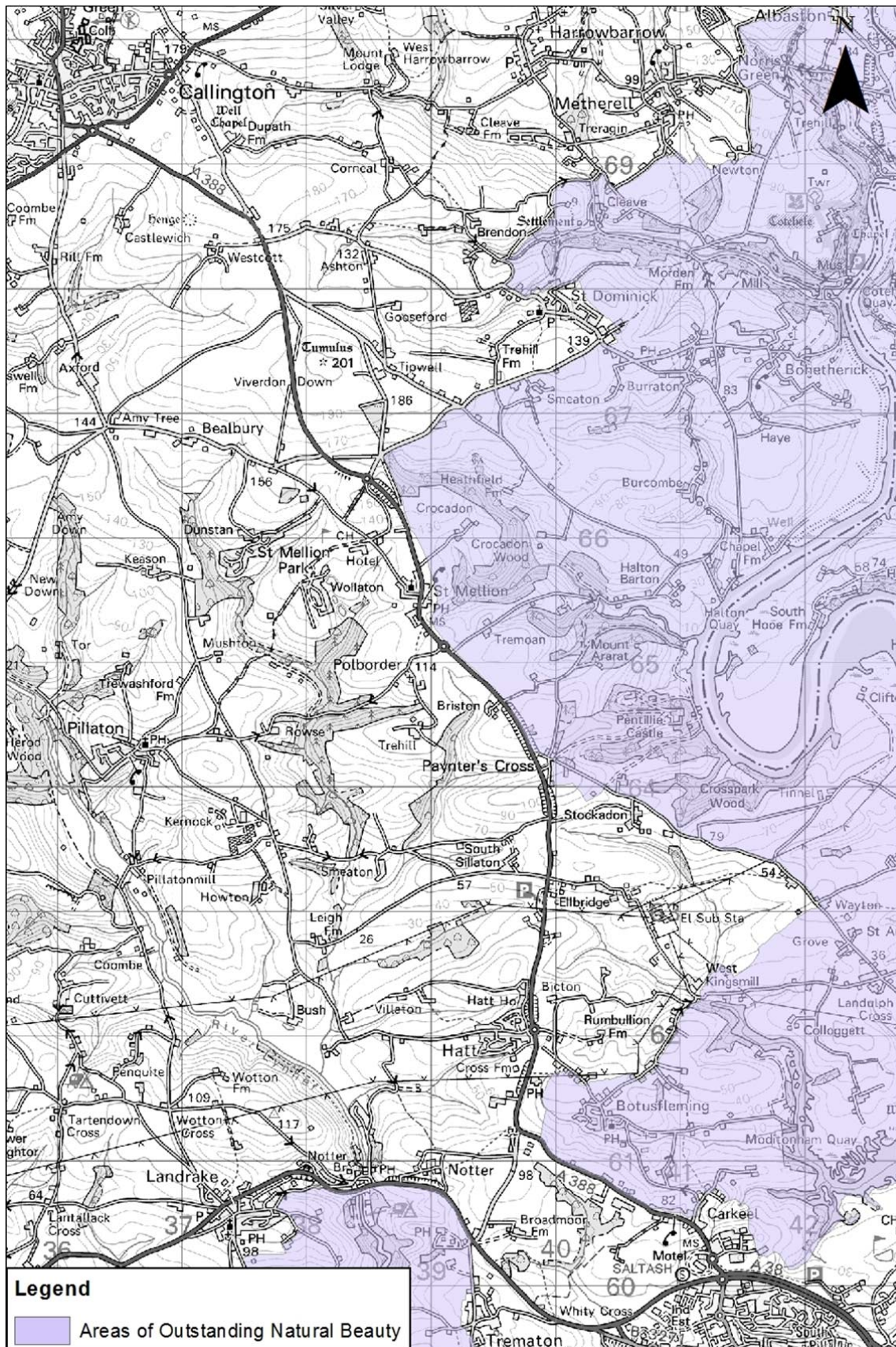
2.8 Designations

- 2.8.1 The study area falls within several national and local designations.
- 2.8.2 Area of Great Landscape Value (AGLV): An AGLV is an area of land in England which is considered to have a particular scenic value, and is therefore afforded a degree of protection by local authorities. The designation was established under the Town and Country Planning Act 1947. If an area is designated as an AGLV, this restricts development in the area, especially if it will affect the distinctive character or quality of the landscape. The Lynher Valley AGLV lies within the study area. This is shown in Figure 2.6.
- 2.8.3 Area of Outstanding Natural Beauty (AONB): An AONB is an area of countryside which has been designated for conservation due to its significant landscape value. Areas are designated in recognition of their national importance by Natural England.
- 2.8.4 The primary purpose of the AONB designation is to conserve and enhance the natural beauty of the landscape, with two secondary aims: meeting the need for quiet enjoyment of the countryside and having regard for the interests of those who live and work there. To achieve these aims, AONBs rely on planning controls and practical countryside management. The AONB within the study area is shown in Figure 2.7.
- 2.8.5 The Tamar Valley AONB lies within the study area.
- 2.8.6 Biodiversity Action Plan Areas (BAP): A BAP is an internationally recognized program addressing threatened species and habitats and is designed to protect and restore biological systems. As shown in Figure 2.8 there are numerous BAP woodland areas within the study area.
- 2.8.7 County Wildlife Site (CWS): CWS is a conservation designation which, despite conferring no statutory protection onto a site, does affirm a site's importance and value for wildlife in its county context. Species in County Wildlife Sites are often also part of Biodiversity Action Plan areas. Figure 2.9 illustrates the CWS sites within the study area.
- 2.8.8 These sites generally complement statutory protection provided by Sites of Special Scientific Interest by acting as buffer zones, wildlife corridors and raising the profile of specific wildlife sites. They are also seen as providing protection for species which would not otherwise be protected by law in the United Kingdom. Whilst there is no legislative protection provided by a CWS designation, planning permission for work that would have an injurious or adverse effect on sites is usually not granted.
- 2.8.9 County Geology Sites: These have been documented as regionally important geological / geomorphological sites worthy of conservation.



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Figure 2.6 – Areas of Great Landscape Value



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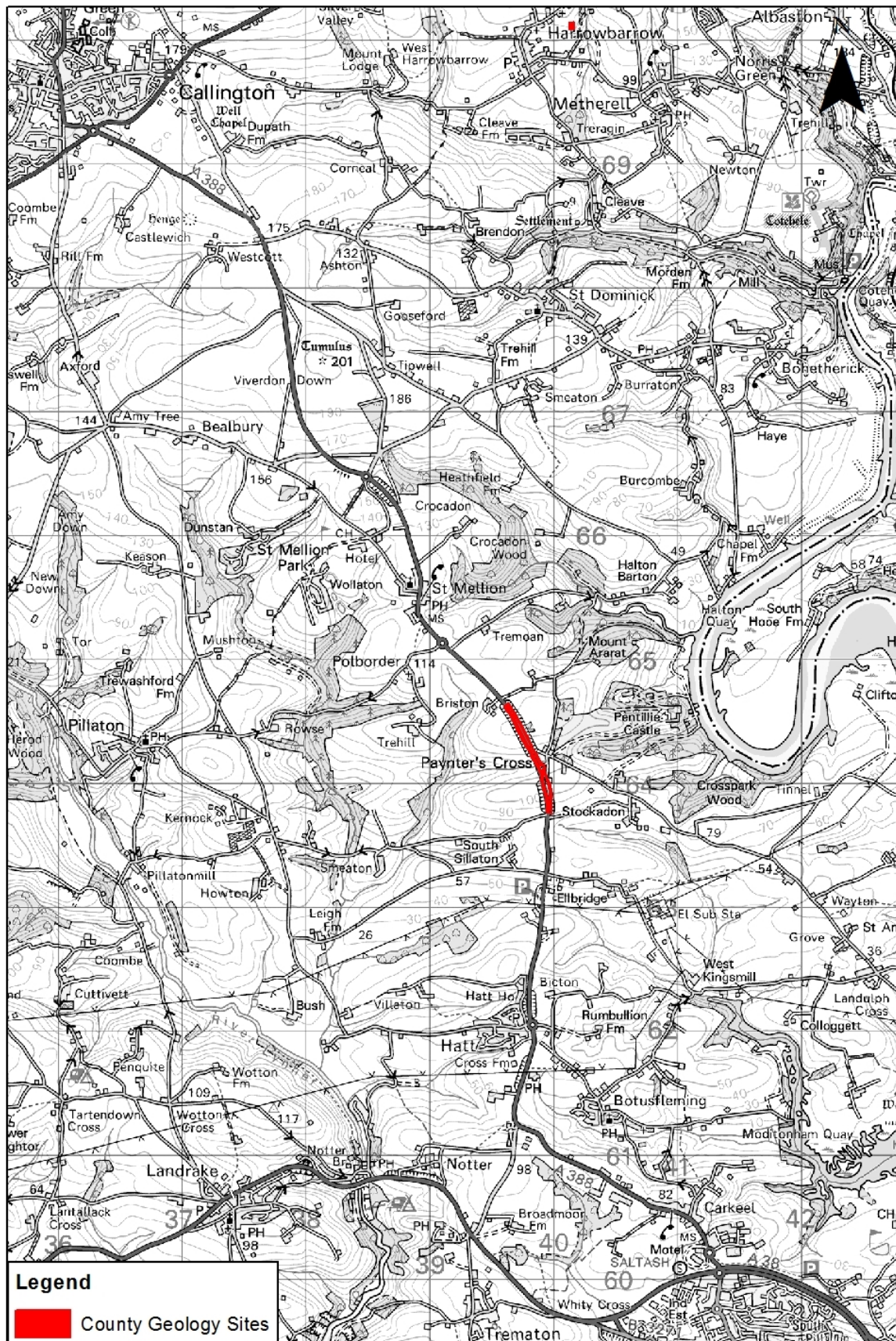
Figure 2.7 – Areas of Outstanding Natural Beauty





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Figure 2.9 – County Wildlife Sites

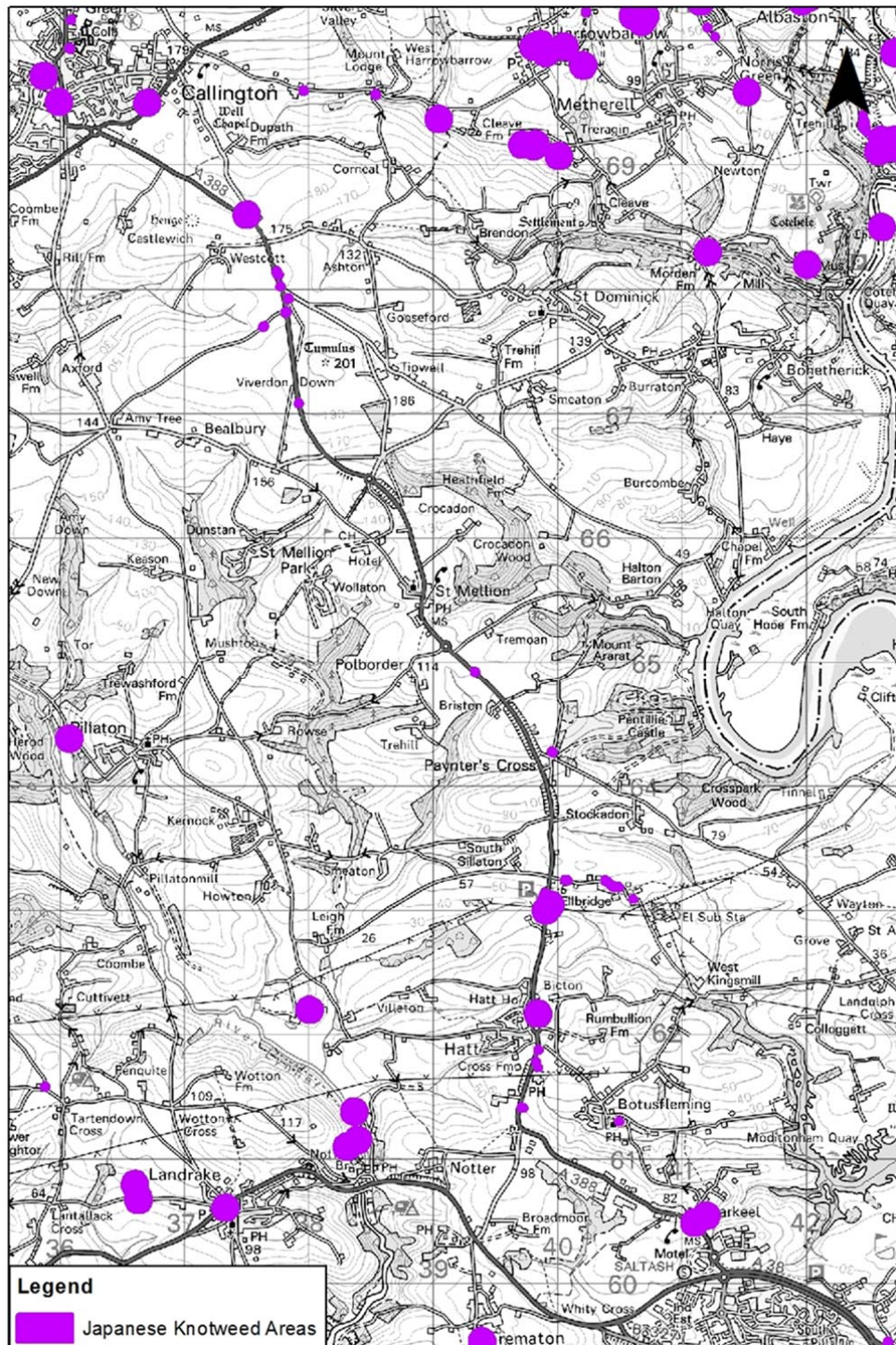


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Figure 2.10 – County Geology Sites

