Final report:

For: *Horsham District Council*

Southwater cycle network review

August 2009

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Southwater Cycle Network Review

Main Report

Appendices

Glossary

ASL ..... *Advanced Stop Line*
CERS ..... *Cycling Environment Review System*
CID ..... *Cycle Infrastructure Design (DfT Local Transport Note 2/08)*
CSNA ..... *Cycle Skills Network Audit*
DfT ..... *Department for Transport*
GIS ..... *Geographic Information System*
HDC ..... *Horsham District Council*
HDCP ..... *Horsham District Community Partnership*
LAA ..... *Local Area Agreement*
LTP ..... *Local Transport Plan*
MfS ..... *Manual for Streets (DfT 2007)*
PCT ..... *Primary Care Trust*
TRO ..... *Traffic regulation order*
WSCC ..... *West Sussex County Council*

1. Introduction

1.1 Background

Southwater is a large village at the centre of a wider civil parish just to the south of the much larger town of Horsham. It has a population of roughly 10,000, with a considerable amount of residential development in the last 20 years. Until the 1980s the economy of the village was based around the brick industry which thrived in the local clay-pits. Following the closure of the brickworks, the area was transformed into a large Country Park in the centre of Southwater, which is now a major local attraction.

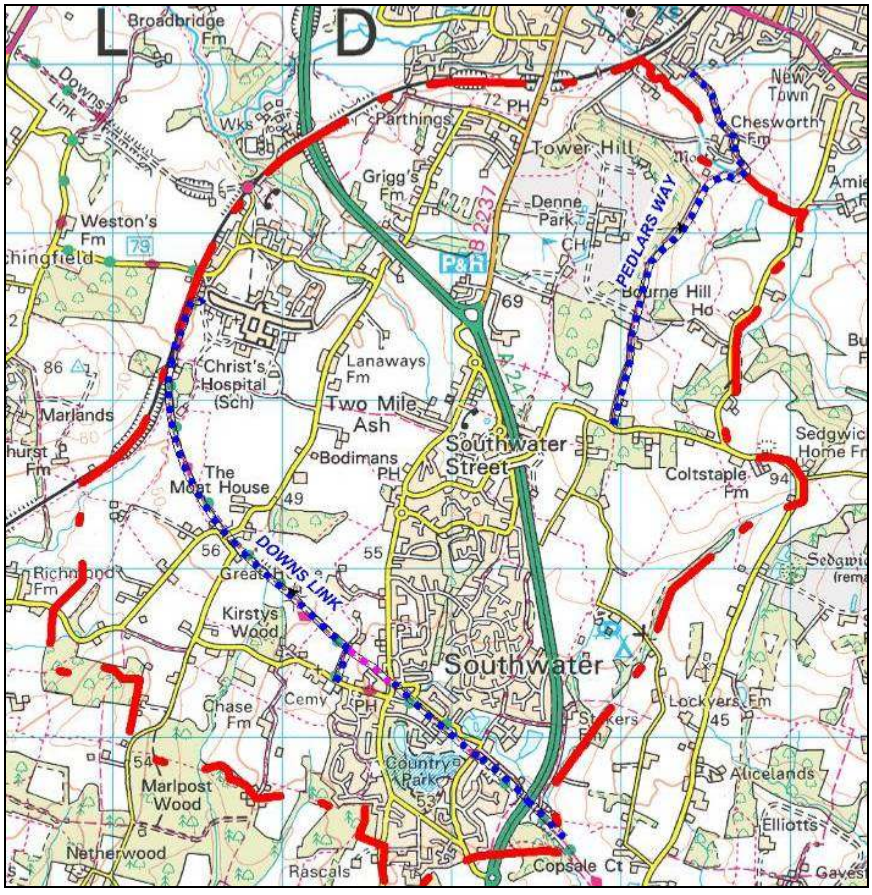
Recently, the centre of Southwater has been renewed at a cost of £25 million to create a new Village Centre, Lintot Square. This was formally opened in December 2006. This major investment has created a community focus for the village which was previously absent, and has attracted substantial local commercial and business interest.

In general, Southwater is flat, compact and economically active, all of which would be expected to lead to a good level of cycling. However a variety of factors have combined which result in a poor level of accessibility by bicycle to the village centre and a low level of cycle use in general.

1.2 Study area

The area covered by the study is outlined in red below. It comprises approximately 14km², split between the village itself and the surrounding rural area.

The network review examined the road network within the parish of Southwater, plus existing and potential traffic-free routes in the village itself. It also considered the Downslink long distance route (Regional Cycle Route 79) which passes through the village, as well as the Pedlars Way path linking Southwater to Horsham.



Study area – Southwater Parish

1.3 Cycling in Southwater

Southwater is generally flat, although the surrounding countryside is fairly hilly. As the built-up area is compact it should be conducive to cycling, and indeed there is a reasonable level of cycling (and walking) to local schools. There is no dedicated provision for cycling within the village itself, apart from the Downslink traffic-free path and a very small number of shared-use cycle/pedestrian paths. Furthermore the main roads in the village, particularly Worthing Road, are not suitable for use by less experienced cyclists, especially at peak times.

The development of residential areas over time has led to the village being divided into discrete blocks of housing with poor permeability between them. The majority of these areas were developed during the last two decades and follow standard patterns of development from this period.

While some of the distributor roads in the residential areas are suitable for cycling, the individual estates are generally isolated from each other. Although there are many link paths between cul-de-sacs on neighbouring estates, there are almost no formal cycle connections. While there are few explicit “No Cycling” signs, there is nevertheless little indication that cycling is encouraged on these paths.

Potential Level 1 link (Eversfield)

The Downslink runs through the centre of Southwater along the line of the former railway between Christ’s Hospital and Shoreham. This provides good access for cyclists (as well as pedestrians and equestrians) to the countryside north-west and south-east of the village. However, while the section of the Downslink in the centre of the village runs immediately past Lintot Square there are very poor connections between the two.

In particular the Downslink provides a direct link to Christ’s Hospital station. Although the station is only some 3km (2 miles) from the village centre, the rough surface of the path and other factors such as the isolated section by Two Mile Ash Road act to deter trips by all but the most confident and experienced cyclists.

In addition, the barrier formed by the A24 dual-carriageway north and east of South-water leads to the village being cut off both from Horsham and from the rural hinterland in these directions. This deters longer distance cycling for both utility and leisure trips.

The location of the Country Park in the centre of the village also causes severance, as none of the paths through the park are open to cyclists. However, the Downslink runs along its northern boundary and provides reasonable access to the visitor centre.

Downslink north of Southwater

The cumulative effect of the various factors described above is to create a setting that does not encourage cycling, even though much of the village is not a particularly cycle-unfriendly environment. In particular there is a poor level of accessibility by bicycle to the village centre.

It is therefore not surprising that the level of cycling to work recorded in the 2001 census for Southwater ward as a whole was 2%. This is low compared to some wards in Horsham itself (see table below).

Ward	**% Journeys to work by bicycle *(2001 census)***
Southwater	**1.99**
Roffey South	2.42
Broadbridge Heath	2.99
Forest	3.01
Horsham Park	3.22
Denne	3.97

Levels of cycling to work, Southwater and selected Horsham wards (ascending order)

It is considered that one factor in this low level of cycling is the general unattractive-ness of cycling to Horsham, as a major group of Southwater residents work there and most drive or travel by bus. There are good bus links from Southwater to Horsham, as well as the Park & Ride site at Hop Oast serving trips from the wider area to the south. The main road link to Horsham, Worthing Road, carries a high level of traffic and to reach it requires cyclists to cross the large A24 Hop Oast Roundabout (see 1.4 below). This all reduces the potential demand for cycling on this route by people who do not own or would rather not use a car.

1.4 Southwater Community Action Plan

As part of developing the plan residents were asked *"What cycling improvements would lead you to cycle more?".* The five top answers (with percentage support) were:

Easier crossing at Hop Oast	44%
More/improved off-road cycle routes	31%
Slower general traffic speeds	22%
More demarcated on-road cycle lanes	19%
Better route signs and published information	17%

There was also strong support for a safe route to Horsham.

The Transport & Accessibility section of the plan calls for action to *"Encourage safer and more attractive cycling options for Southwater as a whole".*

1.5 Accidents

While there have only been 4 reported accidents involving cyclists between 2003 and 2008, this represents 2.8% of all accidents and 3.7% of all casualties. Cycling is therefore over-represented compared to its modal share of 2% (although this does not include trips to school). The low level of accidents means this is not statistically significant.

1.6 Cyclist training

All Year 6 pupils (ages 10-11) at the two primary/junior schools in the study area (Castlewood Primary and Southwater Junior) are offered cycle training by West Sussex County Council's Road Safety team.

There is little, if any, cyclist training available for older children and adults although a pilot teenage cycle training project was run in Horsham in 2003.

1.7 Travel Plans

All three schools in Southwater (the two named above plus Southwater Infant Schools) have adopted travel plans. There appears to be a relatively high level of both walking and cycling to these schools, even to the Infant school.

Cycle and scooter parking, Southwater Infant School

However as there is no secondary school in the village all secondary pupils must attend one of the three secondary schools in Horsham, or a school elsewhere. Very few, if any, travel by bicycle due to a combination of distance and poor connectivity. Many travel either by scheduled bus services or dedicated school buses/coaches.

The situation regarding other travel plans is much less comprehensive. There appear to be no adopted travel plans for businesses in the village including the large RSPCA headquarters situated at the Oakhurst Business Park.

2. Methodology

2.1 Overview

The review of the cycle network in Southwater is predominantly based on the same methodology as the previous Horsham Cycle Network Review (2008-09). A description of this can be found in Appendix B.

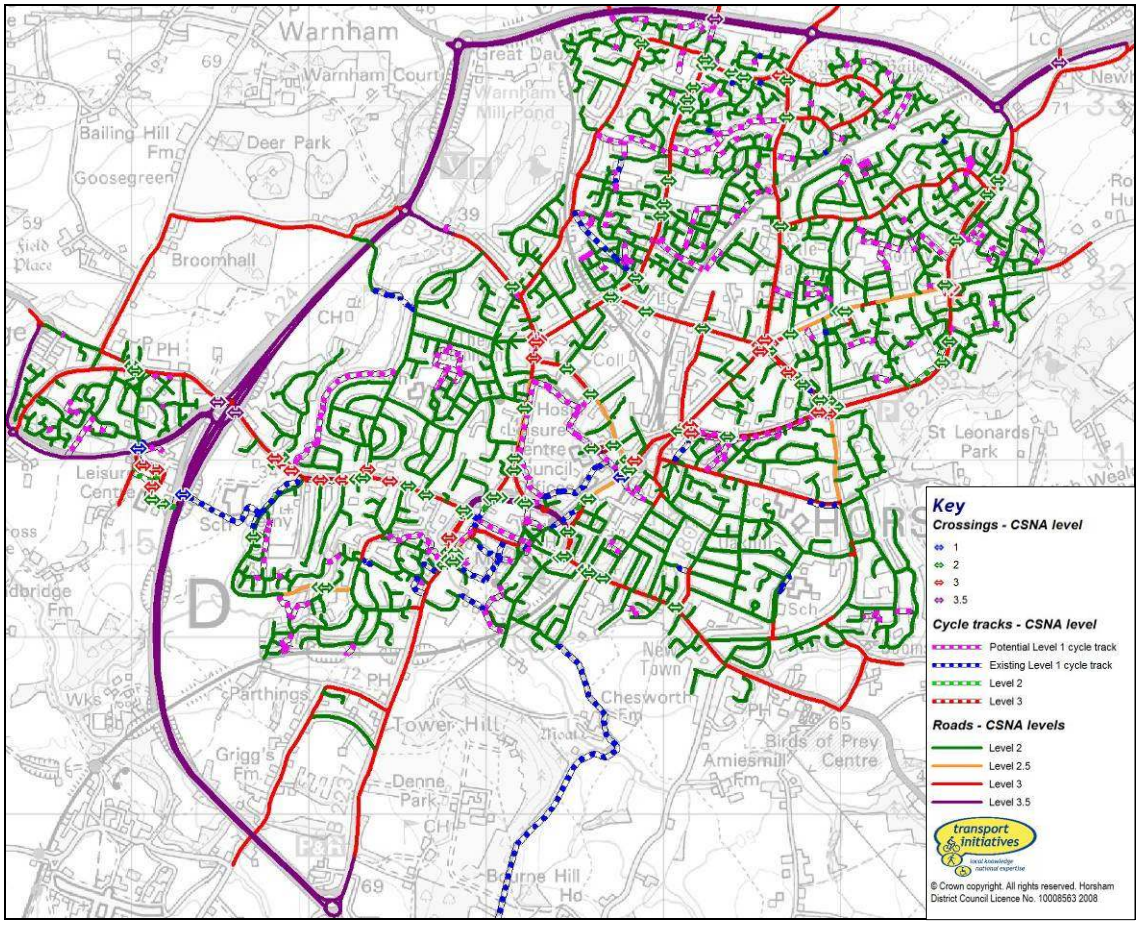
A Cycle Skills Network Audit (CSNA) was carried out for the road and path network in the parish of Southwater. This comprised the entire road network in the parish and existing and potential traffic-free routes in the village itself, plus the Downslink and Pedlars Way traffic-free routes outside the village.

