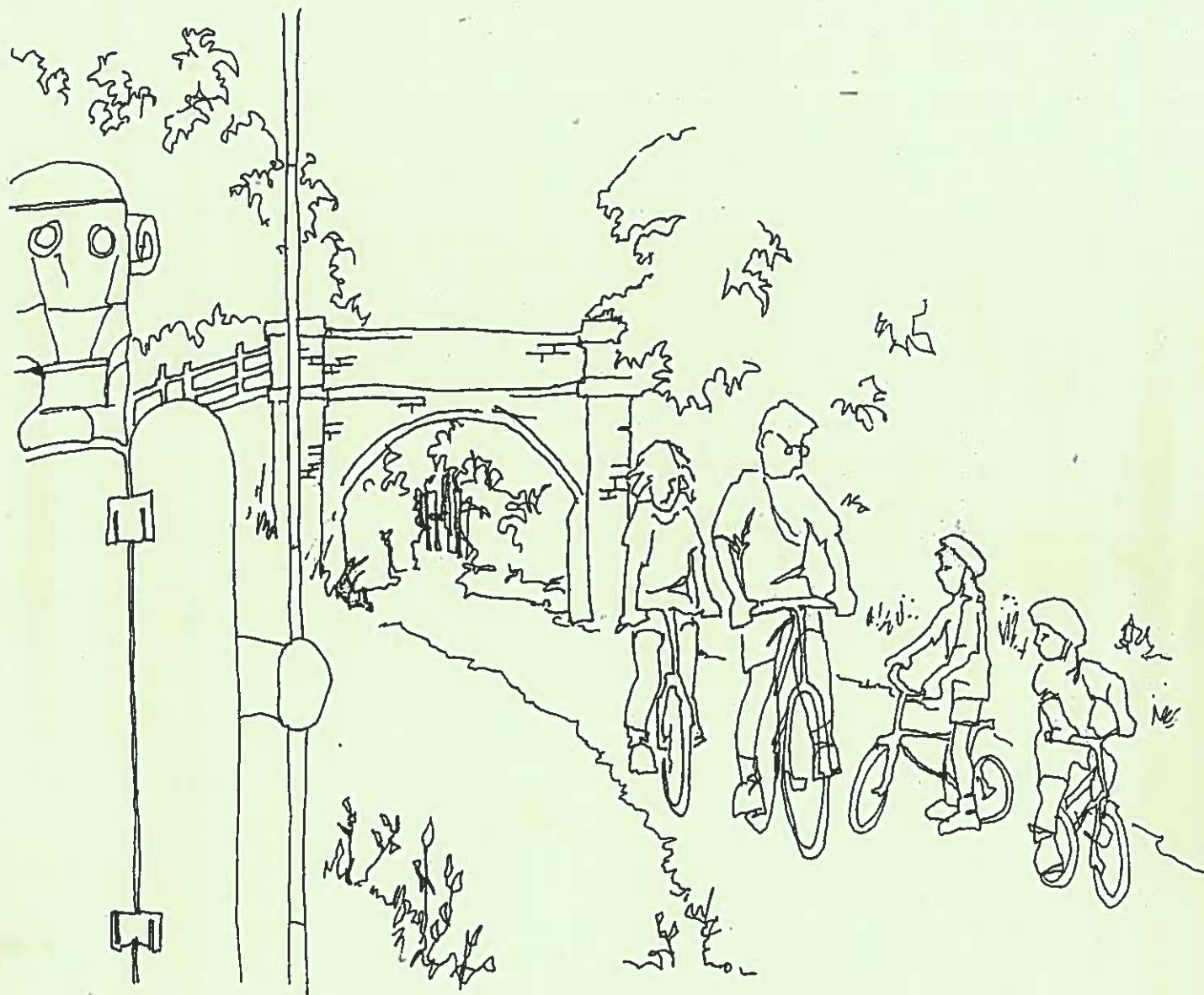


Centurion Way, Chichester

Proposed extension to West Dean and the South Downs

Regional Route 88



Route Construction Study prepared by

sustrans

for



**Chichester
District
Council**



October 2000

1. The first part of the paper is devoted to a general discussion of the problem of the existence of a solution of the system of equations

$$\frac{dx}{dt} = f(x, y, z), \quad \frac{dy}{dt} = g(x, y, z), \quad \frac{dz}{dt} = h(x, y, z),$$

where f, g, h are continuous functions of x, y, z and satisfy the conditions

$$f(0, 0, 0) = 0, \quad g(0, 0, 0) = 0, \quad h(0, 0, 0) = 0,$$

and the functions f, g, h are bounded in a neighborhood of the origin.

2. In the second part of the paper we consider the case when the functions f, g, h are linear functions of x, y, z .

3. In the third part of the paper we consider the case when the functions f, g, h are quadratic functions of x, y, z .

4. In the fourth part of the paper we consider the case when the functions f, g, h are cubic functions of x, y, z .

5. In the fifth part of the paper we consider the case when the functions f, g, h are quartic functions of x, y, z .

6. In the sixth part of the paper we consider the case when the functions f, g, h are quintic functions of x, y, z .

7. In the seventh part of the paper we consider the case when the functions f, g, h are sextic functions of x, y, z .

8. In the eighth part of the paper we consider the case when the functions f, g, h are septic functions of x, y, z .

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11. In the eleventh part of the paper we consider the case when the functions f, g, h are decic functions of x, y, z .