2.9 Invasive Species

- 2.9.1 Japanese Knotweed is known to be present in some locations within the study area as shown in Figure 2.11. Care will be required to ensure that the species is not spread during construction of any selected route.

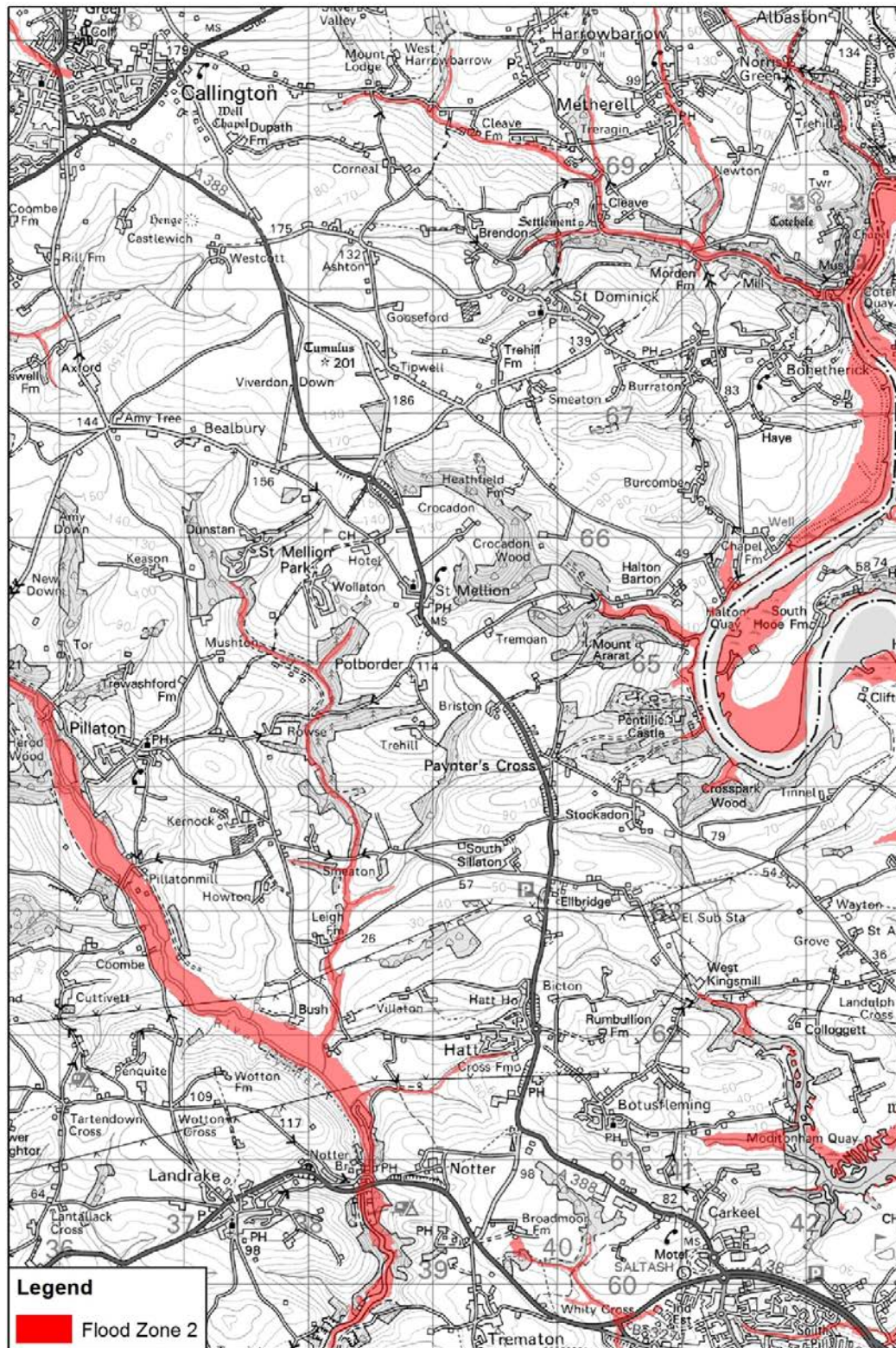


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Figure 2.11 – Japanese Knotweed Areas (Indicative)

2.10 Flood Zones

- 2.10.1 Flood Zone 2 comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding.
- 2.10.2 As shown in Figure 2.12 below, the study area does contain some areas which fall within Flood Zone 2. Care may be required when designing facilities if they pass through or close to these zones.