Areas within the parish were then prioritised based on key destinations and potential demand. This differed from the approach in Horsham where a more detailed exercise was carried out using the Cycling Environment Review System (CERS2). This was necessary due to a higher degree of complexity of the road and path network.

Finally detailed recommendations for improvements to the network were developed, split into the prioritised areas.

2.2 Cycle Skills Network Audit (CSNA)

The CSNA process has been developed by Transport Initiatives as a consistent and objective means of providing a survey of an area's roads, motor traffic free paths and pedestrian/cycle crossings taking into account the skill level needed for cyclists to use them in relative safety. Transport Initiatives has carried out these audits for a range of local authorities covering a wide variety of areas, including cities, towns (such as Horsham itself) and villages.



CSNA, Horsham

The CSNA process classifies each road, cycle track and crossing using a system based on the three core levels of the National Standard for Cycle Training (Bikeability):

Level 1 Beginner

Level 2 Introduction to Riding on the Road

Level 3 Advanced

This provides a clear view of which routes are suitable to be used by less experienced cyclists without any further work.

Level	Type of route	Suitability for cycle network
Potential Level 1	Motor-traffic-free off-carriageway routes where either: i. cycling is not permitted (e.g. due to legal reasons); or ii. cycling is not possible due to physical restrictions (e.g. barriers) or lack of adequate surfacing.	Potentially suitable for ***cycle route*** network
Level 1	Motor-traffic-free off-carriageway routes where cycling is permitted, and some streets with minimal, calmed traffic.	Suitable for ***cycle route*** network
Level 2	Roads or lengths of a road (or off-carriageway route) that a cyclist who has achieved Bikeability Level 2 can cycle on and carry out all manoeuvres. This includes most utility and casual cyclists.	Suitable for ***advisory*** network and for ***cycle route*** network
Off-peak Level 2	Roads or lengths of road that in off-peak traffic have the characteristics described for Level 2 above. During peak traffic they will have the characteristics described for Level 3 below. Peaks may be related to rush hour traffic or other specific peaks such as traffic to schools.	Not suitable for ***advisory*** network. Suitable for a ***cycle route*** network only where alterations are made.
Level 2.5	Roads or lengths of a road that a cyclist who has achieved Bikeability Level 2 can cycle on and carry out all manoeuvres except turning across traffic.	Suitable for ***advisory*** and ***cycle route*** networks only if there are facilities to assist cyclists with crossings and right turns both on and off the road
Level 3	Roads or lengths of a road (or off-carriageway route) that that a cyclist who has achieved Bikeability Level 3 can cycle on and carry out all manoeuvres.	Not suitable for ***advisory*** network. Suitable for a ***cycle route*** network only where alterations are made.
Level 3.5	Roads or lengths of a road where the level of risk is currently a barrier to even the most competent and experienced cyclists.	Not suitable for ***advisory*** network or for ***cycle route*** network

CSNA Levels

The CSNA process enables the identification of roads and tracks which are immediately suitable for inclusion in an advisory network, as well as those which might be converted for cycle use by a variety of engineering and legal measures.

All pedestrian crossings on roads classified higher than Level 2 (including Off-peak Level 2) are also classified using the same criteria, as they may provide less skilled cyclists with links to lower classified roads by means of a short detour on foot.

The crossings audited comprise both those which cyclists can currently use while cycling and those where they must dismount. The latter are designed for pedestrian use and hence are assessed from the perspective of a dismounted cyclist wheeling a bicycle.

It should be noted that there are no Level 2.5 crossings since they will be either Level 2 or Level 3. Occasionally there may be some Level 3.5 crossings, where the level of risk is so high that their use is not considered advisable (e.g. crossings of the A24)

2.3 Prioritisation

Prioritisation of a number of different areas within the parish was carried out based on the location of key destinations and potential demand. The areas are shown in section 4 below.

A CERS2 assessment was not deemed necessary due to the relatively straightforward nature of the road and path network in the village, and the presence of only a small number of key destinations.

Castlewood Primary School

2.4 Detailed recommendations

Following the production of the CSNA the study looked in detail at recommended improvements that would be likely to encourage cycling, split between the prioritised areas. This stage also considered general infrastructure measures e.g. introduction of Advanced Stop Lines (ASLs) and continental style roundabouts.

While improvements to all routes investigated might be desirable, it is important to assess how practicable it might be to carry them out. The recommendations therefore indicate varying levels of practicality.

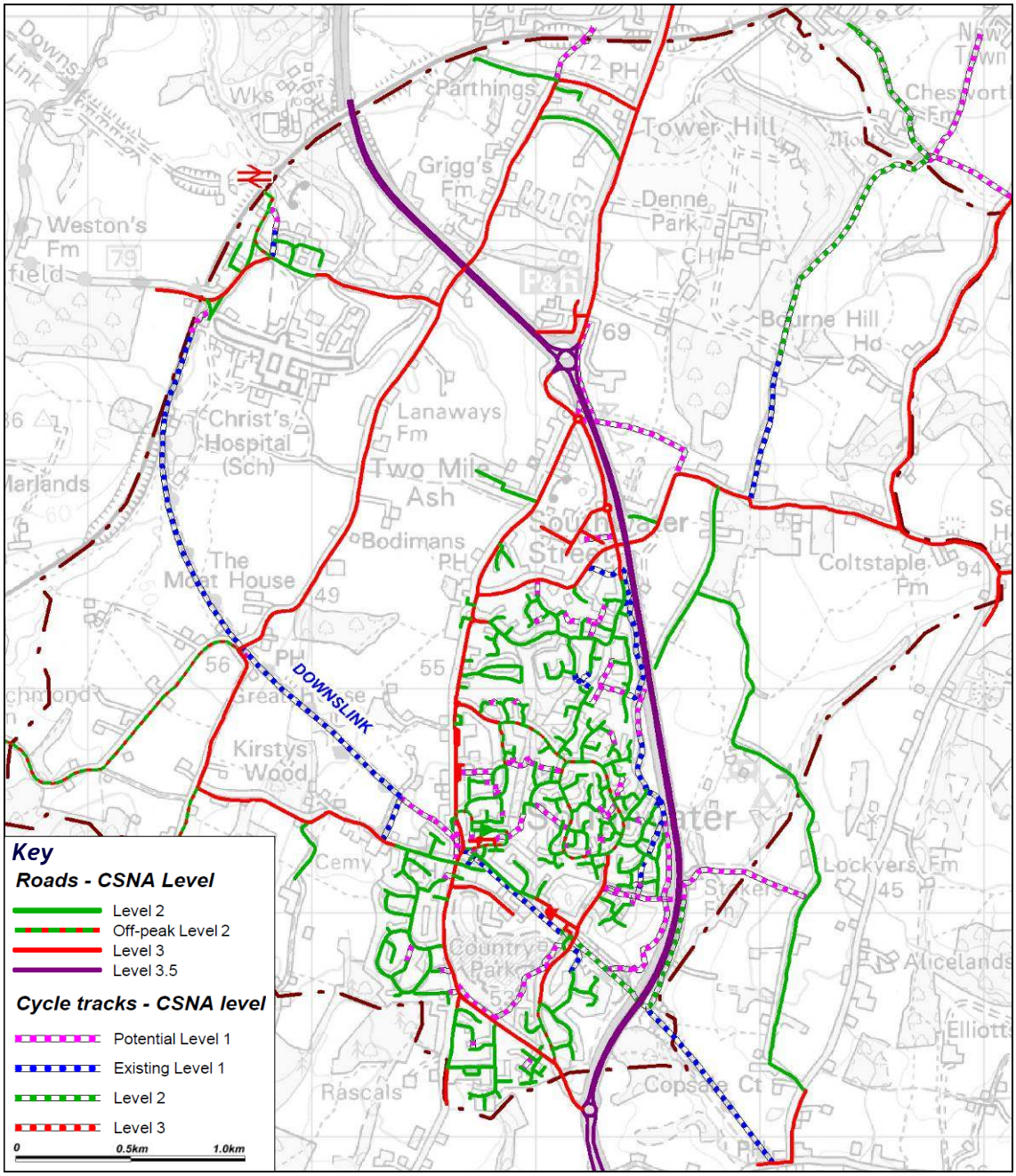
3. Cycle Skills Network Audit

3.1 Background

As described above the Cycle Skills Network Audit (CSNA) is a detailed survey of an area's roads and motor traffic free cycle paths to assess the skill level needed to cycle on them in relative safety. These are classified using a system based on the three core levels of the National Standard for Cycle Training (Bikeability), redefined into seven levels for the CSNA.

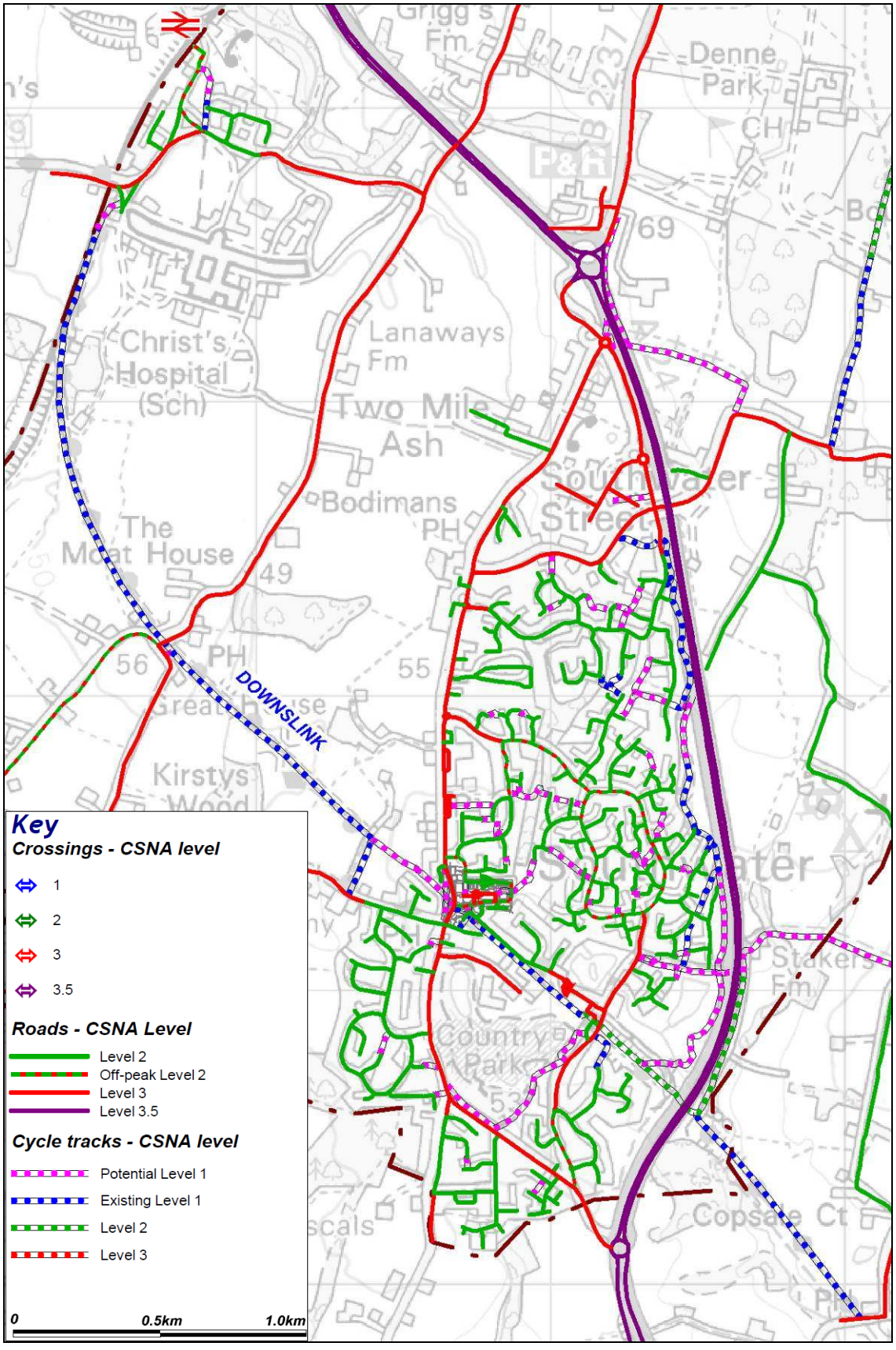
3.2 Cycle Skills Network Audit – Southwater

The plan below shows the results of the CSNA for the whole of Southwater parish. Crossings have been omitted for clarity.