12. In the twelfth part of the paper we consider the case when the functions f, g, h are undecimic functions of x, y, z .

13. In the thirteenth part of the paper we consider the case when the functions f, g, h are duodecimic functions of x, y, z .

14. In the fourteenth part of the paper we consider the case when the functions f, g, h are tredecimic functions of x, y, z .

15. In the fifteenth part of the paper we consider the case when the functions f, g, h are quattuordecimic functions of x, y, z .

16. In the sixteenth part of the paper we consider the case when the functions f, g, h are quindecimic functions of x, y, z .

17. In the seventeenth part of the paper we consider the case when the functions f, g, h are sexdecimic functions of x, y, z .

18. In the eighteenth part of the paper we consider the case when the functions f, g, h are septemdecimic functions of x, y, z .

19. In the nineteenth part of the paper we consider the case when the functions f, g, h are octodecimic functions of x, y, z .

Centurion Way Chichester

Proposed extension
to West Dean
and the
South Downs

Regional route 88



A MILLENNIUM PROJECT
SUPPORTED BY FUNDS
FROM THE NATIONAL LOTTERY

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sustrans
ROUTES FOR PEOPLE

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Sustrans Report No. 680 Author: Brian Griggs
1st Draft October 2000

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West Sussex County Council LA076902

Introduction

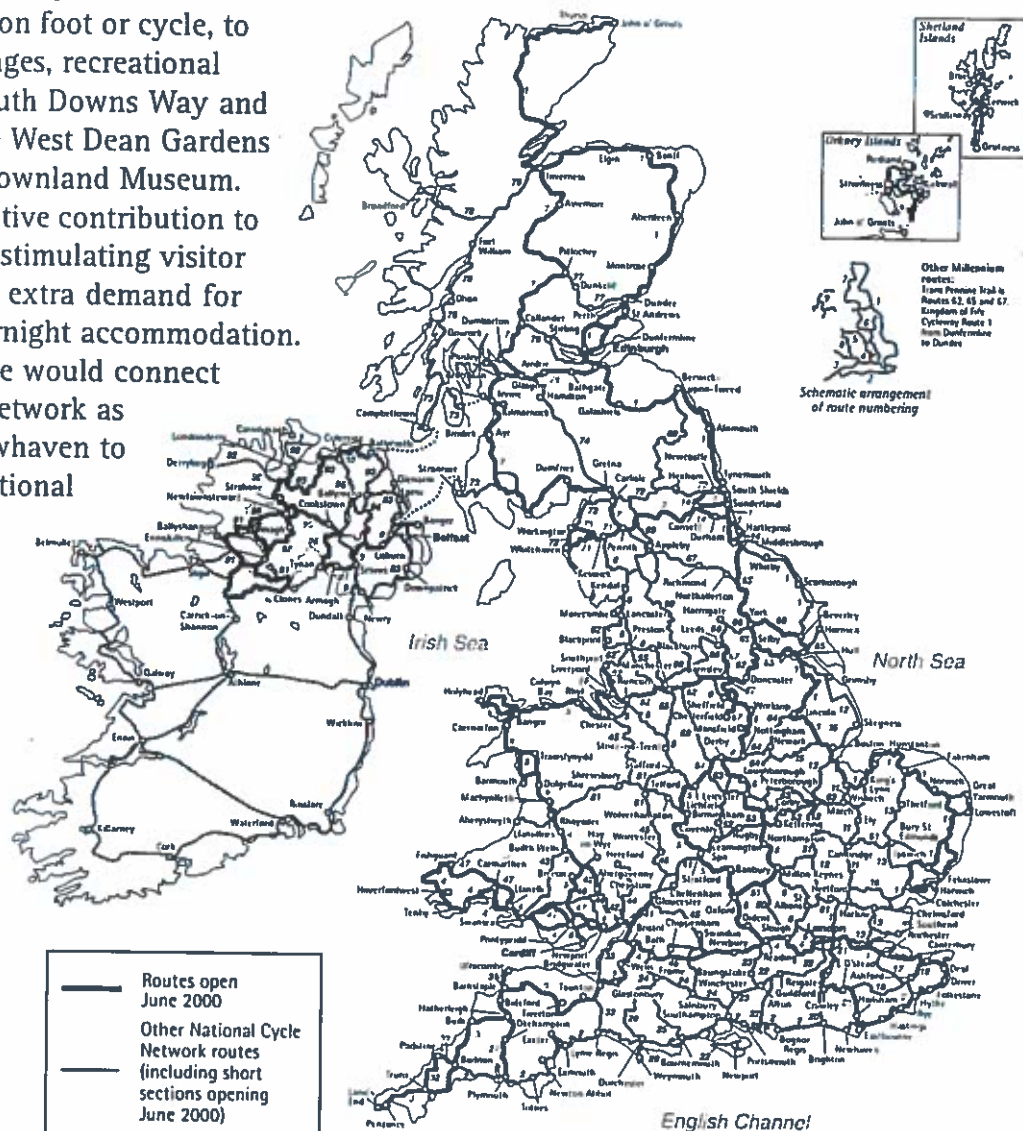
This study details a suggested route for an extension of Centurion Way from its present end, at Mid Lavant, northwards to provide sustainable utility, recreational, and leisure and tourism links from Chichester and the coast into the South Downs.