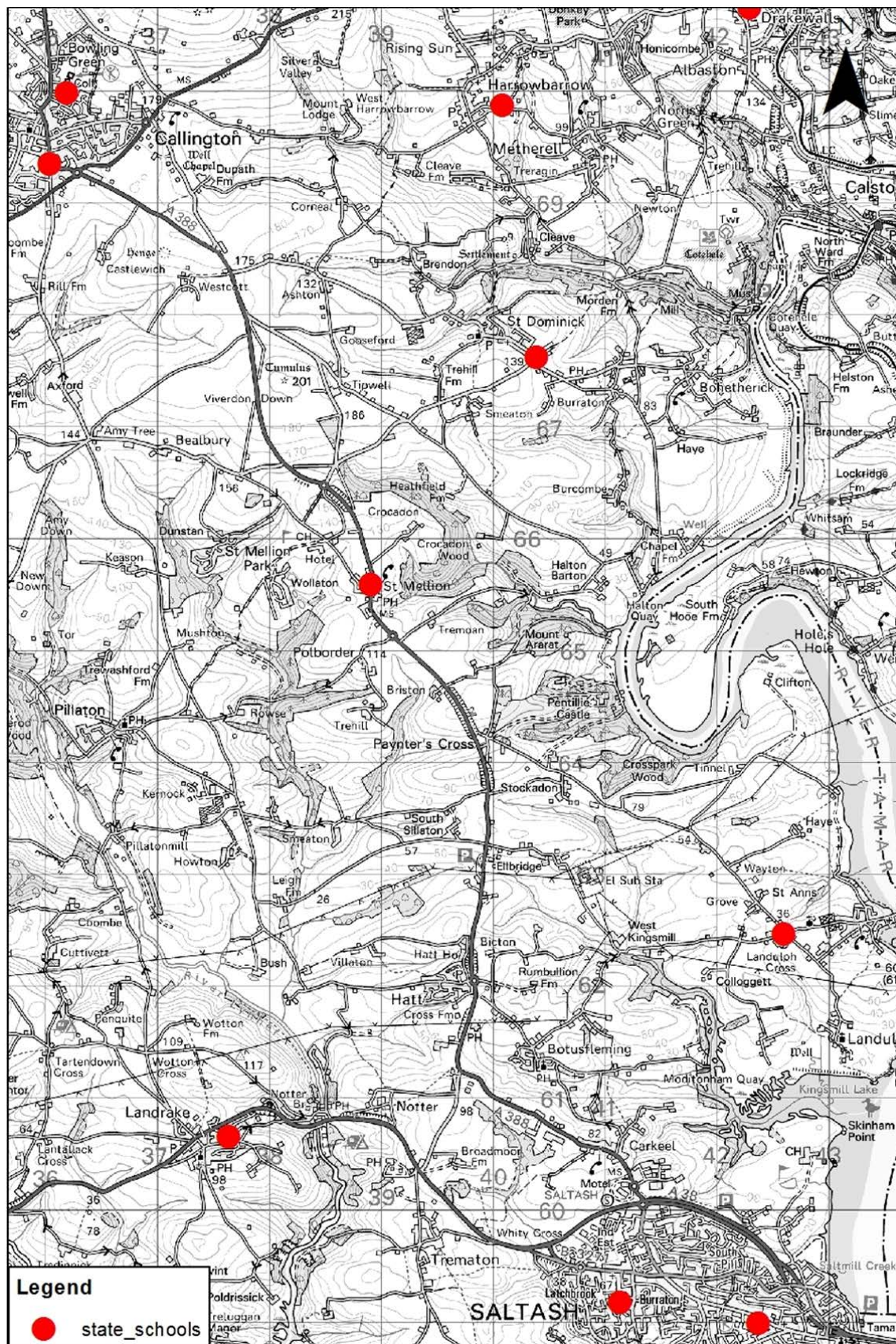


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Figure 2.12 – Flood Zone 2

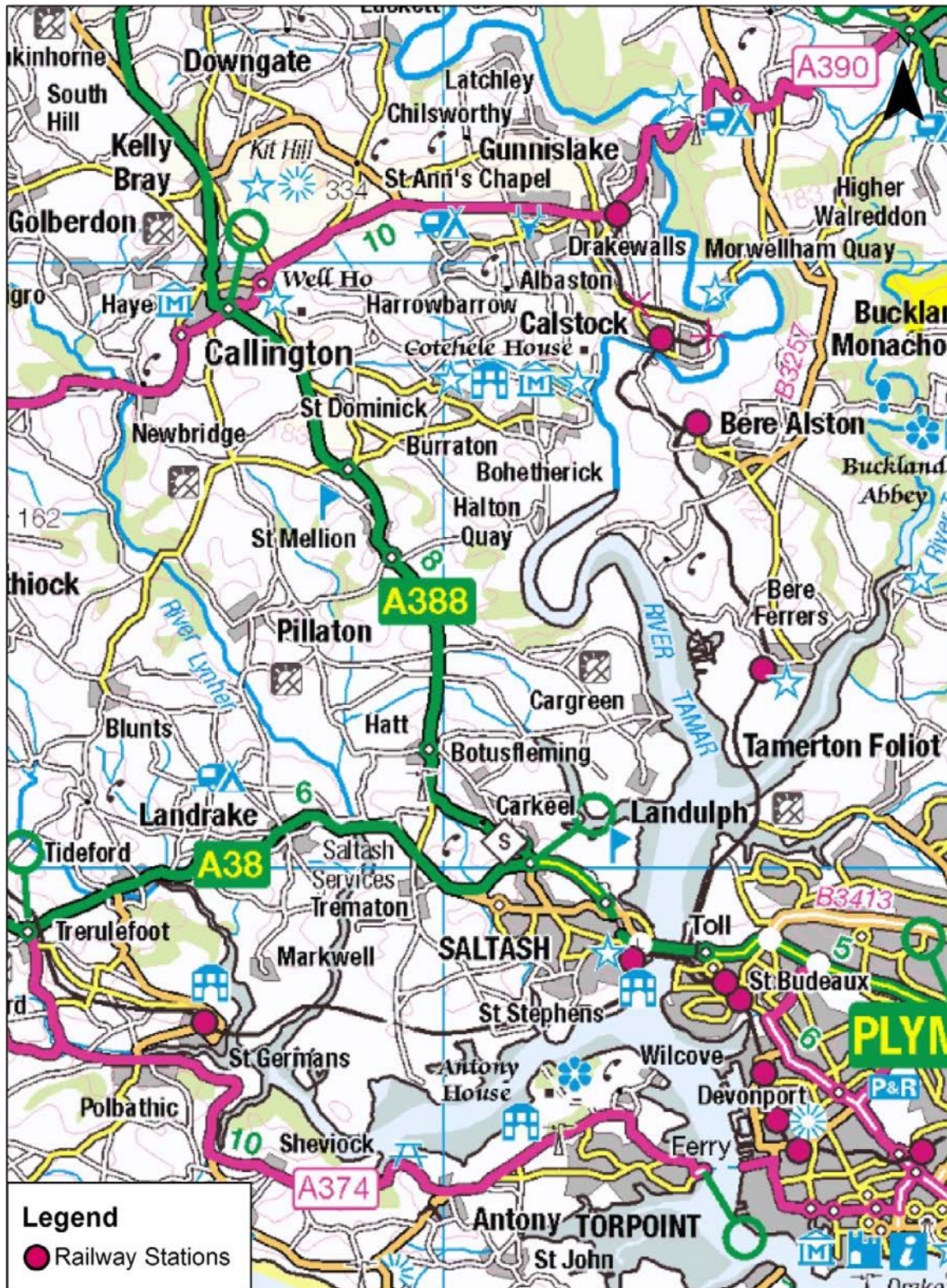
2.11 Useful Connections / Links

- 2.11.1 The sites of schools within the study area are shown in Figure 2.13. Parts of the proposed safe passageway could be used to get to schools in Callington, St Mellion and Saltash. The existing quiet lane network is not popular for cycling to school due to the steep gradients.
- 2.11.2 There are also a number of railway stations that exist within the study area as shown in Figure 2.14. The safe passageway could be used to connect with the Callington to Gunnislake shared use route, to access Gunnislake railway station. It could also be used as part of the route to Saltash railway station.
- 2.11.3 Bus stop locations are shown in Figure 2.15. These are situated along the length of the A388.
- 2.11.4 Links with many tourist destinations along the Tamar Valley can be made, with part of the journey being made on the safe passageway and the rest along quiet lanes. Destinations could include:
- Cotehele Quay
 - St Mellion International resort
 - Crocadon
 - Halton Quay
 - Pentillie Castle
 - Cargreen
- 2.11.5 The proposed route could be used to connect with the Tamar Trails, via the Callington to Gunnislake shared use route. It can also be used to link with the Tamar Valley Discovery Trail.



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Figure 2.13 – Location of Schools



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Figure 2.14 – Locations of Railways and Stations



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Figure 2.15 Bus Stop Locations

2.12 Proposed Developments

- 2.12.1 Proposed development at the southern end of the route will affect how the safe passageway connects to Saltash. These are outlined below.
- 2.12.2 A housing development has been proposed at Broadmoor Farm at the southern end of the study area. The planning decision has not yet been issued for these proposals. The proposals include pedestrian / cycle links across the development site and a pedestrian / cycle bridge over the A38. This bridge links with the proposed Saltash cycle network.
- 2.12.3 Associated highway improvements include:
- Carkeel Roundabout – works are currently underway to increase the capacity of this 4 arm roundabout. A cycle / footbridge has already been completed to enable pedestrians and cyclists to cross the A38 without having to access the busy roundabout. This links up with the proposed Saltash cycle network.
 - Stoketon Cross – Currently a staggered crossroads – As part of the access strategy for the Broadmoor Farm development this junction is to be converted to a 4 arm roundabout. As well as providing access to the new development this roundabout will also be the signposted route for vehicles travelling south on the A388 wishing to turn west on the A38. This will reduce traffic flows on the section of the A388 from Roods Corner to Carkeel roundabout (reducing their flows through Carkeel village).
 - Carkeel Village traffic calming – a variety of measures are proposed to reduce the traffic flows through Carkeel village. These include signage strategies to highlight alternative routes. Measures such as improved gateways, narrowings, refuges and pedestrian crossings will assist.
 - Roods Corner – This junction is to be the southern extent of the safe passageway. Currently this is a T junction. It is proposed to convert this junction to a 3 arm roundabout in order to provide improved route choice and a more even distribution of traffic across the local network.

See Appendix B for more details.

2.13 St Mellion Parish Council Questionnaire

- 2.13.1 A Survey Monkey Questionnaire was carried out by St Mellion Parish Council to gather information on how people use the A388 between Callington and Saltash. Total of 266 responses were received. The questionnaire and results of this survey are shown in Appendix E. These have been summarised below.

- 2.13.2 Most people responding travel by car on the A388 either daily or several times per week. Most people do not travel by motorbike on the A388. Few people travel by bus. Cycle use is relatively high. Walking is the least popular mode of transport after motorbikes.
- 2.13.3 Cyclists use the A388 both for commuting to work and recreation and fitness. Commuting to school is not common by bike.
- 2.13.4 Travelling by car on the A388 is considered safe but walking or cycling on the A388 is considered dangerous.
- 2.13.5 With safety improvements there would be a large increase in the number of people walking, cycling and running this route.
- 2.13.6 14% had received some injury or been pushed into a hedge when cycling on the A388.
- 2.13.7 All sections of the A388 from the roundabout with the A390 in Callington down to Roods Corner are considered to be dangerous.
- 2.13.8 From Roods Corner to Carkeel is considered to be very dangerous.
- 2.13.9 The survey was completed by residents from Callington, Saltash, Plymouth and the villages in the area. It was completed by a wide range of age groups but not many under 16s.

3 OPTION APPRAISAL METHOD

3.1 Method Approach

- 3.1.1 For each of the route options a qualitative assessment was undertaken based upon a range of specified criteria such as Policy and scheme objective fit, Environmental impacts, Journey quality, Technical considerations and cost.
- 3.1.2 A workshop was held on 04/07/2017 involving relevant officers from CORMAC Solutions to assess each of the options against the defined criteria.

3.2 Appraisal Criteria

- 3.2.1 The assessment criterion was based upon the topics listed in Table 3.1 below:

Heading	Sub-headings	
Strategic	Fit with policy objectives	
	Fit with scheme objectives	
Environment	Noise	
	Air Quality	
	Water / Drainage	
	Biodiversity / designations / constraints	
	Landscape	
	Historic Environment	
Social	Distance	
	Gradient	
	Journey quality / comfort	
	Links / Access / Crossings	
	Safety	Accidents
		Lighting
		Vulnerability
		Visibility
Engineering	Land Take	
	Build	
	Services / utilities	
	Existing structures	
	Maintenance	
	CDM (in construction / in operation)	
	Maintenance	
Costs	Out turn works cost	

Table 3.1 Appraisal Criteria

- 3.2.2 The completed assessment for each of the solution options can be found in Appendix C.

- 3.2.3 Section 5 summarises the findings of the assessment for the route options.

3.3 Cost Estimation

- 3.3.1 The cost estimation value quoted for each route is the works cost which includes materials and labour & traffic management only.
- 3.3.2 Cost estimations made at this stage of feasibility are necessarily high level. The estimations have been calculated based on costs per m for the assumed construction types as experienced on other similar schemes across the UK.
- 3.3.3 Design fees have been calculated as a % of the works cost. 8% has been used. These fees are for the design only and do not include: consultation; ground investigation; topographical survey or any other survey, permission or consent necessary to progress the works.
- 3.3.4 Works supervision fees have been calculated as a % of the works cost. 10% has been used.
- 3.3.5 Risk values have been calculated at 35% of the estimated works costs and OB added at 44% of works costs to account for the early stage of feasibility and very limited understanding of construction issues.
- 3.3.6 If the project were to be progressed through the normal Cornwall Council processes an additional sum of approximately 8% of the works cost would be required for project control. This cost has not been included in the following estimates as it is uncertain how the project will be taken forward, however it should be borne in mind.
- 3.3.7 A breakdown of the total cost of the engineering preferred routes is given in Table 5.1, Section 5, Recommendations.

3.4 Assumptions

- 3.4.1 This report is based on existing data in the study area. Assumptions are necessary so as to provide a base idea of the indicative solutions and costs. The following assumptions have been made in the development of the different options:
- The costs of the solutions do not include land costs or the costs associated with the protection or diversion of utility equipment
 - Routes have not been designed in detail and thus the associated costing are high level estimations only
 - Optimism Bias has been included at a rate of 44% in accordance with the Treasury Green Book on investment appraisal

3.5 Exclusions

- 3.5.1 This is a high level desk based assessment so commissioning of new surveys / investigations has not been undertaken.

4 ROUTE APPRAISAL

4.1 General

- 4.1.1 The Two proposed route options are shown on drawing number EDG1245_CSL_GEN_SX238065_DE_D_0001 in Appendix F.
- 4.1.2 Average annual daily traffic (AADT) figures quoted are 2015 values and can be used to gauge how busy a road is. Where no traffic volumes are available it can be assumed that they are low. The figure represents the average daily two-way flow for all types of vehicle. To make the data more relatable an estimation of hourly flow has also been made. This is based on the assumption that a peak hour flow is typically 10% of the AADT. Peak hours are typically considered to be 8am to 9am and 5pm to 6pm, although it should be noted that this varies greatly by road and area. Whilst not totally accurate, this does give a feel for the number of vehicles a cyclist or pedestrian is likely to encounter per hour.

4.2 St Mellion Parish Council Route - Option A

- 4.2.1 The route submitted by St Mellion Parish Council is shown in Figure 4.1. For appraisal the route has been divided into sections, each of which has been individually assessed. This route includes some sections using quiet lanes, some sections using existing highway verge and some sections where land-take is necessary.
- 4.2.2 As a whole this route fits well with Cornwall Council policy objectives as it provides a realistic way of encouraging journeys by bike instead of car. This will therefore:
- Contribute to tackling climate change
 - Encourage healthy lifestyles
 - Support economic prosperity by promoting ecotourism
- 4.2.3 This route also fits well with the scheme objectives of:
- Linking to public transport
 - Providing a safe, comfortable, direct route for commuting and leisure
- 4.2.4 Environmentally the route is likely to provide minor beneficial impacts for noise and air quality by encouraging walking and cycling over other modes of transport. It is anticipated to be neutral for landscape and historic environment impacts. There might be some minor adverse impacts from water runoff from increased hard areas and routing through a woodland BAP but these can be mitigated through design.

- 4.2.5 The route is felt to provide an enhanced journey quality and provides good links to villages, schools and public transport. There are several bus stops along the length of the route, which users could reach safely providing links to public transport.
- 4.2.6 From an engineering perspective the route does require new construction resulting in higher costs than the quiet lane option (Option B). It will require an estimated 6904m² of land take and is likely to impact on some utility services which may need adjustment to allow the implementation of the scheme.



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Figure 4.1 – Option A – Route submitted by St Mellion Parish Council

Section 1a – Tavistock Road

- 4.2.7 A shared use cycle footway is already in use along the north side of Tavistock Road. This is the western extent of the Callington to Gunnislake route and the proposed Callington to Saltash safe passageway would connect with this route from Dupath Lane.
- 4.2.8 This route section has not been assessed within this report as it is an existing facility.

Section 1b – Dupath Lane

Description

- 4.2.9 Distance: on road 1368m.
- 4.2.10 This section starts with an improved crossing of Tavistock Road by Pengelly Garage to link the Callington to Gunnislake shared used route with the proposed Safe Passageway starting at Dupath Lane. The improved crossing would include signage and increased path width between the roundabout crossing point and Dupath Lane. Bollards could be used to prevent parking on the shared use route. The assessment of Option A, the St Mellion Route starts with this crossing point.
- 4.2.11 It then follows the existing Dupath Lane, which is an 'access only' lane. In order to deter vehicles from using the lane, deterrent paving has been installed at both ends and half way along at the turning to Dupath Well Chapel. To make the route more comfortable for cyclists it is recommended that a smooth bitmac surface should be provided for cyclists to cross the deterrent paving.
- 4.2.12 Some provision for cyclists already exists here in the form of a small cycle path at Rylands Corner and signage 'no access to A390 except for cyclists'.
- 4.2.13 The maximum gradient on Dupath Lane is 1 in 22 which is not significantly steeper than the A388 (1 in 29) in this area.
- 4.2.14 The AADT volumes and speed limits of the roads in or alongside this section are:

- Dupath Lane C219 AADT 230 (23/peak hr), 60mph

Benefits expected

- 4.2.15 The expected benefits are:
- Links - As well as linking to the Gunnislake shared use route at the north this section also joins a quiet lane linking to attractions such as Dupath Well Chapel and Cotehele Quay.