Cycle Skills Network Audit – Southwater parish (crossings not shown)

The plan below shows the results of the CSNA in more detail, focused on the village itself. Individual areas are shown at a larger scale in Appendix A.



Cycle Skills Network Audit – Southwater (including crossings)

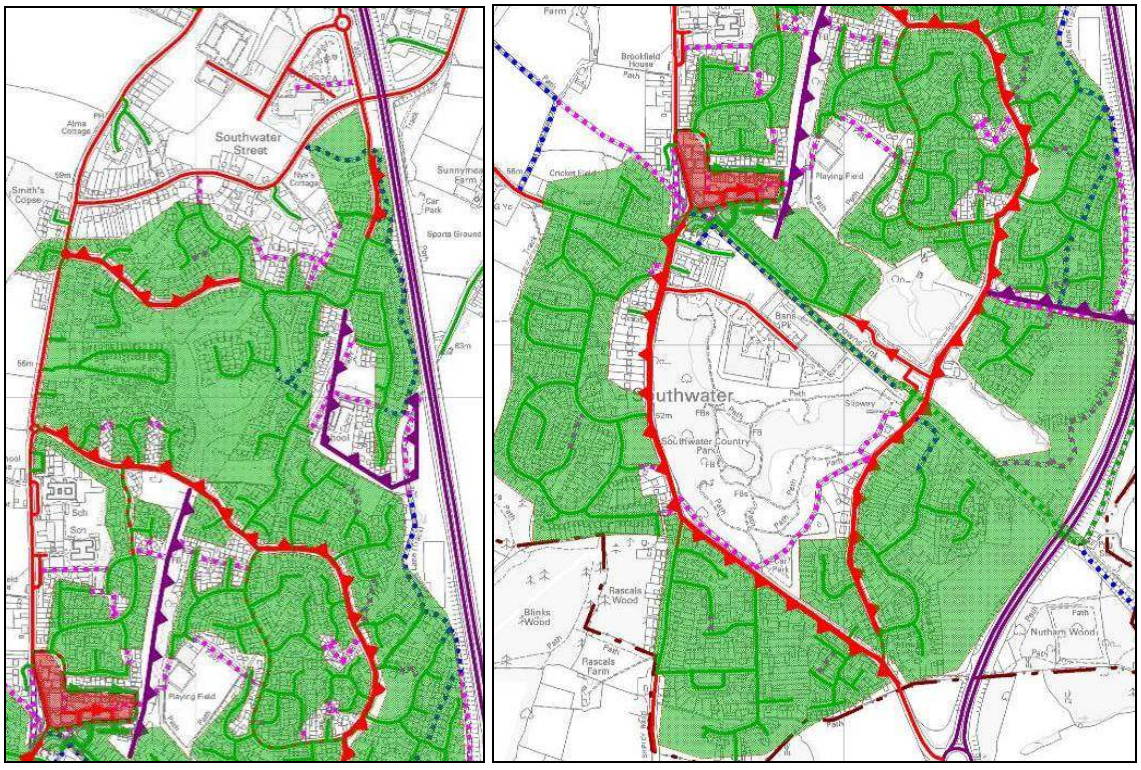
From the CSNA plans it can be seen that there are a number of areas within the village where cyclists with skill levels equivalent to Bikeability Level 2 can travel comfortably.

However, while many areas have a good network of Level 2 roads, these are often connected only by link paths that are not formally available for cycling. These 'islands' are separated from each other by roads which require Level 3 skills either at peak times or all day.

In particular there are no convenient east-west routes which can be used safely by less experienced cyclists i.e. those whose skills are not equivalent to Bikeability Level 3. Although some destinations on these routes can be reached on Level 2 roads, this means that only experienced cyclists will feel comfortable making longer trips across Southwater, especially to the village centre.

The plans below show the areas accessible to cyclists trained to Level 2 and the barriers to movement. The accessible areas are shown in green and include connections using link paths, as well as Level 2 crossings which can be used by dismounted cyclists. The area in red is the village centre.

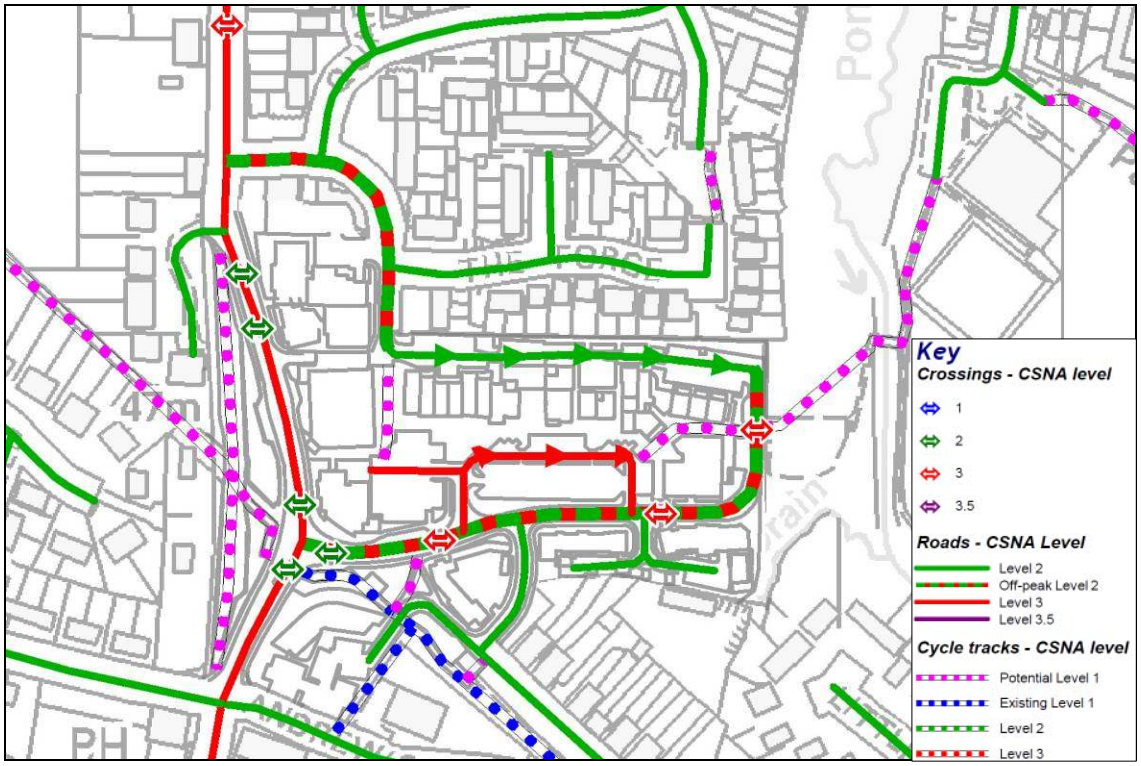
The barriers identified are either physical (e.g. the valley running north-south through the village) or due to road conditions. These are show in purple and red respectively. It can be seen that the village centre is only easily accessible by Level 2 cyclists from the relatively small areas immediately to the north and south-east.



Accessibility and barriers to cycling – north and south of Southwater parish (crossings not shown)

3.3 Cycle Skills Network Audit – Southwater village centre

The plan below shows the situation in the centre of the village in greater detail.



CSNA – Southwater village centre

As noted above, the CSNA reveals that connections for cyclists to the new village centre at Lintot Square are poor. Even the Downslink, which runs very close to Lintot Square, is separated from it by Fairbank Road which has no crossing that is both convenient and safe. The sole crossing on the direct line from the Downslink to Lintot Square has dropped kerbs only.

Similarly the Leisure Centre (north-east of Lintot Square) is linked to the centre only by a path where cycling is prohibited. This route is also poor for pedestrian use, with a narrow diagonal route across the car park and a crossing of Fairbank Road where the dropped kerbs are not aligned correctly.

Potential Level 1 link (Lintot Square – Leisure Centre)

In addition, the signalled crossing of Worthing Road by the Downslink is tortuous and poorly designed, with the route for cyclists unclear on both sides. The surface cycle markings direct cyclists to an equestrian crossing (i.e. a horse symbol on the controller) while the controllers for cyclists are accessed via a path signed as a pedestrian route.

Eastern approach to Downslink crossing of Worthing Road, Southwater

Western approach to Downslink crossing of Worthing Road, Southwater (showing two signal controllers)

3.4 Potential Level 1 routes

Existing traffic-free links which are not currently available to cyclists (due to either legal or physical restrictions) are classified as Potential Level 1.

This category includes paths where cycling is prohibited but the physical layout (e.g. width) is suitable for shared use. These include links between two cul-de-sacs which are wide enough for shared use by pedestrians and cyclists but where there is either a “No Cycling” sign or no indication that cycling is permitted. There are many of these links in the newer residential areas of Southwater where the status of cycling is at best unclear.

Only two such links were surveyed that are actually signed as shared use: Larkspur Way – Castlewood Close (unsegregated) and Cripplegate Lane – Abbot's Leigh (segregated).

Unsegregated shared-use path, Larkspur Way – Castlewood Road

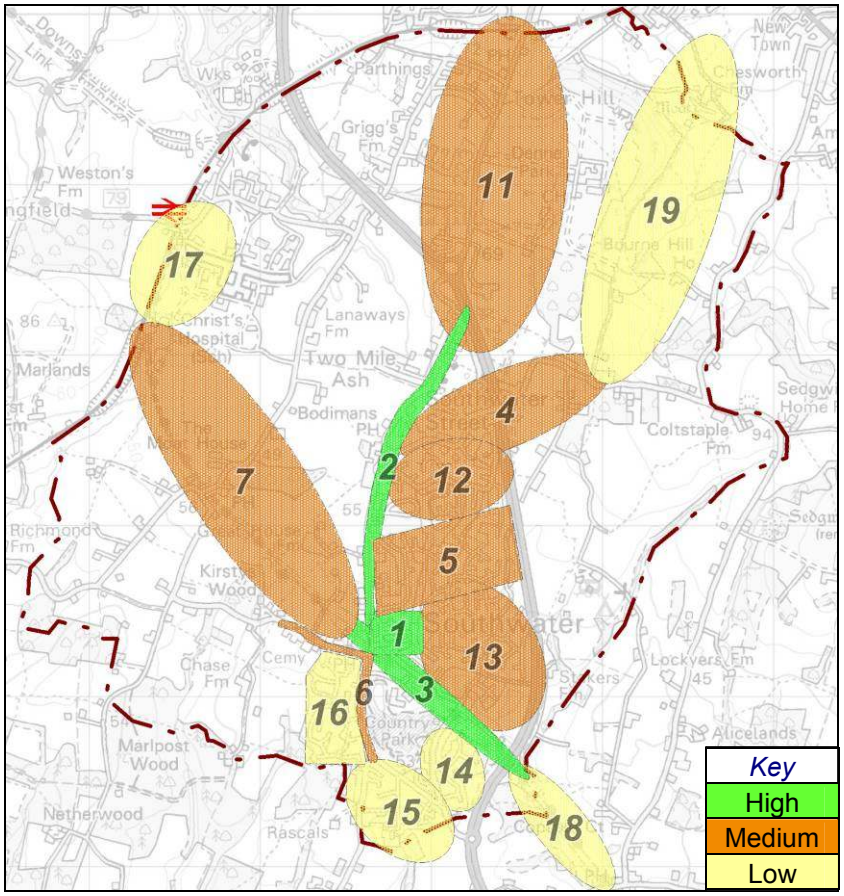
The category also includes routes which are legally available to cyclists but where it is difficult to cycle due to physical problems such as a poor surface. This includes many of the traffic-free routes in the area (e.g. the path at Ben's Field, in the northern section of the Country Park).