- The improved crossing point by Pengelly Garage will boost walking and cycling numbers.
- Traffic flows along Dupath lane are low making it a safe route.
- No land-take would be required for this section.

Risks and Issues

4.2.16 Risks and issues include:

- Provision of lighting is not appropriate along this lane.
- Utilities – Services will not be affected by directing cyclists along this quiet lane. However, for the improved crossing of Tavistock Road trial pits will have to be carried out to determine the exact location of services as there are underground gas, water electric and telecoms in this area.

Cost

4.2.17 As this section utilises existing highway the works costs are low. It is estimated that the works costs would be approximately £6,200.

Section 2 – Rylands Corner to St Dominic turn off

Description

4.2.18 At the southern end of Dupath Lane the proposed safe passageway follows an unclassified section of road adjacent to the properties Chyendolar and Rylands. This has a bitmac surface and can be used by cyclists. South of this is an overgrown unsurfaced section of a former road. There are signs indicating the presence of Japanese Knotweed. This section could be resurfaced to provide a good cycle route. After 70m this ties back in with the existing A388. From this tie in location, the cycle route would utilise the existing verge. Further south near the Ashton turn off the verge is narrow (3.2m). The provision of the cycle route would result in tree loss from the hedgerow unless there was some land-take here and the route located behind the hedgerow in the field. Ideally the shared use route would have 3m wide bitmac surface and a grass buffer strip of at least 1m between the shared use route and the main carriageway. A buffer strip is necessary to separate the users of the safe passageway from the busy road where vehicles can be travelling at high speeds. In order to avoid the need for land take in this section the width of the shared use route could be narrowed to 2.5m where necessary, though if possible the buffer strip should be continuous throughout this section.

- 4.2.19 South of the Ashton turn-off for 327m to the St Dominic turn-off the cycle route would be provided on the verge. This verge is wide enough but care would be necessary to avoid damage to tree roots and to leave the existing highway drainage working. The length of this section is 620m. 550m of this would require new 3m wide track construction.
- 4.2.20 Distance: on road 59m, off carriageway 468m, off road x70m
- 4.2.21 The maximum gradient on this section is 1 in 21 just south of Rylands.
- 4.2.22 The AADT volumes and speed limits of the roads in or alongside this section are:
- A388 AADT 13400 (1340/peak hr), 60mph

Benefits expected

- 4.2.23 The benefits expected are:
- The Ashton turn-off can be used to connect with Cotehele Quay to the east.
 - Will form part of an off carriageway route between 2 quiet lanes (Dupath Lane and the St Dominic turn off) allowing safe connectivity.
 - No land take essentially required for the route.
 - Makes use of existing highway and old roads.

Risks and Issues

- 4.2.24 Risks and Issues include:
- Safety – North of the Ashton turn-off the verge is narrow and there is insufficient space for a buffer strip between the cycle route and the carriageway. In the dark drivers could be confused by cyclist's lights approaching them on the near-side. It would be better (but not essential) to take small amount of land (see below).
 - Land-take is not essential but a better route could be provided by putting the route behind the hedge in the field just north of the Ashton turn-off. Where land take is required it has been assumed that post and rail fence would be erected alongside the route, to separate it from the field.
 - There is a grade II listed milestone in the verge in this section.
 - Utilities – Need to avoid BT underground cable

- Japanese Knotweed is present in existing highway verge very close to the proposed route at Rylands Corner. This is currently being treated by spraying with herbicide. Material excavated near to this could be treated on site.

Cost

- 4.2.25 The works cost for this section is anticipated to be approximately £114,100, excluding Knotweed treatment.

Section 3a – St Dominic turn off to Vernigo Cross

Description

- 4.2.26 This section is already sign posted as a cycle route to St Mellion shown in Photo 2.4. 600m to the south of Rylands Corner a turn off to Tipwell provides a quiet lane route to St Mellion for cyclists heading south. This is shown in Photo 2.4. However, northbound cyclists cannot currently use this route as the most northerly section of the quiet lane is one way and is only for vehicles leaving the A388. In order to allow this the quiet lane to join with section 2 for cyclists heading in either direction a 185m long section of 3m wide bitmac surfaced track is proposed to be constructed in a field adjacent to the carriageway. A post and rail fence would be erected separating the track from the field. In order to slow down vehicles leaving the A388 this junction would be re-aligned, tightening the turning radius. A gateway feature would also be installed to alert drivers to the presence of cyclists. The rest of this section (1592m) is on quiet lanes to Vernigo Cross.
- 4.2.27 Distance: on road 1588m, off carriageway 95m, off road (with land take) 127m, existing junction re-alignment 28m
- 4.2.28 The gradient on the quiet lane section does get steep, reaching 1:12, though this is no steeper than the adjacent section of the A388.
- 4.2.29 The AADT volumes and speed limits of the roads in or alongside this section are:
- C44 AADT 370 (37/peak hr), 60mph
 - U6167 AADT unknown (unknown/peak hr), 60mph

Benefits expected

- 4.2.30 The benefits expected are:
- This quiet lane also connects with Halton Quay on the River Tamar.
 - Cyclists are safer on the quiet lane than on the A388 on this steep section. The off road section at the north of section 3 provides a safe connection with section 2, allowing a continuous route off the carriageway of the A388.
 - Utilises an existing signposted cycle route facility

Risks and Issues

4.2.31 Risks and issues:

- The lane is unlit and lighting is not considered to be appropriate on this section.
- Land-take would be required for 185m length of route at the north of section 3.
- For the off road section at the north care will be needed to avoid underground an underground BT cable and a water main.

Cost

4.2.32 The works cost for this section is anticipated to be approximately £56,300.

Section 3b – Vernigo Cross to St Mellion North

Description

4.2.33 This section is along a piece of old road which is now blocked off to vehicles. It is surfaced with bitmac and is currently accessible to cyclists and pedestrians. However, at the south of this section southbound cyclists currently have to re-join the A388. Northbound cyclists on the A388 have to cross the A388 to reach the off road section. This problem is overcome by creating section 4 on the same side of the carriageway (see below). For section 3b little work is required but an allowance has been made for signage improvements and vegetation clearance.

4.2.34 Distance: off road 405m

4.2.35 The gradient on this section reaches 1:13

4.2.36 The AADT volumes and speed limits of the roads in or alongside this section are:

- Old Road AADT 0 (0/peak hr), no speed limit in place

Benefits expected

4.2.37 The benefits expected are:

- The route takes the users away from the busy A388 allowing them to walk or cycle alongside the peaceful Pentillie Estate Woods County Wildlife Site. This area is also a woodland BAP.
- This section runs alongside the Tamar Valley AONB from Vernigo Cross south. The introduction of a 'safe passageway' would enhance the quiet enjoyment of the countryside and therefore be beneficial to the AONB.
- The route is safe from traffic.

- Utilises existing old highway, requiring little work to implement
- No land take required

Risks and Issues

4.2.38 Risks and Issues:

- This section is rather secluded. There is no lighting and lighting this section would not be appropriate.
- This section of old road is closed off to vehicles, although access is currently allowed for cyclists and walkers. It is also being used as a storage area for temporary highway signage and road stone / plantings, which may need review.
- This section is currently poorly maintained and rather overgrown at the southern end.

Cost

4.2.39 The works cost of this section is low as it is already a cycle route along a section of surfaced old road now closed off to vehicles. Works cost - £500

Section 4 – St Mellion North to Polborder Roundabout

Description

- 4.2.40 At the north of this section the verge is too small for any pedestrian or cycle provision. Ideally an agreement with Crocadon Farm (Pentillie Estate) could be reached for land-take in order to install a 3m wide shared use cycle/footway behind the hedge. A timber post and rail fence would be erected alongside this track. Where section 3 ends a track would need to be constructed up to the entrance to Crocaddon Farm (200m). From this entrance there is already an existing track behind the hedge (drive to Crocaddon Farm) which could be used as a shared use cycle / footway. Cyclists/ pedestrians would need to use the existing carriageway through St Mellion village but could join this inside the 30mph speed limit with average speed cameras.
- 4.2.41 There are some sections of narrow footway through the village but cyclists can only use the carriageway here.
- 4.2.42 South of the village where the 30mph speed limit ends the highway verge is wide enough for a 3m wide shared use cycle / footway on the eastern side of the road. This would have a 1m wide grass buffer strip. This would be intended to be used by south bound cyclists. On the western side of the carriageway is a small section of old road which could be used as a shared use route for north bound cyclists who would rejoin the carriageway at to 30mph speed limit sign. North of the Polborder Roundabout a crossing point will be installed utilising the traffic island to provide a refuge.

- 4.2.43 Distance: on road 596m, off carriageway 117m, off road 107m, off road with land take 479m.
- 4.2.44 There are steep gradients on this section reaching 1 in 13 at the start of this section in the north and through the village of St Mellion on carriageway.
- 4.2.45 The AADT volumes and speed limits of the roads in or alongside this section are:
- A388 AADT 12500 (1250/peak hr), 60mph (30mph inside St Mellion)

Benefits expected

- 4.2.46 The benefits expected are:
- This section runs alongside the Tamar Valley AONB from. The introduction of a 'safe passageway' would enhance the quiet enjoyment of the countryside and therefore be beneficial to the AONB.
 - This section can be used to access St Mellion country club and Crocadon Farm.
 - If the land take can be agreed north of the village this would allow a route from St Mellion all the way to Callington off the A388.
 - To the south of the village, pedestrians and cyclists will be able to travel off carriageway once outside the 30mph speed limit.
 - From St Mellion for 2km south to Ellbridge the Option A route runs along the edge of the Lynher Valley Area of Great Landscape Value. This would add to the appeal of the route to cyclists.

Risks and Issues

- 4.2.47 Risks and Issues:
- Safety has been improved recently by the introduction of average speed cameras. However, the section of this route through St Mellion village is on a narrow carriageway with limited footways available. There is poor visibility due to bends. The carriageway is not lit.
 - Land-take is required for this section. 480m to the north of St Mellion.
 - Services to be aware of include underground BT, water supply and high pressure gas (nearby).

Cost

- 4.2.48 The works are anticipated to cost approximately £162,900.

Section 5 Polborder Roundabout to Hatt Lay-by

Description

- 4.2.49 From the north of section 5 the proposed route follows a disused section of road for the first 75m heading south from Polborder Roundabout. At this point the old road merges with the A388 so the proposed shared use route would be installed in the existing western verge of the A388. This can be achieved for 1630m at which point the verge becomes too narrow. From here land-take is required for 461m with the proposed route going alongside a field to the west, behind a hedge. The route meets Leigh Lane. From here south to Hatt lay-by the shared use route would fit on the existing verge (113m).
- 4.2.50 Distance: off carriageway 1730m, off road 71m, off road with land take 456m.
- 4.2.51 At the north of this section the gradients start off quite flat. Further south the gradient are steeper, being 1 in 17 for 1.2km, increasing to 1 in 10 towards Hatt lay-by.
- 4.2.52 The AADT volumes and speed limits of the roads in or alongside this section are:
- A388 AADT 13800 (1380/peak hr), 60mph

Benefits expected

- 4.2.53 The benefits expected are:
- This section runs alongside the Tamar Valley AONB. The introduction of a 'safe passageway' would enhance the quiet enjoyment of the countryside and therefore be beneficial to the AONB.
 - Quiet lanes link to Pentillie Castle and Cargreen Quay on the River Tamar.
 - By providing an off carriageway route, safety will be increased. This section of road is considered to be dangerous and providing this section of off carriageway cycling would boost the number of people walking and cycling.
 - From St Mellion for 2km south to Ellbridge the Option A route runs along the edge of the Lynher Valley Area of Great Landscape Value. This would add to the appeal of the route to cyclists.
 - This section passes through the Vinegar Hill to Paynter's Cross, County Geology Site (see figure 2.10). This site is where a geological boundary has been exposed in the rock cutting. It would not be adversely affected by the safe passageway but accessing this site could be of interest to users of the route.

Risks and Issues

- 4.2.54 Risks and Issues:

- The most hazardous areas would be the crossing of side roads, where cyclists should give way to the vehicle on the lane. Lighting this section is not appropriate for the rural area.
- 461m of land-take would be required towards the south of this section. This would be in fields to the west of the A388 near Sillaton Farm.
- There are many services to be aware of in this section. Underground BT, electric, water, and high pressure gas.

Cost

- 4.2.55 The works cost for this section is anticipated to be approximately £492,100.

Section 6 Hatt Lay-by to Hatt Roundabout

Description

- 4.2.56 This section starts at the north end of the Hatt lay-by. Here the route is on the verge. The route then goes behind the hedge into the field to take it past the back of houses at the southern end of the layby. In this area a stream crossing is required and the route will be very close to a national grid electric pylon. The route continues along the edge of the field to a point 120m south of the layby (driveway to Swiftaford). From here there is sufficient space for the route to continue on the verge for 140m. Further to the south there is no verge, so the proposed shared use route will be behind the hedge along the edge of fields for 228m. South of this the route enters an area of BAP woodland for 62m before joining a quiet lane to Hatt Roundabout.
- 4.2.57 Distance: on road 381m, off carriageway 192m, off road with land take 575m.
- 4.2.58 The gradients are steep with 1 in 10 at the north end of Hatt lay-by. The off carriageway section to the north of Hatt House is 1 in 14.
- 4.2.59 The AADT volumes and speed limits of the roads in or alongside this section are:
- A388 AADT 14300 (1430/peak hr), 60mph
 - U6172 AADT unknown (unknown/peak hr), 60mph (30mph in Hatt village)

Benefits expected

- 4.2.60 The benefits expected are:
- Quiet lane routes can be accessed from Hatt Roundabout both to the west and east of the A388.
 - This section of the route is safe with no road crossing points

- Completion of this section and section 5 above will provide a continuous off carriageway route all the way from Hatt up to the 30mph limit at the southern edge of St Mellion.

Risks and Issues

4.2.61 Risks and Issues:

- The route goes into a BAP woodland area. A 'no dig track' could be installed to protect tree roots. Should this not be acceptable further land would need to be agreed in the field to the west.
- 513m of land-take is required for this section of the route. This is in fields to the west of the A388.
- Services – Water main in layby. Large national grid pylon to west of layby and the route has to pass close to this. Underground BT and water in wooded area near quiet lane to Hatt.
- This section will be unlit except for the existing lights at the junction in Hatt.
- Stream crossing also required near the pylon.

Cost

4.2.62 The work cost is estimated to be in the region of £186,600.

Section 7 Hatt Roundabout to Rood's Corner

Description

4.2.63 On the south side of Hatt Roundabout is an existing crossing point which uses a pedestrian refuge. This will be enhanced to create a cycle friendly crossing point to help cyclists cross to the other side of the road. From Hatt Roundabout towards the south the safe passageway can be constructed entirely within existing highway verge along the eastern side of the road all the way to Rood's Corner.

4.2.64 Distance: off carriageway 822m.

4.2.65 There are some hills but these are not too extreme with 1 in 21 near Rood's Corner and 1 in 29 near Hatt.

4.2.66 The AADT volumes and speed limits of the roads in or alongside this section are:

- A388 AADT 15600 (1560/peak hr), 60mph

Benefits expected

4.2.67 The benefits expected are:

- Quiet lanes lead to the Tamar Estuary Nature Reserve to the east.
- The route ties into proposed improvements and cycle facilities being provided by private developers: A proposed roundabout at Rood's

Corner will aid cyclists and pedestrians in crossing the road here. Traffic Calming is proposed through Carkeel which will slow traffic on this section. Access to Saltash is via either the A388 to Carkeel Roundabout where a footway/cycleway bridge has been installed. The proposed Broadmoor Farm development will have cycle routes and a proposed cycle bridge over the A388.

- This section of the proposed route would be safe. It takes the users off carriageway with space for a 3m wide track and at least a 1m buffer strip between the track and the carriageway.
- No land-take is required.

Risks and Issues

4.2.68 Risks and Issues:

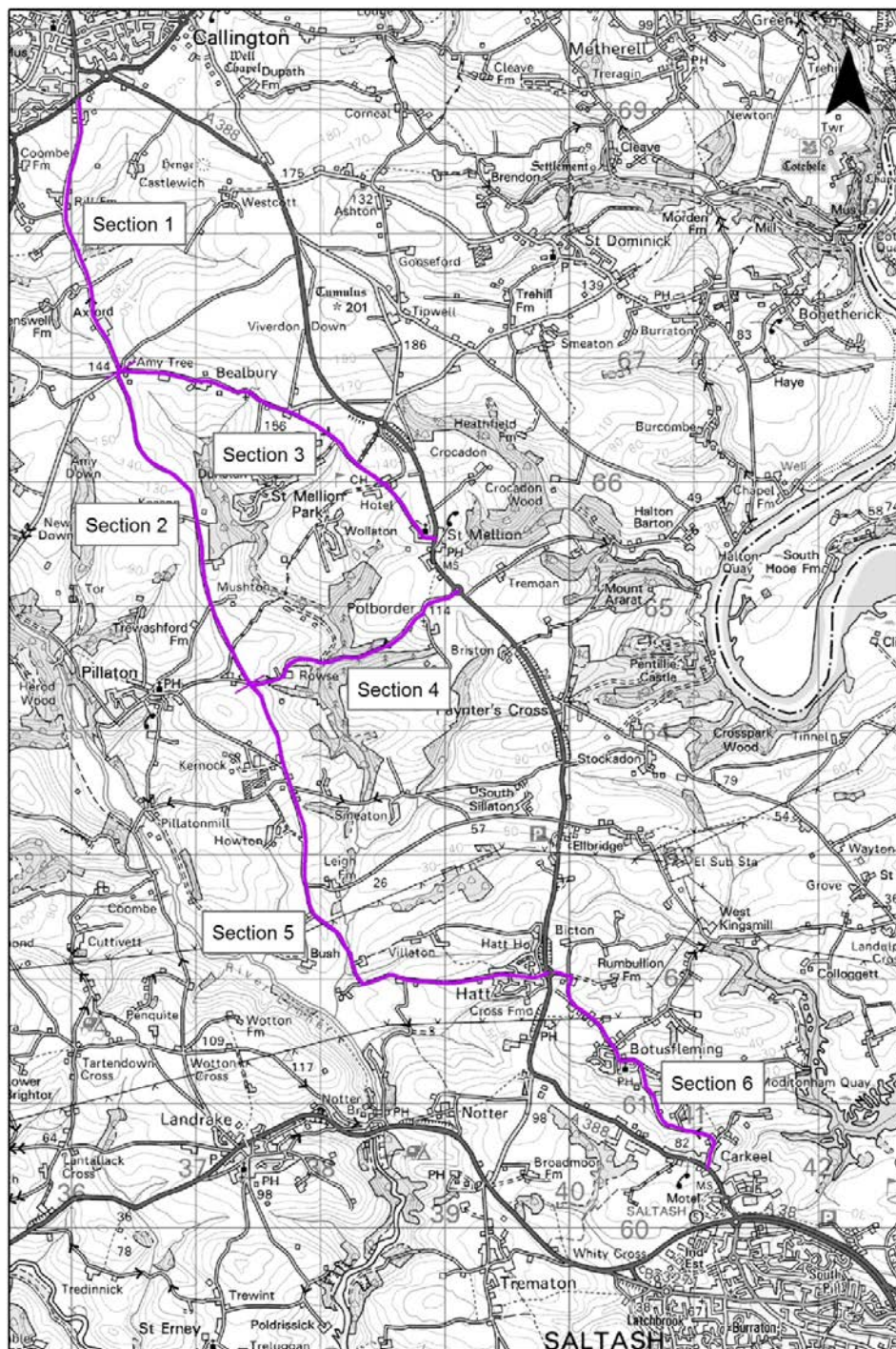
- The main hazards would be the road crossings at the ends of the section.
- This section is unlit except for close to Hatt Roundabout.
- Services present are: electric underground low voltage, water supply, low pressure gas, BT underground

Cost

4.2.69 The works cost for this section is anticipated to be approximately £189,400.

4.3 Quiet Lane Route - Option B

- 4.3.1 The quiet lane route is shown in Figure 4.2. The route has been divided into sections each of which has been individually assessed.
- 4.3.2 When taken as a whole and, as the lanes already exist, signing this route will do little to encourage cycling. And so provides a neutral fit with policy objectives. Steep gradients and longer distance significantly limit the route's appeal to commuters and leisure cyclists resulting in a poor fit with the scheme objectives.
- 4.3.3 The route is considered to be neutral for all environmental considerations and very little needs to be done to implement it.
- 4.3.4 In terms of journey quality its steep gradients and longer length will not provide improvements and the route will be neutral from a safety perspective. Option B also does not link well to School, Villages or public transport as there are no bus stops along its length, so it could not be used for easy access to wider public transport.
- 4.3.5 From an engineering perspective the option is simple to construct only requiring minor works, signing and lining and no Land take is anticipated to be required.



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Figure 4.2 – Option B – Quiet Lane Route

Section 1 Callington to Amy Tree

Description

- 4.3.6 From the A390 in Callington this route takes a tree lined quiet lane, St Germans Road south. This then drops down Axford Hill to a stream and then goes uphill again the other side. At the northern end the crossing of the A390 would be improved by adding dropped kerbs and signage.
- 4.3.7 Length 2278m
- 4.3.8 The AADT volumes and speed limits of the roads in or alongside this section are:
- C40 AADT 560 (56/peak hr), 60mph (40mph at Callington)

Benefits expected

- 4.3.9 The benefits expected are:
- Links – to the north across the A390, Southern Road the route connects to Callington Primary School and recreation ground.
 - At the north of route Option B, along the north side of the A390 is a shared use route which could be connected to this route.
 - To the west of this section the route runs along the edge of the Lynher Valley Area of Great Landscape Value. This would add to the appeal of the route to cyclists.

Risks and Issues

- 4.3.10 Risks and Issues:
- The gradients are quite steep with 1 in 12 down to the stream from the north and 1 in 10 from the south
 - Safety – the first 180m of the route on the edge of Callington has street lights. Beyond this the route is unlit.

Cost

- 4.3.11 The cost is low as this route uses the existing highway. Works are estimated to cost £4800.

Section 2 Amy Tree to High Kernock

Description

- 4.3.12 This narrow winding quiet lane with hedges past fields provides a pleasant cycle route from Amy Tree to Higher Kernock.
- 4.3.13 Length 2862m
- 4.3.14 The maximum gradient on this section is around 1 in 16

4.3.15 The AADT volumes and speed limits of the roads in or alongside this section are:

- C228 AADT 160 (16/peak hr), 60mph

Benefits expected

4.3.16 The benefits expected are:

- This section links to the village of Pillaton.
- This section of the route runs through the Lynher Valley Area of Great Landscape Value. This would add to the appeal of the route to cyclists.

Risks and Issues

4.3.17 Risks and Issues:

- Safety - This section is unlit and rural.

Cost

4.3.18 The cost is low as this route uses the existing highway. Works are estimated to cost £3400.

Section 3 Amy Tree to St Mellion

Description

4.3.19 This section of quiet lane links Amy Tree with St Mellion. Cyclists from St Mellion could use this section to head to Callington.

4.3.20 Length 3049m

4.3.21 The AADT volumes and speed limits of the roads in or alongside this section are:

- C259 AADT 280 (28/peak hr), 60mph (30/20mph at St Mellion)

Benefits expected

4.3.22 The benefits expected are:

- This route links to St Mellion and St Mellion International Resort.
- This section of the route runs along the edge of the Lynher Valley Area of Great Landscape Value. This would add to the appeal of the route to cyclists.