Potential Level 1 link with poor surface (Ben's Field)

It is not expected that all routes classified as Potential Level 1 would ultimately be made available for cycling. There may be good reasons why cycling might continue to be restricted. For example, the cost or environmental concerns associated with surfacing a bridleway might outweigh the benefits. However, many of the links would not require major work to allow shared use and hence significantly increase accessibility by bicycle.

4. Priority areas

Since the road network in the parish is much smaller and less complex than Horsham, the study did not include a CERS2 audit. Prioritisation of a number of different areas within the parish was carried out based on the location of key destinations (shops, schools etc.) and potential demand. The areas are shown below.



Priority areas, Southwater parish

Area no.	*Name*	*Plan no.*	*Status*	*Priority*
1	Village centre (Lintot Square)	3	Primary	High
2	Worthing Road north	2/3	Primary	High
3	Downslink central & Country Park	4/5	Primary	High
4	Southwater Street	2	Primary	Medium
5	Cedar Drive north	3	Primary	Medium
6	Worthing Road south / Church Lane	4/5	Primary	Medium
7	Downslink west (rural)	3	Primary	Medium
11	Hop Oast	1	Secondary	Medium
12	Blakes Farm Road	2	Secondary	Medium
13	Cedar Drive south	3	Secondary	Medium
14	Cripplegate Lane / Millfields	5	Secondary	Low
15	Mill Straight / Shipley Road	5	Secondary	Low
16	College Road	4	Secondary	Low
17	Christs Hospital		Secondary	Low
18	Downslink east (rural)		Secondary	Low
19	Pedlars Way (rural)		Secondary	Low

Schedule of priority areas, Southwater (plan no. refers to Village Plans, Appendix A)

5. Recommendations

5.1 Summary

The recommended improvements set out below are those that are considered most likely to encourage cycling, clustered according to the priority areas set out above.

While improvements to all routes investigated might be desirable, it is important to assess how practicable it might be to carry them out. The recommendations therefore indicate the following levels of practicality:

M *Best carried out as part of the maintenance programme (e.g. resurfacing) or when other highway works are being undertaken*

1 *Relatively inexpensive to introduce in both design and implementation, and should provide good return for minimal cost*

2 *Could be more expensive but generally should provide a reasonable return in giving more advantage to cyclists and pedestrians*

3 *Potentially expensive with the level of return uncertain*

4 *May be desirable but may also be impractical/very difficult to implement, or have negative outcomes beyond the area to be treated.*

5.2 High priority areas

Area	Description	CSNA Level	Recommended measures *(if numbered, in order of preference)*	Practi-cality
3	**Village centre (Lintot Square) – primary**			
	Junction of Worthing Rd / Fairbank Rd	3	*See Worthing Road north*	
	Fairbank Rd (south and east)	Off-peak 2	• Introduce cycle-friendly traffic calming measures & 20mph limit	2
	Fairbank Rd (south) – western crossing	Off-peak 2	1. Install flat-top hump at crossing to Downslink	1
			2. Create more direct link with wide flat-top hump crossing at end of path from Downslink (west of existing location)	2
	Fairbank Rd (east)	Off-peak 2	1. Install flat-top hump at crossing to Leisure Centre car park	1
			2. Move crossing to north to avoid conflict with car park entrance and install flat-top hump	2
	Fairbank Rd (north)	2 (one-way)	• Allow 2-way cycling (i.e. westbound) & introduce 10mph limit	1
	Lintot Square (west)	3	• Introduce cycle-friendly traffic calming measures & 10mph limit	2
			• Allow cycling in section by Co-op (i.e. to Station Road north)	1
	Lintot Square (east)	3	• Introduce cycle-friendly traffic calming measures & 10mph limit	2
			• Allow cycling in section by Library (i.e. to Leisure Centre car-park	1
			• Move cycle parking at Beeson House to area by entrance	1
	Link to Leisure centre	Pot. 1	• Realign path across car park to allow use by cyclists (min. 2.5m wide unsegregated shared-use path, ideally on raised table)	2
			• Allow cycling on bridge across stream and remove “No Cycling” signs	1
			• Widen path between bridge and Leisure Centre to allow use by cyclists (min. 2.5m wide unsegregated shared-use path)	2
	Station Road North	Off-peak 2	• Introduce cycle-friendly traffic calming measures & 20mph limit	2
	Station Road South	n/a	• Redesign cycle parking at Village Surgery to give correct spacing (min. 0.8m between stands – currently 0.5m)	1
	Link to Andrew's Lane	Pot. 1	1. Install signing to show legal unsegregated shared-use (NB path is a bridleway)	1
			2. Widen path to min 2.5m and sign as unsegregated shared-use	2

5	**Worthing Road (north of Downslink) – primary**			
	Junction of Worthing Rd / Fairbank Rd	3	1. Introduce ASLs with lead-in lanes	2
			2. Redesign western arm crossing (Downslink) to provide correct signing and controls for pedestrians, cyclists and equestrians	2
	Worthing Road (Farirbank Rd – Station Rd)	3	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane (min 4.8m) for motor vehicles	2
			2. Introduce cycle-friendly traffic calming measures and 20mph limit	3
	Worthing Road (Station Rd – Cedar Drive)	3	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane (min 4.8m) for motor vehicles	2
			2. Widen cycle gaps at chicanes	3
			3. Introduce more cycle-friendly traffic calming measures and 20mph limit	3
			4. Close road to through traffic or realign section by schools	4
	Junction of Worthing Rd / Cedar Drive	3	• Redesign roundabout to continental design	3
			• Narrow eastern arm approach to single lane and widen refuge	2
	Worthing Road (Cedar Drive – Southwater St)	3	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane (min 4.8m) for motor vehicles	2
			2. Widen cycle gaps at chicanes	3
			3. Introduce more cycle-friendly traffic calming measures	3
	Junction of Worthing Rd / Blakes Farm Rd S	3	• Redesign roundabout to continental design	3
	Junction of Worthing Rd / Southwater St	3	1. Redesign junction to include crossings with wide refuges on all 3 arms	2
			2. Signalise junction with ASLs and pedestrian phase	3
	Worthing Road (Southwater St – Blakes Farm Rd N)	3	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane (min 4.8m) for motor vehicles	2
			2. Widen cycle gaps at chicanes	3
			3. Introduce more cycle-friendly traffic calming measures and 30mph limit	3
	Junction of Worthing Rd / Blakes Farm Rd N	3	• Redesign roundabout to continental design	3
			• Narrow southern arm approach to single lane and widen refuge	2
			• Create gateway feature at end of Blakes Farm Road	2
	Link from Worthing Rd – A24	Pot. 1	1. Clear vegetation and widen to min. 2m	2
			2. Create link path along western verge of A24 to Hop Oast roundabout	3
6	**Downslink central & Country Park – primary**			
	Downslink (field section)	Pot. 1	• Provide sealed / Fibredec surface across field (slightly raised to improve drainage)	3
			• Improve signing at junction with bridleway to show destinations (i.e. Christ's Hospital & Southwater village centre)	1
	Downslink (rear of housing)	Pot. 1	1. Clear encroaching vegetation, repair sewage cover & remove plastic barriers	M
			2. Provide sealed surface across full width of path (between fences)	2
	Downslink (w of Worthing Rd)	Pot. 1	• Provide sealed surface under bridge to replace hazardous loose stones	M
			• Fully redesign area between bridge and crossing of Worthing Rd. to provide improved and clear routes for pedestrians, cyclists and equestrians	1
	Junction of Worthing Rd / Fairbank Rd	3	*See Worthing Road north*	
	Downslink (Worthing Road – Station Rd S)	1	• Fully redesign area between Station Rd S and crossing of Worthing Rd. to provide improved and clear routes for pedestrians, cyclists and equestrians	1
			• Improve signing to clearly show destinations (i.e. Christ's Hospital & Southwater village centre)	1

	Downslink (Station Rd S – Country Park car park)	1	• Provide sealed surface	2
			• Improve signing at junction with Station Rd S including cycle warning signs for motor vehicles	1
			• Improve link to Station Rd S and provide sealed surface	
	Station Rd (Station Rd S – Cripplegate Lane)	3 (one-way)	1. Allow two-way (eastbound) cycling by providing one-way plug and traffic calming with 20mph limit	2
			2. Widen footway (remove vegetation) and permit shared-use eastbound	1
	Junction of Station Rd/Cripplegate Lane	3	1. Redesign junction as mini roundabout with continental design	3
			2. Redesign junction with raised table and improved visibility and signing	2
	Downslink / Country Park car park	2	• Provide less steep (i.e. longer) ramp between car park and Downslink, with sealed surface	2
			• Provide raised table crossing of car park access	1
			• Improve signing at car park including cycle warning signs for motor vehicles	1
			• Improve link to Country Park Centre including allowing two-way cycling on link road	1
	Junction of Downslink / Cripplegate Lane	3	1. Redesign junction with raised table and improved visibility and signing	2
			2. Signalise junction / provide Toucan crossing	3
			• Provide less steep ramp between Downslink and Cripplegate Lane	1
			• Improve signing at junction to reduce sign clutter	1
	Downslink (Staker's Lane)	2	• Clarify shared-use status with signing and 10mph limit	1
			• Repair surface defects	M

5.3 Medium priority areas

Area	Description	CSNA Level	Recommended measures *(if numbered, in order of preference)*	Practi-cality
4	**Southwater Street – primary**			
	Southwater St w	3	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane for motor vehicles	3
			2. Introduce cycle-friendly traffic calming measures esp. at bends	2
	Southwater St – link to Warren Drive	3	• Install flat-top hump at crossing n of path	2
			• Remove barriers and formalise cycling of link path	1
	Southwater St – link to Blakes Farm Close n	3	• Replace barriers with bollards and improve visibility at junction with link path	1
			• Install flat-top hump at crossing n of path	
	Southwater St e	3	• Introduce cycle-friendly traffic calming measures esp. at bends	3
			• Make 30mph gateway feature more effective	3
	Blakes Farm Rd n (Wilberforce Way – Southwater St bridge)	3	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane for motor vehicles	3
			2. Introduce cycle-friendly traffic calming measures	3
	Oakhurst Business Park	3	• Provide cycle track along Wilberforce Way	3
			• Provide link from Wilberforce Way to Southwater St	2
	Junction of Blakes Farm Rd n / Wilberforce Way	3	• Redesign roundabout to continental design	3
			• Provide crossing with refuge on southern arm	2
	Blakes Farm Rd n (Southwater St bridge – link to Southwater St)	3	• Introduce cycle-friendly traffic calming measures and 20mph limit	3
			• Move 20mph gateway feature to just south of bridge	3
	Link path (Southwater St – Blakes Farm Rd n)	1	• Sign as unsegregated shared-use path	1
			• Replace barriers with bollards at crossing of Blakes Farm Rd	1
			• Replace chicane with flat-top hump at crossing of Blakes Farm Rd	2

5	**Cedar Drive north – primary**			
	Cedar Drive (Worthing Rd – Timber Mill)	3	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane for motor vehicles , plus 20mph limit	3
			2. Introduce cycle-friendly traffic calming measures	3
	Timber Mill	Off-peak 2	1. Remove centre line	3
			2. Introduce 20mph limit	3
	Link path (Timber Mill – Worthing Rd)	Pot. 1	• Widen to min. 2m and allow cycling	2
			• Improve access to link path	1
	Link path (Timber Mill – Dover Close)	Pot. 1	• Investigate shared-use path across stream with higher level bridge (min. 2m)	3
	Cedar Drive (Timber Mill – Camelot Close & Pevensey Road)	Off-peak 2	• Introduce cycle-friendly traffic calming measures	1
			• Provide dropped kerbs at side road crossings	2
	Shared-use path (Larkspur Way – Castlewood Road)	1	• Improve signing	1
			• Provide dropped kerbs at access points	2
	Eastlands Lane	Pot. 1	• Improve surfacing on northern section	2
	Paths around Castle-wood Infant School	Pot. 1	• Improve surfacing and widen to allow shared use	1
	General		• Allow cycling on link paths and provide dropped kerb access, and sign accordingly	1
			• 20mph limit on all estate roads	2
6	**Worthing Road south / Church Lane – primary**			
	Church Lane (Bonfire Hill – church)	3	1. Move start of 30mph limit to w of church and install gateway feature	3
			2. Introduce cycle-friendly traffic calming measures	2
	Church Lane (church – Worthing Rd)	3/2	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane for motor vehicles , plus 20mph limit	3
			2. Introduce cycle-friendly traffic calming measures	2
	Junction of Church Lane and bridleway to Downslink	3	• Install flat-top hump at crossing s of path	3
			• Improve signing at junction	1
	Junction of Church Lane and Worthing Rd	3	1. Redesign junction to ensure slow speeds, possibly using speed table at junction	3
	Worthing Rd (Church Lane – Shipley Road)	3	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane (min 4.8m) for motor vehicles	3
			2. Introduce cycle-friendly traffic calming measures	2
	Worthing Rd (crossing north of College Rd)	2	1. Move 30mph limit to junction with Cripplegate Lane and introduce 20mph limit n of this crossing	3
7	**Downslink west (rural) – primary**			
	Downslink (Church Lane bridleway – Christ's Hospital)	Pot. 1	1. Provide sealed / Fibredec surface	3
			2. Improve surface and remove encroaching vegetation	2
			• Improve ramp at Two Mile Ash Rd	2
11	**A24 / Hop Oast – secondary**			
	A24 s of Hop Oast roundabout	3.5	1. Install toucan crossing of southern (A24) arms with link path across wide southern island	3
			2. Construct bridge crossing at location of existing footpath crossing	4
	Worthing Rd (Hop Oast roundabout – Park & Ride site)	3	1. Widen footway to min. 2m to entrance to Park & Ride site and convert to shared use	3
			2. Widen refuge at pedestrian entrance to Park & Ride site	2
			3. Provide pedestrian/cycle phase at signalled junction with Park & Ride site, plus ASLs	3
	Park & Ride site	3	• Provide improved cycle access and sheltered cycle parking	3