Risks and Issues

4.3.23 Risks and Issues:

- Gradient – This section is fairly hilly with 2 sections of 1 in 11
- Safety – Rural land windy and narrow with quite steep gradients, unlit.

Cost

- 4.3.24 The cost is low as this route uses the existing highway. Works are estimated to cost £2100.

Section 4 Polborder to High Kernock

Description

- 4.3.25 This section of quiet lane through Great Down Wood would be used by cyclists heading south to Hatt / Saltash, avoiding the A388 or heading to Pillaton.
- 4.3.26 Length 1960m
- 4.3.27 The AADT volumes and speed limits of the roads in or alongside this section are:
- C262 AADT 230 (23/peak hr), 60mph

Benefits expected

- 4.3.28 The benefits expected are:
- Links St Mellion to Pillaton
 - This section of the route runs through the Lynher Valley Area of Great Landscape Value. This would add to the appeal of the route to cyclists.

Risks and Issues

- 4.3.29 Risks and Issues:
- Safety – Steep, windy, narrow and unlit
 - From either direction steep gradients lead down to Deans Brook, 1 in 7 and 1 in 8.

Cost

- 4.3.30 The cost is low as this route uses the existing highway. Works are estimated to cost £1500.

Section 5 High Kernock to Hatt

Description

- 4.3.31 Narrow rural lane with hedges
- 4.3.32 Length 4184m
- 4.3.33 The AADT volumes and speed limits of the roads in or alongside this section are:
- C228 AADT 510 (51/peak hr), 60mph (30mph at Hatt)

Benefits expected

- 4.3.34 The benefits expected are:

- Links to Pillaton and Sillaton
- This section of the route runs through the Lynher Valley Area of Great Landscape Value. This would add to the appeal of the route to cyclists.

Risks and Issues

4.3.35 Risks and Issues:

- Steep gradients with sections up to 1 in 7
- This section passes through a flood zone 2 area, as shown in figure 2.12.
- Safety – some steep, narrow windy sections. This section is unlit except for Hatt.

Cost

4.3.36 The cost is low as this route uses the existing highway. Works are estimated to cost £1500.

Section 6 Hatt to Carkeel

Description

4.3.37 From Hatt Roundabout this route starts as a 2 lane road divided by a white line. However, nearer to Botusfleming this narrows to a single lane with passing places. After Botusfleming the route takes a very narrow lane to Carkeel.

4.3.38 Length 2336m

4.3.39 The AADT volumes and speed limits of the roads in or alongside this section are:

- C248 AADT 580 (58/peak hr), 60mph
- U6167 AADT unknown (unknown/peak hr), 60mph

Benefits expected

4.3.40 The benefits expected are:

- This section runs through the Tamar Valley AONB. The introduction of a 'safe passageway' would enhance the quiet enjoyment of the countryside and therefore be beneficial to the AONB.
- Links to Cargreen and the Tamar Estuary Nature Reserve.

Risks and Issues

4.3.41 Risks and Issues:

- Safety – The route is steep, windy, narrow and unlit
- Steep gradients up to 1 in7

Cost

- 4.3.42 The cost is low as this route uses the existing highway. Works are estimated to cost £2400, including an allowance for vegetation clearance.

4.4 Road safety Concerns

- 4.4.1 The 2 options were discussed with the road safety team who made the following comments:
- 4.4.2 *For the proposed cycle and pedestrian route (option A), any significant safety issues won't be obvious until detailed design however at this feasibility stage, I would make the following comments:*
- 4.4.3 *A388/Stone Cross slip road – high speeds for vehicles leaving the A388 therefore careful design needed to ensure either speeds are reduced prior to where cyclists will potentially be crossing the road, or ensure good visibility to and from the crossing so that drivers can see cyclists crossing and cyclists about to cross can see approaching vehicles.*
- 4.4.4 *The proposed off-road facility will bring pedestrians and cyclists out on to busy road with no provision to continue through St Mellion village. The speed limit is 30mph and there are Average Speed Cameras through the village to keep speeds low, however traffic volumes are high. Pedestrians and cyclists will be forced to continue through the village on carriageway therefore increasing the risk of users of the proposed route being in collision with traffic. It is acknowledged that there is little, if any scope, to provide facilities within the highway due to lack of space. An off-road route to the east of the village would be the ideal option.*
- 4.4.5 *Leigh Lane – proposed off-road route accessed/egressed off Leigh Lane. Will need to ensure good visibility for cyclists leaving and accessing the off-road path off Leigh Lane and also towards cyclists for drivers turning off A388. Consider bringing path back alongside A388 on verge just north of junction.*
- 4.4.6 *Southern start/end of route – cyclists travelling from Carkeel will need to be able to access the route on the eastern side of the A388 safely therefore some sort of provision will be required to enable a safe right-turn.*
- 4.4.7 *No real issues with Option B from a safety point of view.*

5 PUBLIC PRESENTATION AND SUBSEQUENT ASSESSMENT

5.1 Background

5.1.1 A public presentation of the proposed Callington to Saltash safe passageway was held on the evening of 20th November 2017. Having listened to the responses of the public who attended the meeting some additional work was requested and commissioned by CC.

5.1.2 This consisted of:

- Reviewing opportunities to reduce the number of A388 road crossings
- Reviewing crossing point refuge widths where possible allow for tag along bikes
- Investigating the possibility of installing controlled (push button) crossings
- Investigating an alternative route past St Mellion School and International Resort
- Investigating the use of physical barriers between the safe passageway and the carriageway
- Assessment of an alternative route bypassing St Mellion
- Assessing the possibility of relocating the A388 carriageway (south of Hatt), to the east to make room for the safe passageway to the west
- Creation of a set of land requirement plans

5.2 Reduction of A Road Crossings and Wide Refuges

5.2.1 At the public meeting concern was raised about having to cross the A388.

5.2.2 The existing proposals have already sought to keep the number of times cyclists and pedestrians need to cross the A388 to a minimum, given the constraints of the existing route corridor. There are currently only 4 crossings points required:

- Crossing the A390 Callington to Gunnislake road to Dupath Lane
- Crossing the A390 to the south of St Mellion
- Crossing the A390 to the south of Hatt
- Crossing at Roods Corner

5.2.3 A review of the existing proposals indicates that there are no obvious opportunities for further reductions to the number of crossings. However, if one of the alternative assessment suggestions to put the safe passageway on the western side of the road between Hatt and Roods Corner was found to be favourable then this could remove the need for crossing points to the south of Hatt and at Roods corner. This option is further discussed in section 5.7.

- 5.2.4 A linked request to review the crossing refuge widths to where possible ensure that they could accommodate a tag along bike was also received.
- 5.2.5 In order to set some parameters for the assessment of this request, guidance was used from the following source:
- Interim Advice Note 195/16 – ‘Cycle Traffic and the Strategic Road Network’. This provided guidance on the potential maximum bike lengths to consider as follows:
 - Standard bike length 1.8m
 - Add 0.8m for tag along
 - Add 1m for trailer
 - Tandem length 2.5
- 5.2.6 Using this data it was decided to review the refuges against a maximum bike length of 2.8m (representing a standard bike with trailer). Thus to allow some positional wiggle room for users it was considered that the minimum depth of refuge in the direction of cyclists travel would need to be 3m.
- 5.2.7 The results of the assessment are presented in the table below:

Location	Existing Refuge Width	Potential to widen to 3m
Crossing the A390 Tavistock Road to Dupath Lane	3.15m	Not necessary
Crossing the A390 to the south of St Mellion	The is a small splitter island by Polborder roundabout. The preferred option is a toucan crossing allowing the crossing of the full road in one go with no refuge	If the toucan crossing is not installed then the splitter island can be widened to form a 3m wide refuge.
Crossing the A390 to the south of Hatt	1.75m between kerbs. Restricted with pedestrian guardrails	There is adequate space to extend and widen the refuge to provide a staggered crossing point suitable for bicycles.
Crossing at Roods Corner	No existing refuge	Proposals by others for a roundabout at the Roods show splitter islands. These are too narrow to provide a refuge suitable for cyclists, so redesign would be necessary.

Table 5.1 Refuge Width Assessment

Recommendation

- 5.2.8 The cost implications of the wider crossings are minimal as some allowance had already been made in the route cost estimations. Therefore, where possible, the wider refuges can be included in any future design phase for the project.

5.3 Controlled Crossings

5.3.1 At the public presentation some concern over the ease of crossing the A388 at the proposed uncontrolled crossing points was raised. It was felt by members of the public that the introduction of controlled crossings would make this easier.

5.3.2 In order to set some parameters for the assessment of this request guidance was used from the following sources:

- Cornwall council Policy Document " Traffic Engineering Manual 4 – Pedestrian Crossings (2005)
- Sustrans Design Manual for cycle-friendly design (2014)
- DMRB vol 6 section 2 geometric design of roundabouts – this states:

On the approach to the roundabout, a distance of 20m for a signal-controlled crossing will reduce the likelihood of drivers confusing the signal with one controlling flow into the roundabout and it leaves sufficient storage space for vehicles waiting to enter the roundabout. On the exit, a distance of 20m reduces the likelihood that 'blocking back' will occur where traffic queues extend onto the circulatory carriageway and it helps to ensure that drivers are still travelling slowly as they approach the crossing. If the crossing is staggered, the part on the entry arm can be within the 20m to 60m zone.

5.3.3 The following crossing points have been considered:

- Crossing the A390 Callington to Gunnislake road to Dupath Lane
- Crossing the A390 to the south of St Mellion
- Crossing the A390 to the south of Hatt
- Crossing at Roods Corner

Crossing the A390 Tavistock Road to Dupath Lane

5.3.4 Here at the north of the scheme the safe passageway will use Dupath Lane. Users of the route need to cross the A390 Tavistock Road to connect with an existing shared use route on the north side of the A390. This runs towards Gunnislake to the east and into central Callington to the west.



Photo 5.1- Looking north at the existing refuge on the A390 Tavistock Road



Photo 5.2- Looking south east at the existing refuge on the A390 Tavistock Road

- 5.3.5 In order to create a controlled crossing point here a toucan crossing with a central refuge be would need to be installed. A toucan crossing is a button controlled crossing for pedestrians and cyclists to use. Introducing a toucan in this location will require the existing central refuge be widened to 4m. The toucan would consist of 2 staggered independently controlled crossing points on either side of the central refuge. The width of the refuge will allow for maximum length of bike and trailer identified in this assessment.
- 5.3.6 The bell mouth of Dupath Road would require realigning in order to fit with the crossing point. This would require the realigning on kerbs using tighter radii.
- 5.3.7 The approximate cost of this crossing, based on similar schemes, is £200,000.

Crossing the A390 to the south of St Mellion

- 5.3.8 A crossing point is required near Polborder roundabout to the south of St Mellion. It is recommended that this crossing point be installed at the location of the existing 30mph sign to the south of the village, if a controlled crossing is used. There is a section of old road which can be used for the safe passageway which ends at the 30mph sign. This section would be used if a toucan is installed here.



Photo 5.3- Looking north along section of old road. Proposed toucan crossing by the 30mph sign

- 5.3.9 At this location a toucan crossing could be installed to cross the whole carriageway in one go with no central refuge. To do so would also require the 30mph limit to be extended so cars are travelling at an appropriate speed to stop at the crossing safely should a user call the signals. The alteration to the speed restriction will require a TRO, with an associated cost of approximately £5000. A toucan crossing could not be installed close to the roundabout, as it would need to be 20m away so that motorists do not confuse the crossing lights with the priorities at the roundabout. An alternative would be to start the 30mph prior to the roundabout.
- 5.3.10 The approximate cost of this crossing, based on similar schemes, will be £100,000 plus the TRO cost, IE: £105,000.

Crossing the A390 to the south of Hatt

- 5.3.11 A crossing point is required to the south of Hatt roundabout where the proposed safe passageway crosses to the eastern side of the A388.



Photo 5.4- The existing pedestrian refuge on the south side of Hatt roundabout

5.3.12 Here the existing pedestrian refuge to the south could be extended to the south and widened to accommodate a staggered toucan crossing, with 2 independently controlled crossing points. This would need to be set back from the roundabout to allow some cars to stack at the toucan without blocking up the roundabout.