	Worthing Rd (n of Park & Ride site)	3	1. Reallocate roadspace to provide cycle lanes (min 1.25m) in both directions	3
			2. Introduce cycle-friendly traffic calming measures	3
	Tower Hill	3	• Provide new path link along s side of A24 between Worthing Rd and Tower Hill or new track parallel to A24 on s side	4
			• Introduce cycle-friendly traffic calming measures	3
12	**Blakes Farm Road – secondary**			
	Blakes Farm Rd (Worthing Rd – chicane)	3	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane for motor vehicles , plus 20mph limit	2
			2. Redesign chicane to create gateway	2
	"Red path" along A24	1	• Designate as shared use and sign accordingly	1
			• Replace barrier with bollards at access opp. Wild Orchid Way	1
	General		• Allow cycling on link paths and provide dropped kerb access, and sign accordingly	1
			• 20mph limit on all estate roads	2
13	**Cedar Drive south – secondary**			
	Cedar Drive (Camelot Close – Pevensey Rd)	Off-peak 2	• Introduce cycle-friendly traffic calming measures	1
			• Provide dropped kerbs at side road crossings	2
	Link path (Leisure Centre – York Close)	Pot. 1	• Widen to min. 2m and convert to shared use	2
	Link path (Easteds Barn)	Pot. 1	• Widen to min. 2m and convert to shared use	2
	Link path (Easteds lane allotments – bridleway)	Pot. 1	• Widen unsurfaced section to min. 2m and provide sealed surface to allow shared use	2
			• Redesign barrier at allotments to allow access by cycles	1
	Cripplegate Lane (Cedar Drive – Station Rd)	3	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane for motor vehicles	3
			2. Introduce cycle-friendly traffic calming measures	2
			• Replace crossings at Great Lime Kilns with speed table	2
	Bridleway e of Cripplegate Lane	Pot. 1	• Provide sealed surface (min. 2m) to allow shared use	2
			• Provide links to paths to Eversfield and Great Lime Kilns	1
	Ben's Field path (bridle-way – Staker's Lane)		• Provide sealed surface (min. 2m) to allow shared use	2
			• Remove kissing gates and replace with bollards	1
	General		• Allow cycling on link paths and provide dropped kerb access, and sign accordingly	1
			• 20mph limit on all estate roads	2

5.4 Low priority areas

Area	Description	CSNA Level	Recommended measures *(if numbered, in order of preference)*	Practi-cality
14	**Cripplegate Lane / Millfields**			
	Cripplegate Lane (Station Rd – Millfields)	3	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane for motor vehicles	3
			2. Introduce cycle-friendly traffic calming measures	2
			3. Improve access to Country Park car park	2
			• Improve access and visibility at cycle track to Abbots Leigh	2
	Cripplegate Lane (Millfields – Mill Straight)	Off-peak 2	1. Introduce cycle-friendly traffic calming measures	3
	Cycle track (Cripplegate Lane to Abbots Leigh)	1	• Remove segregation and re-sign as unsegregated shared use	1
			• Clear vegetation at s end	M
	Country Park	Pot. 1	• Convert path between Country Park Centre and Mill Straight car park to shared use by pedestrians and cyclists	
			• Install warning signs and improve direction signing to & from Downslink	1

15	**Mill Straight / Shipley Road**			
	Mill Straight (Shipley Rd – Cripplegate Lane)	2.5 / 3	1. Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane (min 4.8m) for motor vehicles	3
			2. Introduce cycle-friendly traffic calming measures	2
			• Replace ex. crossings and buildouts with either wider buildouts or refuges	2
			• Convert n footway to shared use between car park and crossing to Woodland Way	2
	Junction of Mill Straight/ Shipley Rd	3	• Replace junction with roundabout to continental design and provide crossings of all arms	3
	Junction of Mill Straight/ Cripplegate Lane	3	• Replace junction with roundabout to continental design	3
			• Move start of 30mph limit to e of junction with Cripplegate Lane and create gateway feature	2
	Shipley Rd (Worthing Rd – Foxfield Cottages)	3/2	• Remove centre line and reduce speed limit to 20mph	2
	General		• Allow cycling on link paths and provide dropped kerb access, and sign accordingly	1
			• 20mph limit on all estate roads	2
16	**College Road**			
	Link path (Woodland Way – Worthing Rd)	Pot. 1	• Convert to shared use	1
			• Replace barriers with bollards	1
	General		• Allow cycling on link paths and provide dropped kerb access, and sign accordingly	1
			• 20mph limit on all estate roads	2
17	**Christ's Hospital**			
	King Edward Rd (railway bridge – Station Rd)	3	• Reallocate roadspace and remove centre line to provide cycle lanes (min 1.25m) in both directions and 2-way central lane (min 4.8m) for motor vehicles	2
	Station Rd	Off-peak 2	• Introduce parking restrictions to address poor visibility caused by high level of on-street parking by rail users	
			• Reduce speed limit to 20mph	2
	Link path (Station Rd – Barnes Wallis Ave)	Pot. 1	• Widen to 2m and provided sealed surface	1
			• Sign as shared use	1
	Link path (The Avenue – Downslink)	Pot. 1	• Widen to 2m and provided sealed surface	1
			• Improve signing at junction to show destinations (i.e. Christ's Hospital station & Southwater village centre)	1
18	**Downslink east (rural)**			
	Downslink / Staker's Lane w (Cripplegate Lane – A24 underpass)	1	• Clarify shared-use status (i.e. by pedestrians, cyclists, equestrians and motor vehicles) with improved signing and 10mph limit	1
			• Repair surface defects	M
	Downslink (A24 underpass – Bar Lane)	1	• Improve surface and remove encroaching vegetation	2
	Junction of Downslink / Bar Lane	3	1. Improve v. poor visibility at crossing by moving to e (will require some land from former pub garden)	3
			2. Improve sightlines and visibility at crossing by cutting back vegetation	1
			• Improve cycle warning signing on road either side of crossing	1
			• Improve gradients of ramps and provide sealed surface	2
19	**Pedlars Way (rural)**			
	Junction of Pedlars Way / Coltstaple Lane		• Improve signing and visibility at crossing point	2
	Coltstaple Lane		• Improve signing to Southwater from Pedlar's Way – sign direct route to village along Southwater St and amend existing route signs to clearly indicate longer leisure route via Downslink	1
			• Introduce 30mph limit and signing at sharp bends	M
	Pedlars Way (n of Keeper's Cottage)		• Improve surface and remove encroaching vegetation	2
			• Repair bank erosion damage at River Arun bridge	M

5.4 Proposals for infrastructure measures

In addition to the detailed recommendations summarised above, a number of area-wide recommendations are also made. As with the detailed recommendations, West Sussex County Council as the Highway Authority would need to agree to many of the proposals but funding could come from a range of sources.

Infrastructure and traffic management

- As a priority, a policy of making the built-up area of Southwater a 20mph zone should be considered, with a few exceptions such as the northern and southern sections of Worthing Road. This would follow the example of larger towns and cities such as Portsmouth, Oxford, Norwich and Leicester where the default speed limit is 20mph. The adoption of such a policy would send a clear message about local transport priorities.
- Car parking in and near junctions and crossings should be reviewed to remove locations which obstruct cyclists, reduce visibility or cause some other hazard.
- All existing and proposed one-way streets should be reviewed to determine whether two-way cycling can be provided either using a contra-flow lane or by means of a 'cycle plug' (making the majority of the road two-way with only a short section of one-way working with a contraflow cycle track at the exit from the two-way section).

Cycle parking

Improved cycle parking has been provided at Lintot Square and the Country Park visitor centre. However there remains a general shortage of good quality cycle parking.

- A programme should be developed to provide cycle parking facilities at main destinations, using Sheffield stands or equivalent
- This should also include reviewing and replacing existing sub-standard parking (e.g. at the Leisure Centre, where the parking is too close to a wall, sited on loose gravel and not visible from inside the building, and at the Surgery, where the gap between racks is too small, halving the number of bikes that can be parked)
- A number of personal cycle lockers at the residential developments in Lintot Square. While this was no doubt carried out with good intentions, there appears to be a low level of usage of the lockers and maintenance is poor. A management regime should be set up to review use of the lockers, including an assessment of demand.

Poorly located cycle parking, Southwater Leisure Centre

Racks too close together, Village Surgery

Signing

Signing for cyclists is almost non-existent within Southwater. Within the village only the Downslink has cycle direction signing, and even this is inconsistent. Improved signing would add to convenience, continuity and the 'profile' of cycling.

- A cycle signing schedule should be drawn up to introduce new signs and improve existing provision followed by a programme of works
- Direction signing should include distances to key destinations such as Southwater village centre

Signing at junction of Downslink and Cripplegate Lane (omitting reference to village centre)

Traffic-free links

In parallel with the signing review a detailed review of all potential traffic-free links should be carried to produce a programme of works to make available to cyclists. There are many missed opportunities that could easily be put right, including many short paths that could be shared to create links with minimal expense and good signing and hence extending the cycle network and increasing coherence and continuity.

- Review short traffic-free links and develop a programme of works to open these up to cyclists where possible, including appropriate signing and removal of barriers

5.5 Proposals for smart measures (i.e. non-infrastructure)

These would require input from the Travel Plan team at West Sussex County Council.

- Cycle route information and promotional activities – to include a village cycle map based on the CSNA levels for roads and cycle tracks
- Workplace Travel Plans to promote cycling more actively, especially at the two main business parks
- School Travel Plans to take account of CSNA plans to enable more active promotion of cycling
- Bikeability training to be established for children outside Year 6 as well as for adults

6. Conclusion

As noted above, there appears to be a good degree of potential for increasing the level of cycling in Southwater, at least for shorter journeys within the village. Most of the road network within the village is already suitable for cycling by inexperienced (Bikeability level 2) cyclists.

Measures to encourage cycling should therefore be focused on the areas which are currently suitable only for experienced (Bikeability level 3) cyclists. These areas are generally similar to the sites highlighted by the Community Action Plan.

A number of these measures could be carried out within a reasonably short timescale and with relatively modest expenditure. In particular, improvements to cycle access to the Village Centre and Lintot Square could be considerably improved thus raising the profile of cycling in the village. In addition this would maximise the benefit of the Downslink.

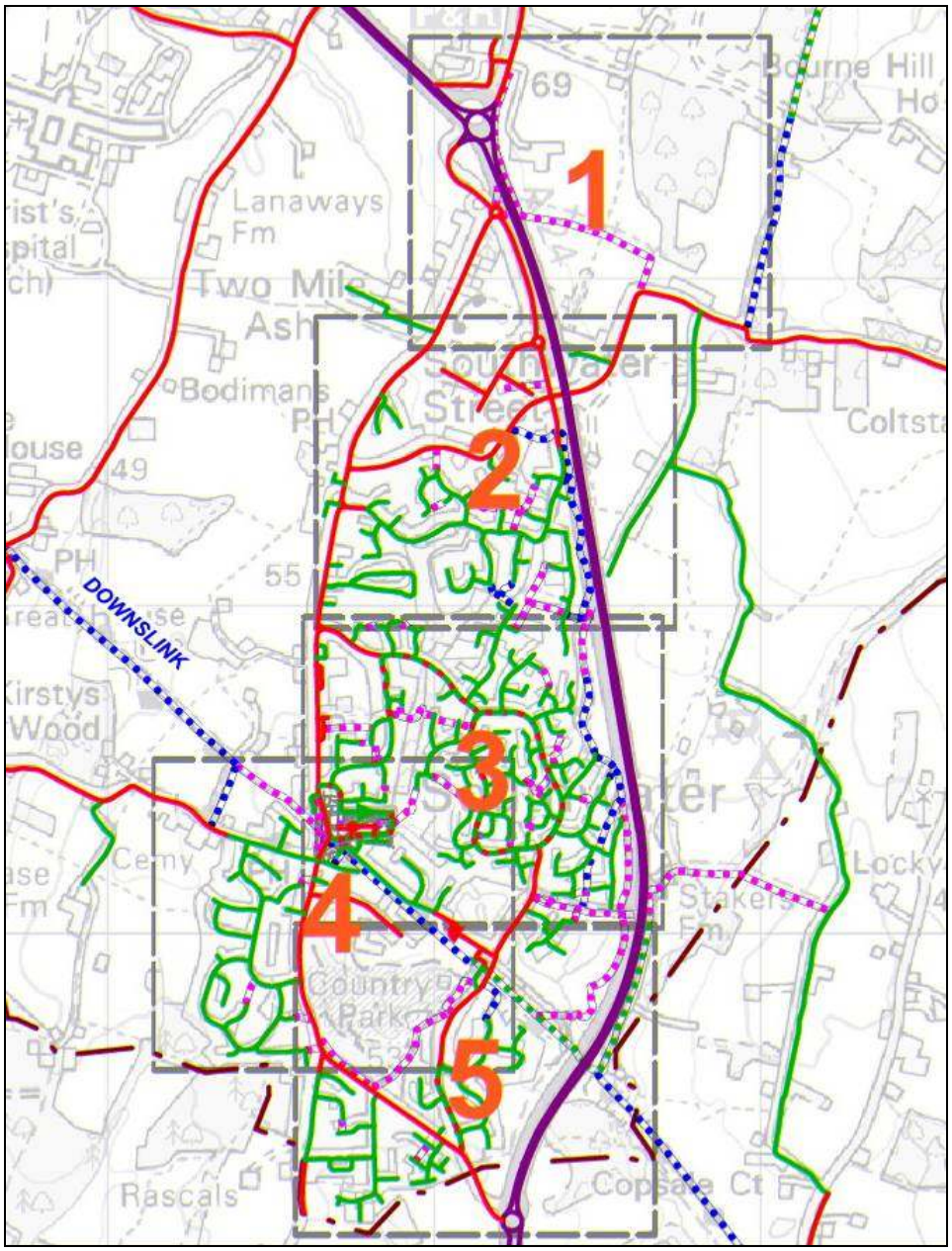
Other measures would require a village-wide approach, such as a 20mph speed limit on most of the roads in Southwater. This would benefit pedestrians as well as cyclists, while having little impact on journey times given the nature of the network.

While improving conditions for longer trips by bicycle is possible, this would require more significant levels of expenditure and longer timescales. Measures to develop these trips would also require a higher level of input from West Sussex County Council. These would be best addressed as part of the proposals for major residential development around Southwater.

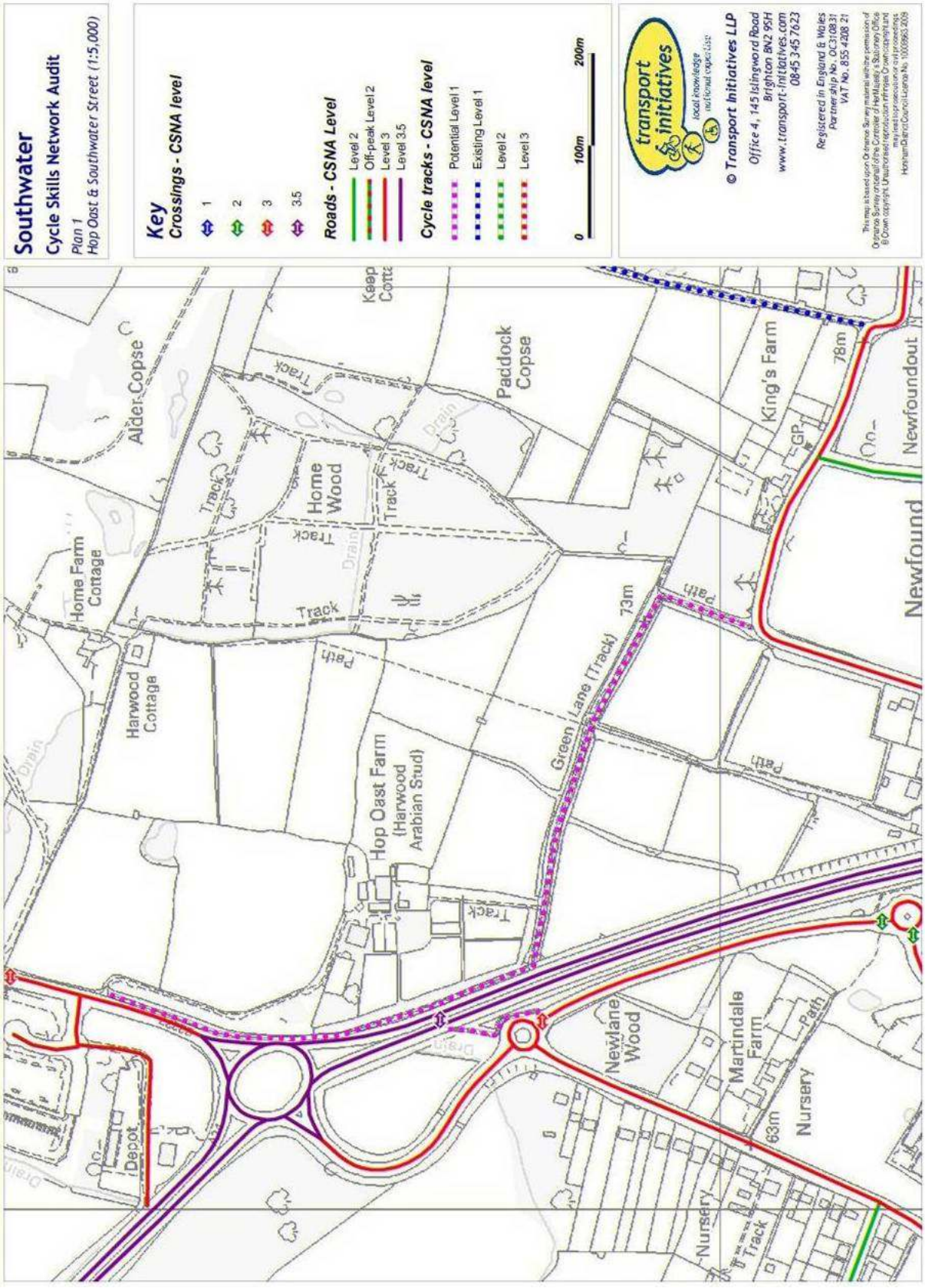
Cyclist, Worthing Road

Appendix A
Detailed CSNA plans

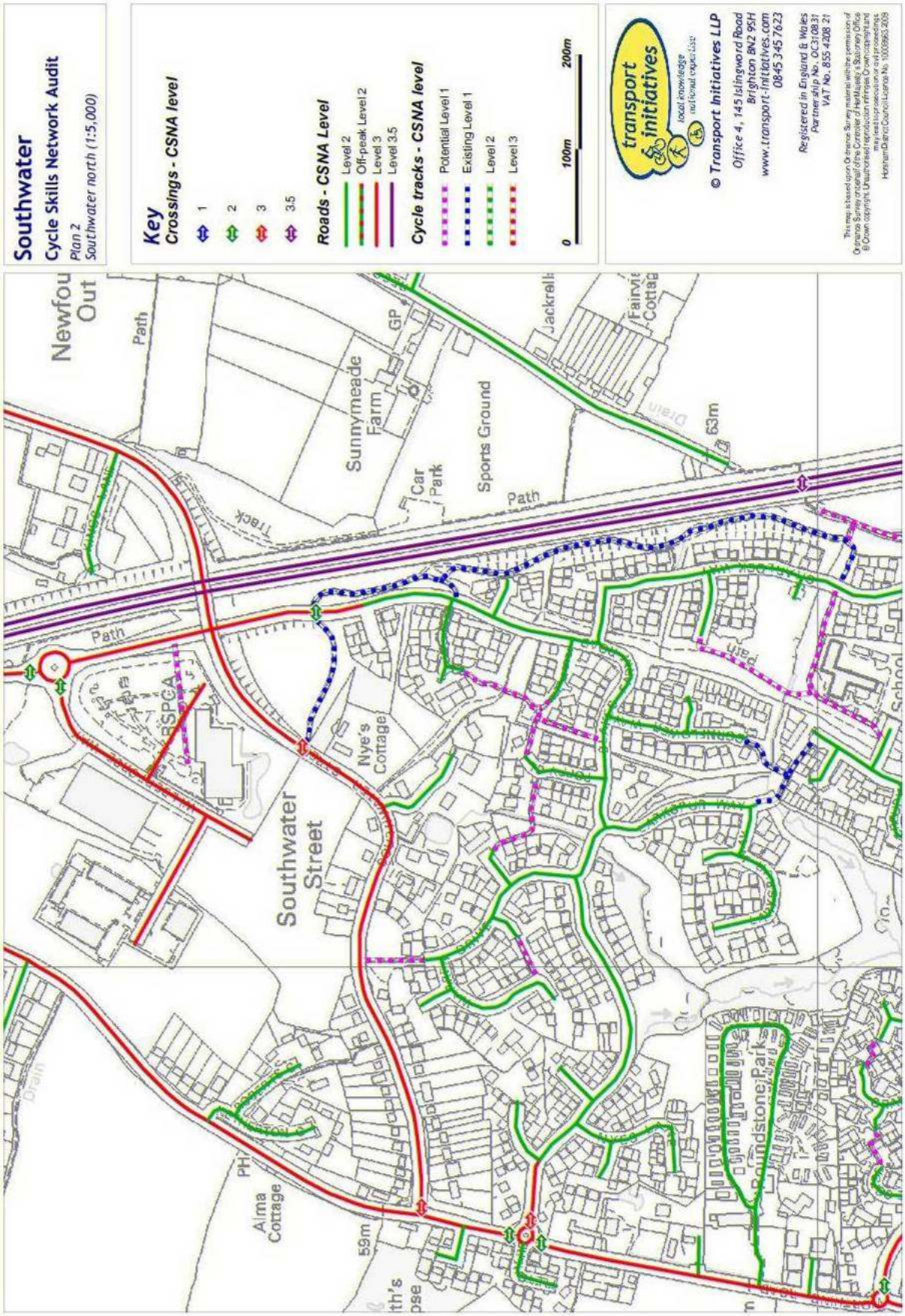
1. ***Hop Oast & Southwater Street*** *(approx. scale 1:5,000 at A4)*
2. ***Southwater north*** *(approx. scale 1:5,000 at A4)*
3. ***Southwater centre*** *(approx. scale 1:5,000 at A4)*
4. ***Southwater west*** *(approx. scale 1:5,000 at A4)*
5. ***Southwater south*** *(approx. scale 1:5,000 at A4)*
6. ***Southwater parish north*** *(approx. scale 1:20,000 at A4)*
7. ***Southwater parish south*** *(approx. scale 1:20,000 at A4)*