5.3.13 The approximate cost of this crossing, based on similar schemes, is £200,000.

Recommendation

5.3.14 Having reviewed all of the currently proposed crossing points it is physically possible to introduce controlled crossings, however it does add significant cost to the proposed scheme. In an effort to establish whether this cost is warranted an assessment of the likely use of the cycle route verse the ease of crossing the existing A388 via uncontrolled crossings is required.

5.3.15 One of the ways this assessment has been made historically is to use PV^2 . Where P is the peak hourly number of pedestrians / cyclists crossing the road and V is the peak hourly 2 way traffic flow. The threshold for a controlled crossing to be considered is when PV^2 is greater than 75000000. However as a guide an average of 50 pedestrians / cyclists crossing per hour over the 4 peak hours would be required for a controlled crossing to be considered.

5.3.16 It is not thought that the route will initially have enough flows for controlled crossings to be installed. However, In order to allow for the potential addition of controlled crossing at a later date any future design phase of this scheme could make allowance for the provision of suitable refuges and ducting.

- 5.3.17 The recommendation is therefore only to add controlled crossings should sufficient funding be available and if subsequent assessment during future stages of the scheme find they are justifiable.

5.4 Alternative Route Past St Mellion School & International Resort

- 5.4.1 At the public presentation it was suggested that an alternative route in the vicinity of St Mellion School and International Resort could be reviewed. It was felt by the proposer, that this route would be a safe way of taking walkers and cyclists off the busy A388.

Description

- 5.4.2 The existing side road network to the west of St Mellion was reviewed and a potential route identified.

- 5.4.3 Distance: on road 1725m.

- 5.4.4 Users of the safe passageway heading south would head from Vernigo Cross to Viverdon Down roundabout. Here they would have to cross the A388. The roundabout has space for cycle lanes to go on the verge near the roundabout and for a refuge to be created at the splitter island on the south of the roundabout. Having crossed the A388 users would take the road to St Mellion International resort. This has a steep gradient closer to the resort which may deter northbound cyclists. At the resort users heading south would turn left to take a narrow, windy lane towards St Mellion. This has steep gradients in both directions as it has a low point where it crosses a stream. This section of the route is national speed limit, except at St Mellion village where there is a 20mph limit.

Benefits Expected

- 5.4.5 The expected benefits are:
- Fairly low cost route requiring signage & A388 crossing.
 - Links with St Mellion International resort.

Risks and Issues

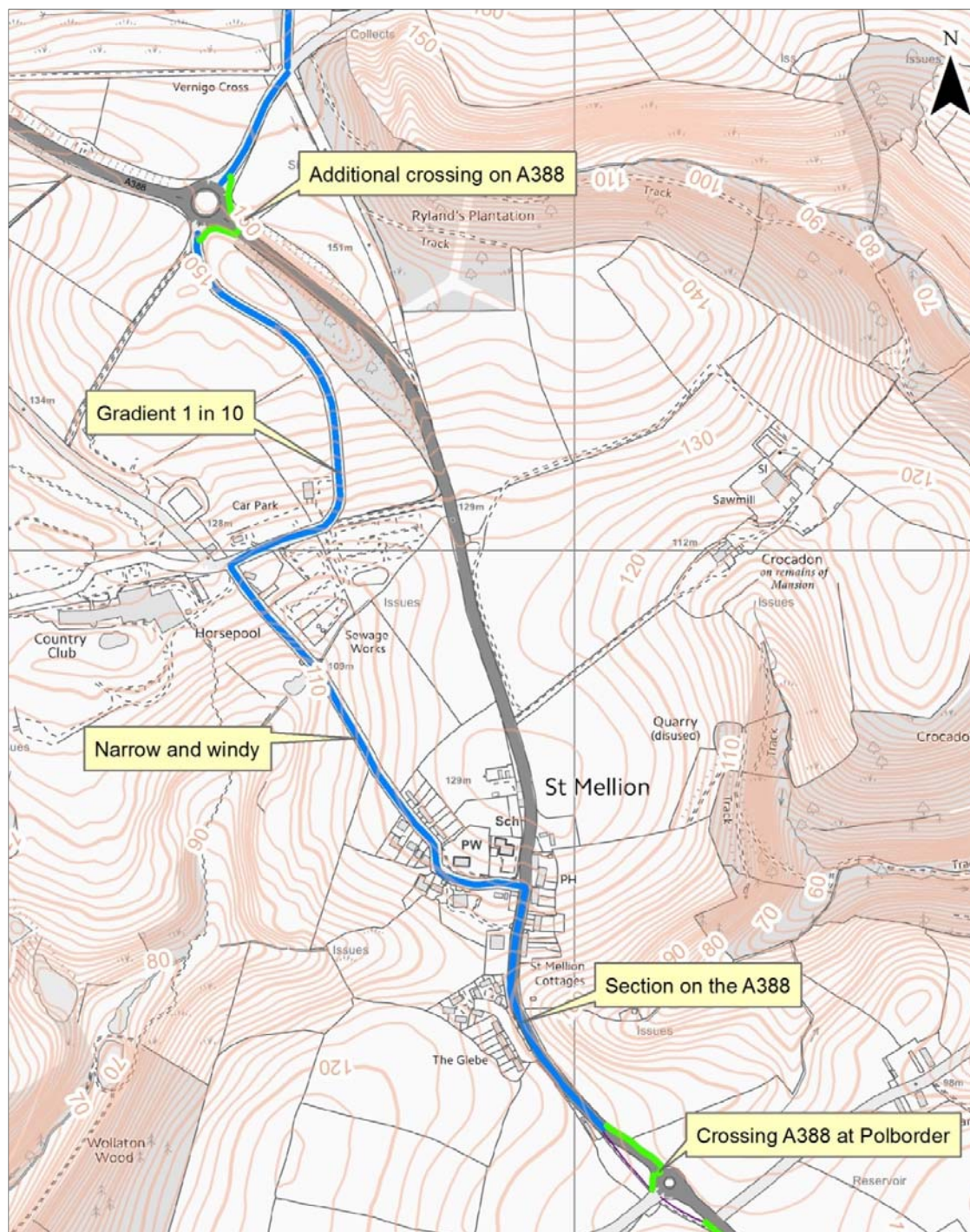
- 5.4.6 Risks and issues include:
- An extra crossing of the A388 would be required at Viverdon Roundabout
 - The gradients are as much as 1 in 10
 - The lanes are narrow and windy
 - This route does not help the users to the south of St Mellion. The users of the route will still have to travel on the A388 from the centre of the village to the Polborder Roundabout.

Cost

- 5.4.7 The works cost for this alternative route is anticipated to be approximately £63,000.

Recommendation

- 5.4.8 Based on this assessment, the disbenefits of the proposal mean that it is not recommended that these lanes form part of the safe passageway. However, as these lanes are existing highways they can be used by anyone wishing to take this route.



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Figure 5.1 – showing the option to have the safe passageway on Church Lane

5.5 Physical Barriers

- 5.5.1 At the public meeting one of the concerns raised was that it would be necessary to install physical barriers between the carriageway and the safe passageway in order to protect pedestrians and cyclists from vehicles.
- 5.5.2 Physical barriers that could be installed include:
- Vehicle restraint systems (VRS)
 - Cornish Hedges
 - Timber fencing
- 5.5.3 Timber fencing would not be adequate to stop vehicles so has not been considered any further. As Cornish hedges are more expensive and take up more space than a VRS they also have not been considered further.
- 5.5.4 A review has been carried out to determine whether a Vehicle Restraint System (VRS) is required between the carriageway and the safe passageway. The areas reviewed are those where the safe passageway would run along areas of existing verge beside the carriageway. There are 5 of these areas:
- Area 1 – Westcott Lodge to Tipwell Rock Farm turning, here the proposed safe passageway runs down the east verge of the A388.
 - Area 2 – Polborder Roundabout to North Sillaton junction. Here the proposed safe passageway runs down the west verge of the A388.
 - Area 3 – Leigh Lane to Hatt lay-by. Here the proposed safe passageway runs down the verge on the west of the A388.
 - Area 4 - Swiftaford entrance to Oaklands entrance. Here the proposed safe passageway runs along the western verge of the A388.
 - Area 5 - Hatt Roundabout to Roods Corner. On this section options have been considered for the safe passageway to run on either side of the A388.
- 5.5.5 Areas which are further away from the carriageway, behind existing hedges and fences or on quiet lanes have not been considered.
- 5.5.6 If a VRS were to be installed it would require a gap of 600mm from the hard strip at the edge of the carriageway. The deformation zone of a W3 grade barrier is 1m. As the 3m wide safe passageway will have a 2m (minimum) buffer from the carriageway, the VRS would have adequate space to fit (and deform) within this zone.
- 5.5.7 The approximate construction cost of a VRS for the areas above is £230k.

Recommendation

- 5.5.8 The use of vehicle restraint systems between cycle routes and the carriageway is not standard practice, is not Cornwall Council policy and is not in the Sustrans guidance.
- 5.5.9 As the chance of a vehicle leaving the carriageway and colliding with a passing pedestrian / cyclist is so low, it is not considered that this extra cost could be justified.

5.6 Alternative route – bypassing St Mellion

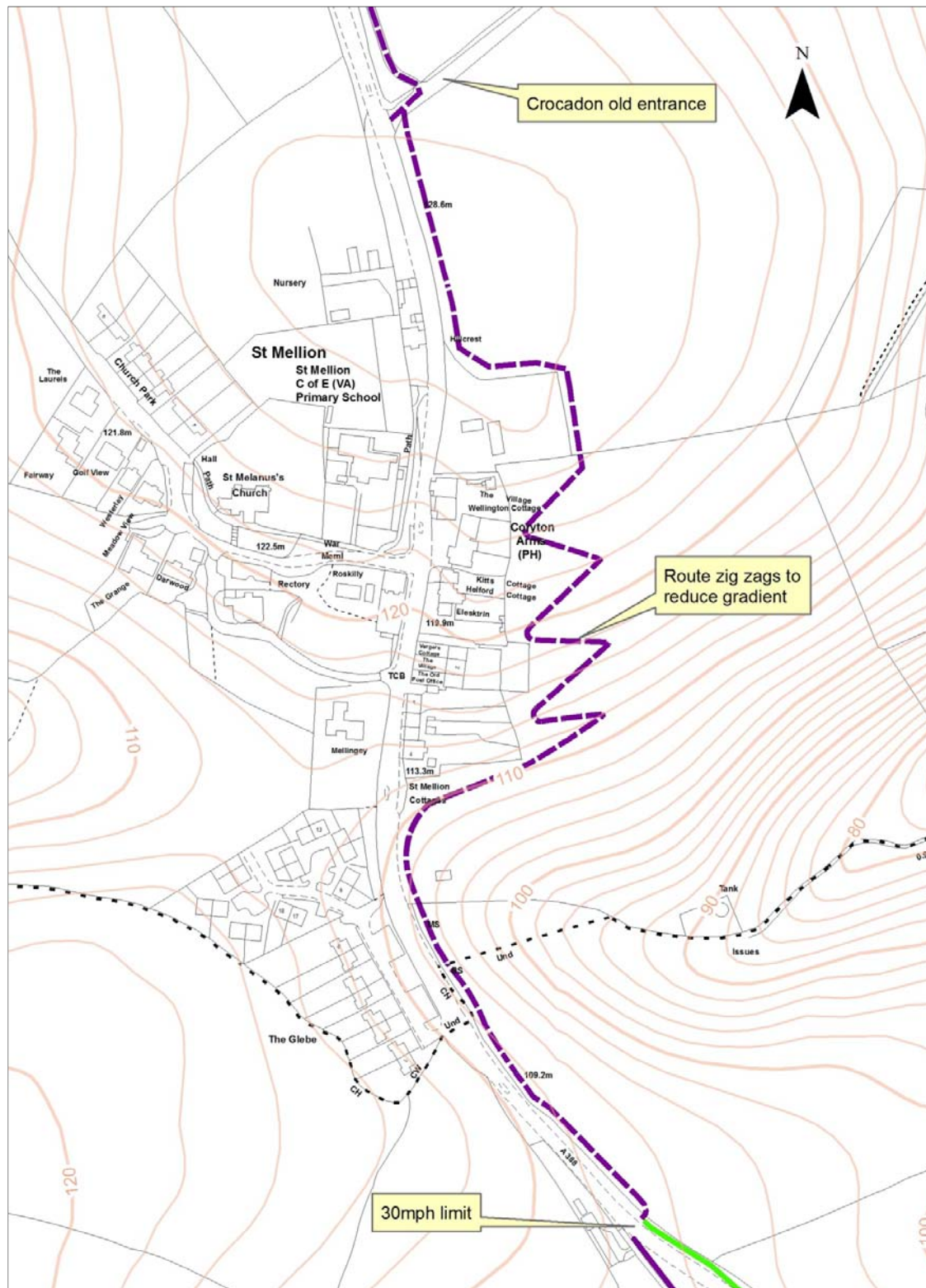
- 5.6.1 The initial proposal was to keep the safe passageway on the carriageway in the village of St Mellion as there is a 30mph speed limit monitored with average speed cameras.
- 5.6.2 At the public presentation in September 2017 it was requested that putting the safe passageway in the fields to the east of the village is considered.

Description

- 5.6.3 Distance: off road 841m
- 5.6.4 This route is shown in Figure 5.2. It runs the old entrance to Crocadon Farm just north of St Mellion to the 30mph sign just south of the St Mellion. The route runs through pasture to the east of the village.
- 5.6.5 The route has been chosen to limit land take and minimise gradients.



Photo 5.5 - View north from near Polborder roundabout towards St Mellion with line of proposed route



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Figure 5.2 - Safe passageway in field to the east of St Mellion

Benefits Expected

5.6.6 The expected benefits are:

- Provides an enhanced user experience by removing the users from the busy A388
- Spectacular views to the east towards the Tamar Valley

Risks and Issues

5.6.7 The anticipated risks and issues are:

- It increases the land take requirements of the scheme
- The route has a steep section to the east of the Coryton Arms pub. The route could zig zag to reduce the gradient, but this would then increase the land required for the scheme.
- On the north side of the valley is a SWW pumping station very close to the chosen route. Contact will need to be made with SWW developer services to ensure that the proposed route does not affect their apparatus.
- Increases the costs of the scheme as opposed to the on road option.

Cost

5.6.8 The works cost for this section is anticipated to be approximately £300,000.

Recommendation

5.6.9 It is recommended that this route option be taken forwards in any future stage of design for this scheme.

5.7 Relocation of the A388 carriageway to the south of Hatt.

5.7.1 This option to relocate the A388 carriageway south of Hatt in a easterly direction to make room from the safe passageway on the western side of the highway corridor was suggested at the public presentation.

Description

5.7.2 At the northern end of this section near to Hatt roundabout a quiet lane could be used for the route. South of this if agreement can be reached with the landowner the route could run along the edge of Hatt recreation field.

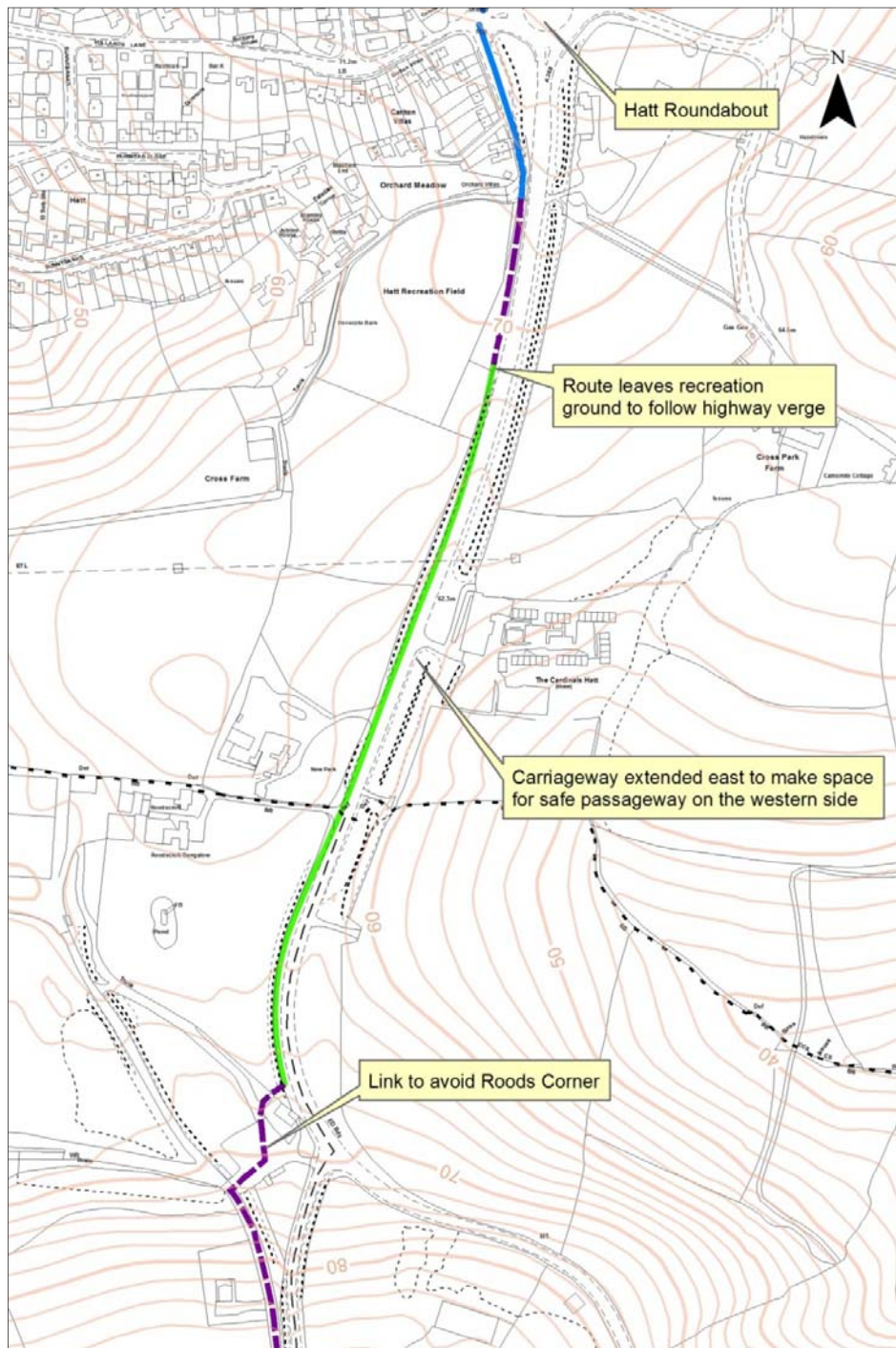
- 5.7.3 Near the southern end of Hatt recreation field an opening could be made in the hedge and fence taking the route onto the highway verge. As the verge here is too steep and narrow to accommodate the safe passageway the carriageway would need to be moved to the east for about 300m (500m including transitions). This would extend it across to the existing verge on the eastern side near the Cardinals Hatt. The amount of the verge required would be approximately 5m and there is adequate space for this. The verge in front of the Cardinals Hatt is 'Public Maintained Highway'.
- 5.7.4 To the south of this the carriageway would tie back in with existing carriageway near the entrance to Roodscroft, as from here south the verge is wide enough to fit the safe passageway including a buffer strip.
- 5.7.5 Ideally agreement would be reached with Roods Environmental Services to add a link along the boundary of the Roodscroft waste disposal site which could be used to cross into the proposed Broadmoor Farm Estate.

Benefits Expected

- 5.7.6 The expected benefits are:
- Keeps route on one side of the carriageway for a longer length, simplifying the route for users.
 - The option removes the need for a crossing point near Hatt Roundabout as the route would be on the west of the carriageway both to the north and south of the roundabout.
 - Provides an opportunity to introduce a link which avoids Roods Corner junction ahead of any developer driven changes and facilities.

Risks and Issues

- 5.7.7 The anticipated risks and issues:
- Land take required at the southern end of the route to provide a connection from Roods corner to Broadmoor Farm
 - There are existing drainage systems on both sides of the road which would need to be replaced / altered if the main carriageway is moved.
 - Increases the costs of the scheme in comparison to the original proposals
 - Requires various landowner agreements
 - Will add to construction timescales and may increase disruption to the A388 over and above that required to introduce the route in general



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Figure 5.3 - Safe passageway on the western side of the carriageway south of Hatt

Cost

- 5.7.8 The approximate construction cost of this is 440K

Recommendation

- 5.7.9 This option could only be recommended for inclusion in the route if sufficient funding were available.

5.8 Land Requirement Plans

- 5.8.1 A set of land requirement plans has been created for the areas along the route potentially needing land take. These are attached in Appendix G.

5.9 Summary of Additional Assessments

- 5.9.1 The assessments above have set out the detail of the benefits or risks/issues with each of the suggestions from members of the public.
- 5.9.2 The following items are recommended for inclusion in the base Option A route:
- Bypassing St Mellion in fields to the east of the village
 - Refuges of a minimum of 3m to be installed where the route crosses the A388
- 5.9.3 The following options are considered to be beneficial but not essential additions to the proposals, so they would be worthy of inclusion only if funding could support them:
- Controlled crossings of the A388 and A390
 - Relocating the carriageway to the south of Hatt so that the safe passageway can be installed to the west of the carriageway
- 5.9.4 The items below are not recommended to be taken any further:
- Vehicle restraint system where the route is on highway verge.
 - Taking the route along Church Lane past St Mellion International resort.

6 RECOMMENDATIONS

- 6.1.1 This OAR has assessed the two potential route options in accordance with the criteria listed in Section 3.
- 6.1.2 For each route option a high level appraisal has been undertaken broadly identifying the benefits, constraints, risks, opportunities and outline costs of each scheme.
- 6.1.3 The results are summarised in the Assessment Matrix in Appendix C. This shows that on balance Option A is the preferred option. It has the advantage that it is more direct and less steep. For this reason it would have more appeal to commuters as well as leisure cyclists. Option B winds along narrow quiet lanes through some beautiful countryside but due to the gradients and extra distance the route would only appeal to the more determined leisure cyclists.
- 6.1.4 Option A will require land agreements or purchase for some sections to work as there is not a wide enough highway verge to provide adequate space for a cycle route. It is recommended that a Land Agent acting on behalf of Cornwall Council begins talks with the owners of properties that would be affected.
- 6.1.5 The estimated costs for Option A are shown in table 6.1 below:

Item	Cost
Construction cost	£1,345,000
Design fees	£108,000
Works supervision	£135,000
Risk	£471,000
Optimism bias	£592,000
TOTAL	£2,649,000

Table 6.1 Preferred Route Estimated cost

- If funding for the whole scheme cannot be secured in total, then the safe passageway could be built in phases to suit funding availability:
 - St Mellion to Callington could be built as one phase. Some land agreement required but much of this section uses existing quiet lanes. The approximate cost of this section would be £514,000
 - St Mellion to Hatt. This is the longest stretch of new cycle track and also requires some land agreements. The approximate cost of this section would be £1,762,000
 - Hatt to Roods Corner. This requires no land as there is a wide highway verge here. A roundabout is proposed at Roods

Corner as a separate scheme. The design of the roundabout should include a cycle crossing to enable cyclists to easily take either the road to Notter Bridge or the A388 to Carkeel. The approximate cost of this section would be £374,000

- 6.1.6 If the option to move the carriageway to the east, south of Hatt, is taken up, then the estimated total of the schemes costs would be:

Item	Cost
Construction cost	£1,593,000
Design fees	£128,000
Works supervision	£160,000
Risk	£558,000
Optimism bias	£701,000
TOTAL	£3,138,000

Table 6.2 Preferred Route Cost including relocation of A388 South of Hatt.

- 6.1.7 Additional costs of installing 3no. controlled crossings which would need to be added to the scheme cost should this option be pursued are shown in Table 6.3:

Item	Cost
VRS Construction cost	£500,000
Design fees	£40,000
Works supervision	£50,000
Risk	£175,000
Optimism bias	£220,000
TOTAL	£985,000

Table 6.3 Additional Cost of Controlled Crossings