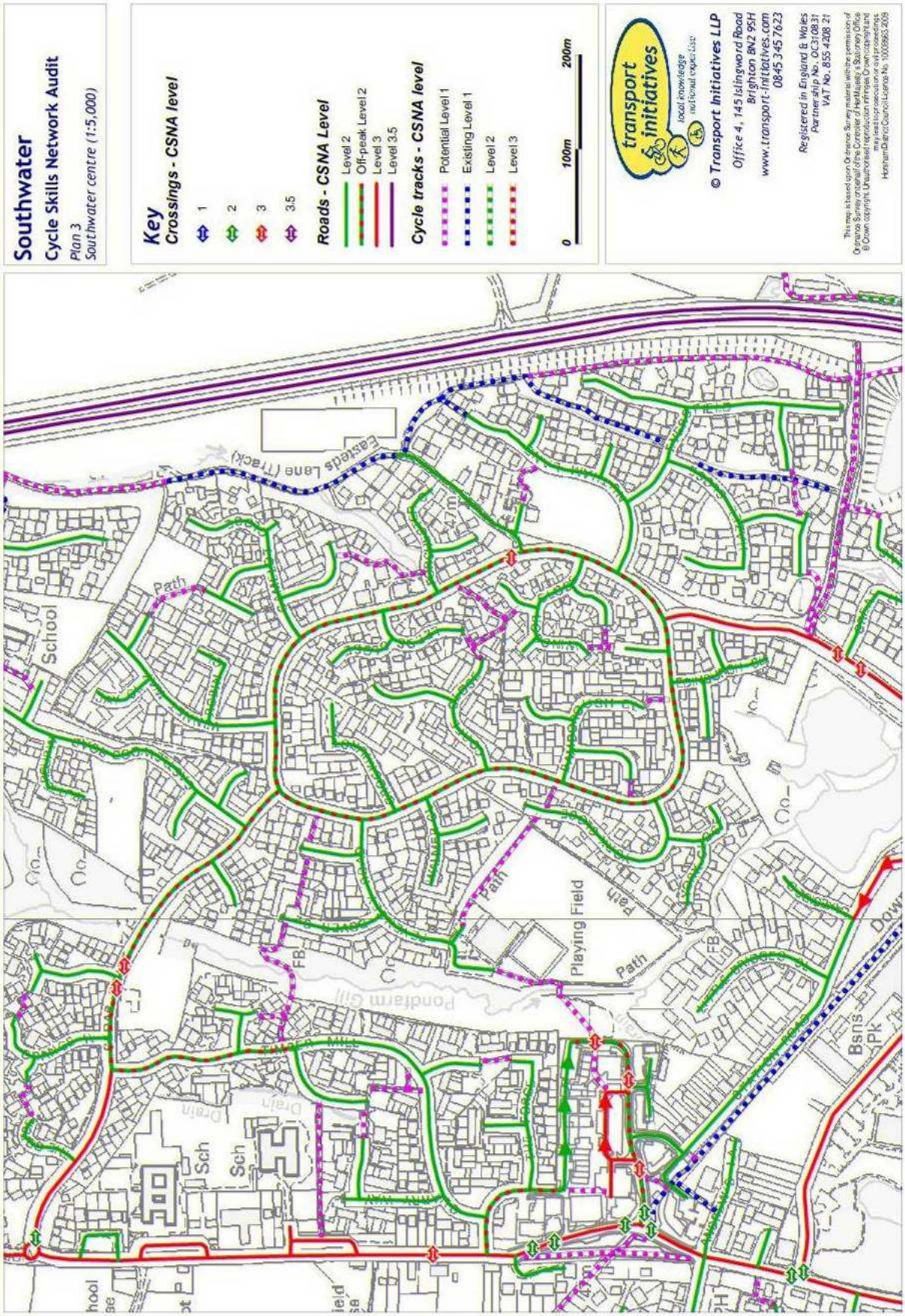
Overview of Plans 1-5 covering Southwater village



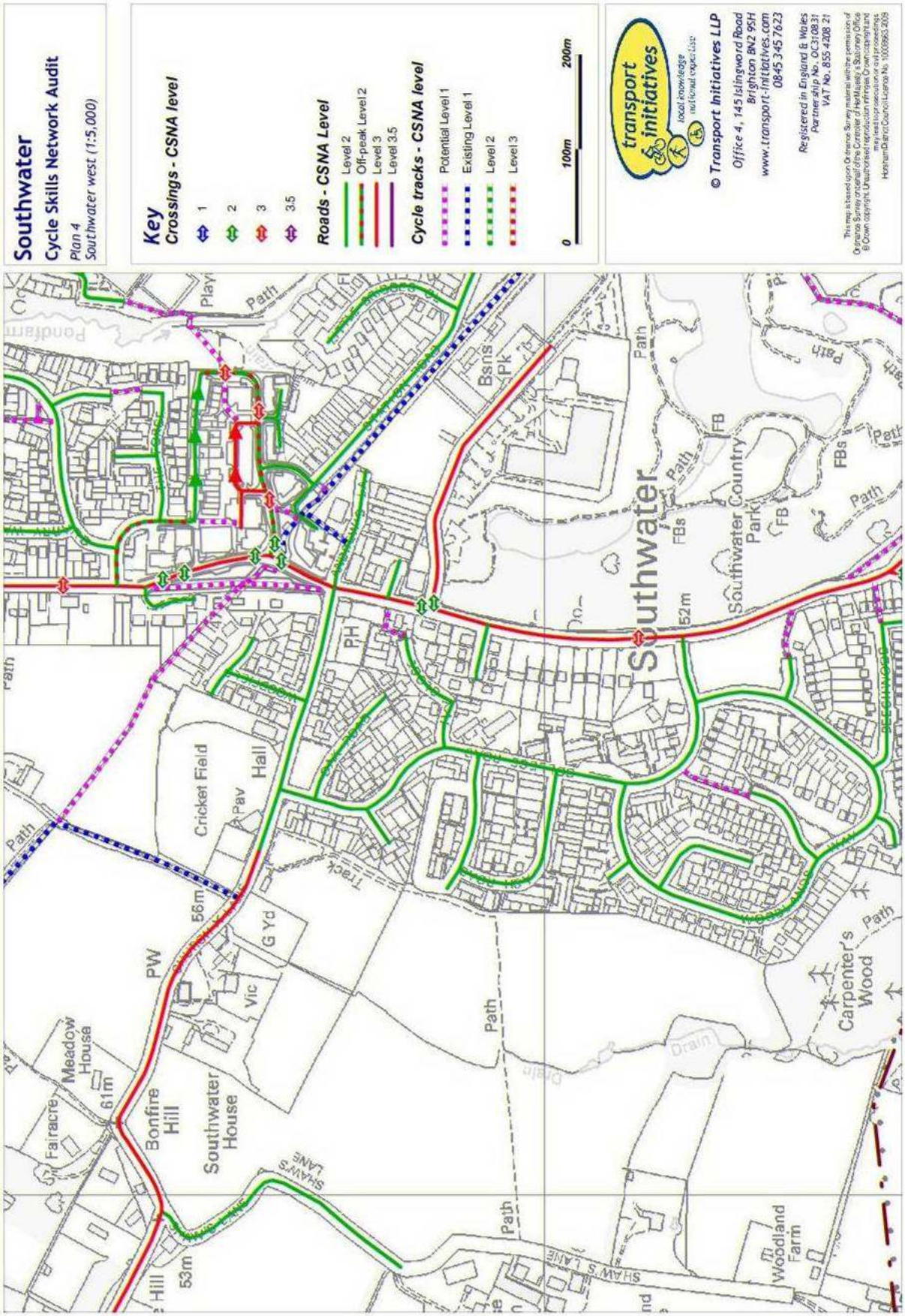
Plan 1. Hop Oast & Southwater Street



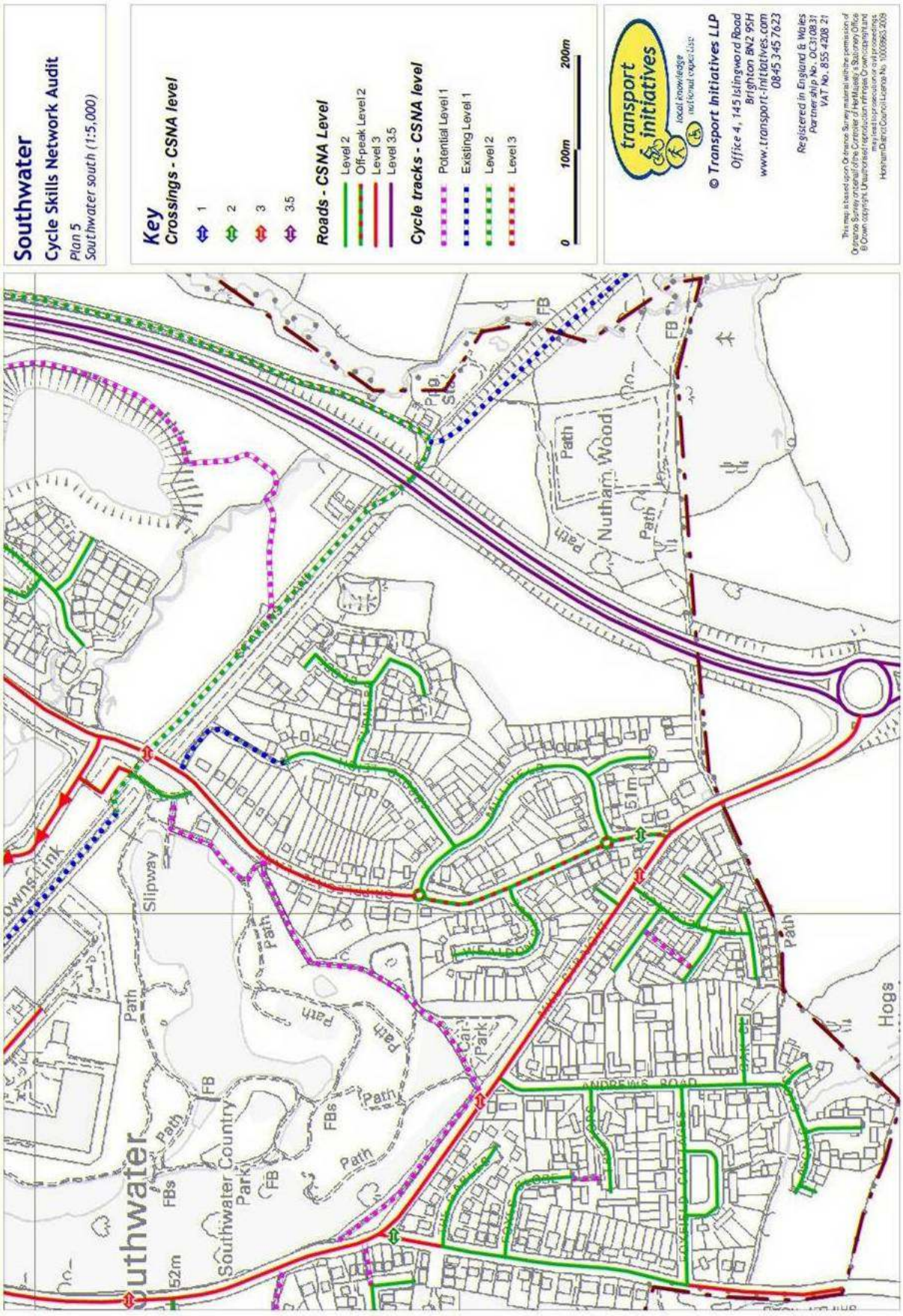
Plan 2. Southwater north



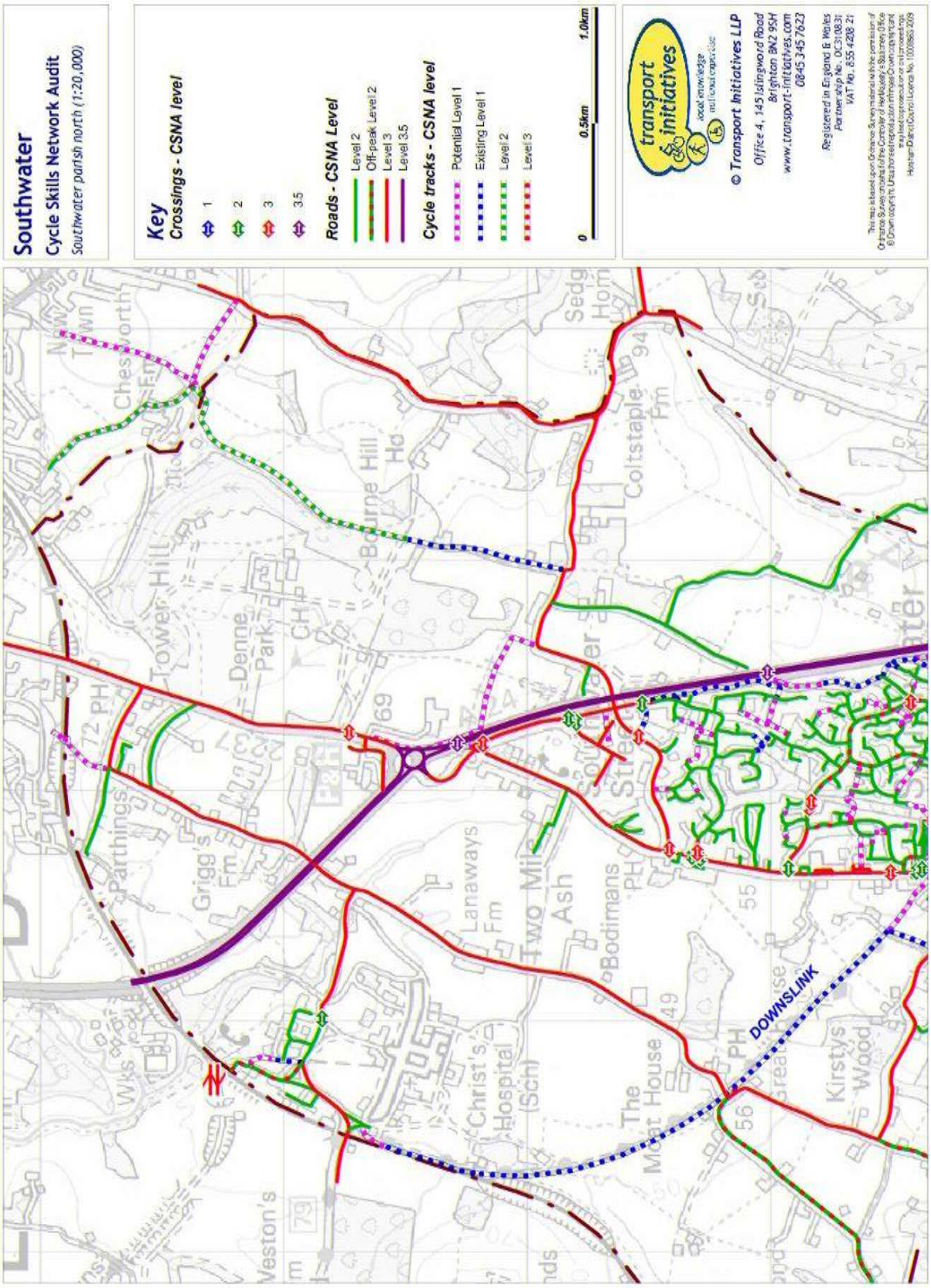
Plan 3. Southwater centre



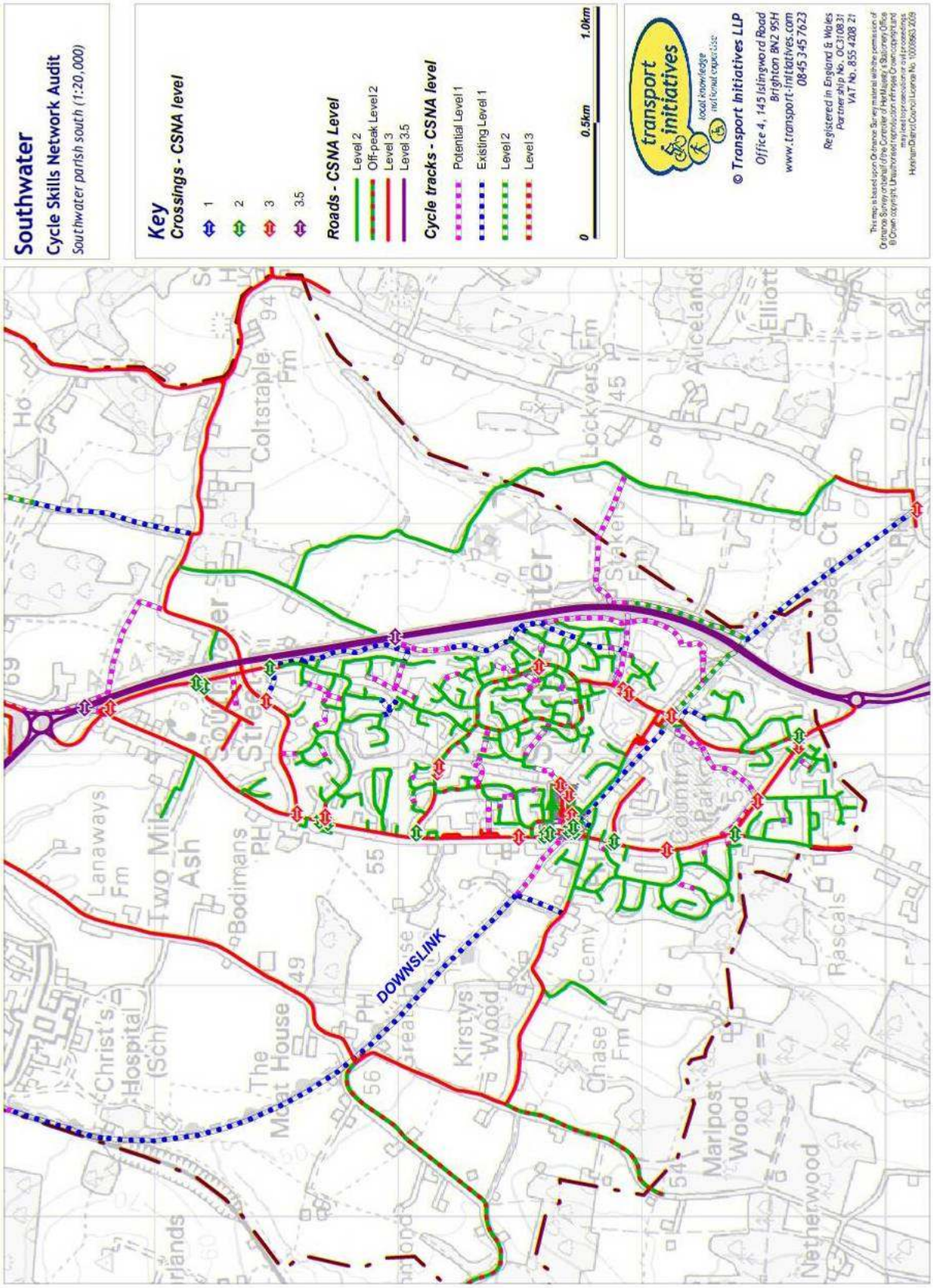
Plan 4. Southwater west



Plan 5. Southwater south



Plan 6. Southwater parish north (approx. scale 1:20,000 at A4)



Plan 7. Southwater parish south (approx. scale 1:20,000 at A4)

Appendix B

Methodology for Undertaking Cycle Skills Network Audits

Purpose

The purpose of this methodology is to provide clear guidance on the **Cycle Skills Network Audit (CSNA).** The CSNA classifies sections of roads, junctions and off-carriageway facilities usable by cyclists by the Bikeability standard that cyclists would need to have achieved to be able to ride on them in comparative safety. Bikeability is the name given to the UK National Standard for Cycle Training.

The guidance first explains the benefits of carrying out an audit. It then explains the three Bikeability levels of achievement and how these have been adapted into five levels for the purposes of the audit. It then gives detailed explanations of the characteristics that define roads at each of the levels. Finally the guidance explains how an audit should be carried out.

Benefits

The information provided by a Cycle Skills Network Audit can be used in a number of ways. An audit can be used for some of the following:

- Production of maps or guides for local cycle users enabling them to plan journeys based on their level of skill
- Identifying barriers to cycling and accessibility. Audits include assessment of pedestrian crossings by their Bikeability levels
- Targeting of cycle training to schools where improved skills are most needed within their catchment areas
- Identification of roads and other routes where a more detailed assessments, such as a CERS2 (Cycle Environment Review System 2) audit, could be carried out

Bikeability (National) Standard Levels

The Bikeability Standard has three levels of achievement:

Level 1 **Beginner**

The cyclist has the skills and understanding to be able to make a trip and undertake activities safely in a motor traffic free environment and as a pre-requisite to a road trip.

Level 2 **Introduction to Riding on the Road**

The cyclist has the skills and understanding to be able to make a trip safely to school, work or for leisure on quiet roads.

Level 3 **Advanced**

The cyclist has the skills and understanding to be able to make a trip safely to school, work or leisure on busy roads and using complex junctions and road features.

Cycle Skills Network Audit Levels

The three Bikeability levels have been used as a base to classify the existing road network but have been expanded slightly for the purposes of the CSNA, adding a number of new categories.

Routes

Roads or any off-carriageway route which cyclists are permitted to use, whether highway or not, are categorised as follows:

Potential Level 1 Motor-traffic-free off-carriageway routes where cycling is not permitted due to legal reasons or not possible/difficult due either to physical restrictions (e.g. barriers) or lack of adequate surfacing e*.g. wide paths between cul-de-sacs with "No Cycling" signs, bridleways with poor quality surfaces.*

Level 1 Motor traffic-free off-carriageway routes where cycling is permitted and some streets with extremely low levels of calmed traffic *e.g. cycle tracks, paths through parks, shared spaces, private road cul-de-sacs.*

NB not all cycle tracks alongside roads will be Level 1.

Level 2 Roads or lengths of a road that cyclists who have achieved Bikeability level 2 can cycle on and carry out all manoeuvres *e.g. most residential roads, roads with traffic calming*

Cycle tracks which require a degree of attention equivalent to that needed on a Level 2 road *e.g. cycle tracks on shared-use footways crossing frequent side roads or private accesses*

Off-peak Level 2 Roads or lengths of road that in off-peak traffic have the characteristics described for Level 2 above. During peak traffic they will have the characteristics described for Level 3 below.

Peaks may be related to rush hour traffic or other specific peaks such as trips to schools

Level 2.5 Roads or lengths of a road that cyclists who have achieved Bikeability level 2 can cycle on and carry out all manoeuvres except turning across traffic (i.e. turning right onto or off the road) *e.g. busier residential roads, mixed priority roads, low-flow distributor roads – especially where there is a wide cycle lane*

Level 3 Roads or lengths of a road that cyclists who have achieved Bikeability level 3 can cycle on and carry out all manoeuvres *e.g. most main roads including small and medium-size roundabouts*

Cycle tracks which require a degree of attention equivalent to that needed on a Level 3 road

Level 3.5 Roads or lengths of a road where the level of risk is so high it is a barrier to even the most experienced and competent cyclists e.g. *the most difficult/busy main roads and junctions, including most dual carriageways, gyratory systems, large roundabouts and grade-separated junctions with slip roads*

Crossings

In addition to assessing the cycling conditions, all pedestrian and cycle crossing points (on roads classified Level 2.5 or higher) are identified. These are classified as Level 1, 2 and 3 and the characteristics for these are based on those for routes. These comprise both crossings which cyclists can currently use while cycling (e.g. Toucan crossings) and those where they must dismount (e.g. Zebra crossings). The latter are designed for pedestrian use and hence are assessed from the perspective of a dismounted cyclist wheeling a bicycle.

It should be noted that for crossings there is no Level 2.5 as they will either be at Level 2 or Level 3. Level 2.5 is **only** used to denote roads where a cyclist trained to Bikeability level 2 will not feel safe when turning across traffic and so would be advised to dismount and cross as a pedestrian. Occasionally there may be some Level 3.5 crossings, where the level of risk is so high that their use is not considered advisable.

In each case the type of characteristics expected for each level is described. A classification will usually be made when a combination of these characteristics are observed. However, it is possible that a single factor (e.g. traffic speed) may lift a section of road into a higher level.

Carrying Out the Audit

Initial scoping

An initial scoping of the area can be carried out establishing the roads most likely to be classified higher than Level 2 and devising a plan of campaign for the practical audit. A quick cycle round the area on the roads identified as probably higher than Level 2 will then help familiarise the auditors with the area, although the audit may begin without such a ride having been undertaken.

Roads classified higher than Level 2

These are generally major routes through an area and mixed residential/local distributors. Some apparently minor residential roads may be used as rat runs which may raise the level of classification. For all these roads the auditors need to make measurements of road widths. Measurements should be made at regular intervals:

- where road width may be the factor that would give a higher classification
- where there is an obvious change in road width
- where regular parking on one or both sides of the road change the effective road width for through traffic (measure of both total road width and available carriageway width should be made at these points)
- where there are pedestrian islands the width of each carriageway lane and of the island should be recorded
- at any other points where the auditors feel width may be a factor

The pedestrian crossings on these roads should all be classified and recorded.

Roads classified Level 2 or less

Estate roads and terrace streets will usually have very similar characteristics. It should not be necessary to ride along every one of these roads. After consulting the map it will often be possible to cycle along each residential distributor and view down the lesser residential streets from their ends to confirm their status.

In some residential streets the width of available carriageway (may be that within lines of parked cars on either side of the street) can be a factor in classification at Level 2. However, in this case the level of traffic should allow any measurement to be carried out by a single auditor. Observation may also preclude measurement as it may be obvious that the road width is too narrow for two vehicles to pass.

Any identified crossings on Level 2 roads should be recorded although they will never be classified at higher than Level 2.