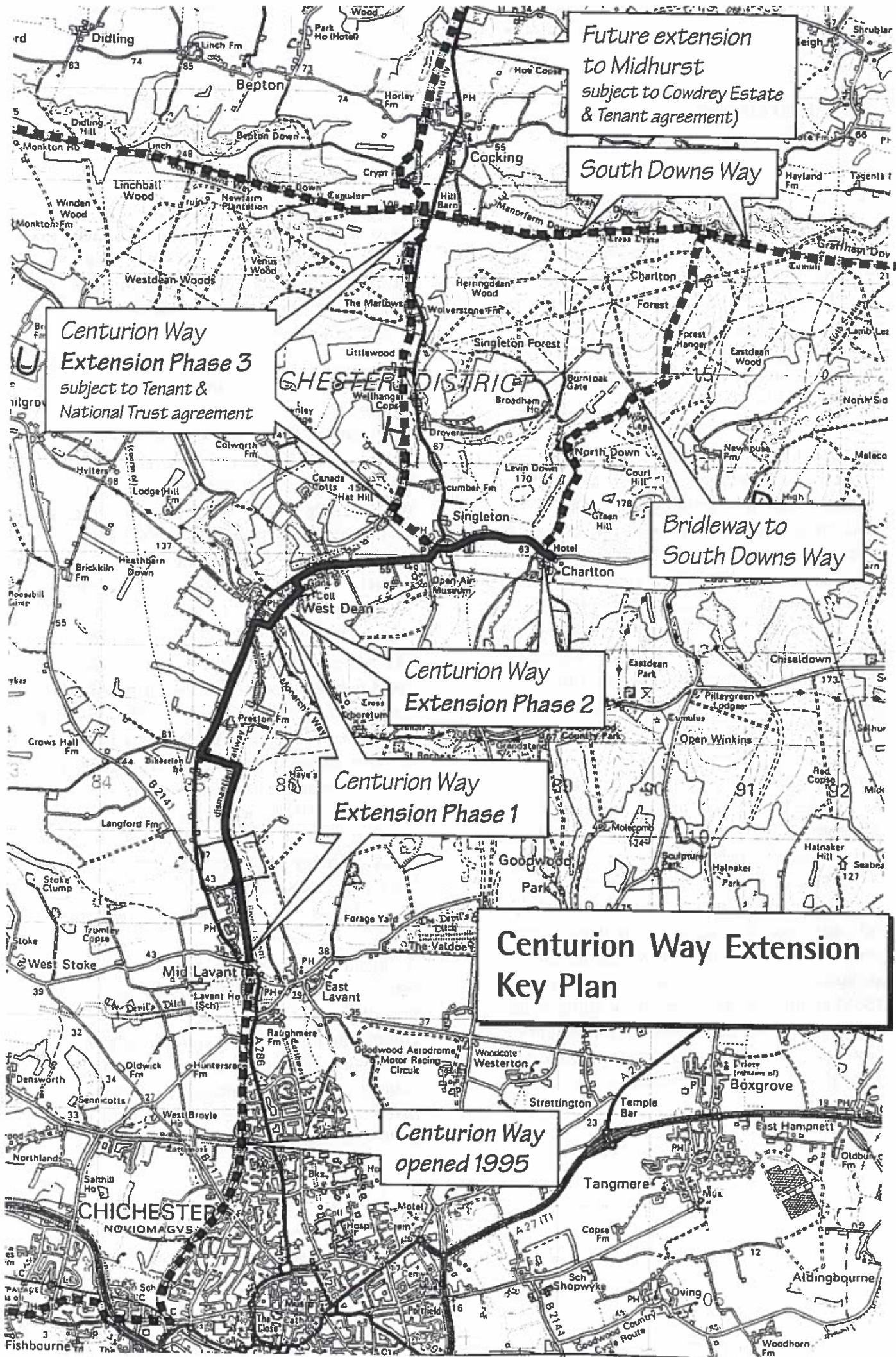
The route would form a logical extension to the existing 'traffic free' path and could eventually form a multi-use Greenway from Chichester to Midhurst utilising sections of disused railway line, existing 'rights of way' and new lengths of path.

It would give safe and easy access for local residents and visitors on foot or cycle, to quiet roads, rural villages, recreational routes such as the South Downs Way and tourist attractions like West Dean Gardens and The Weald and Downland Museum. It could provide a positive contribution to the rural economy by stimulating visitor numbers and creating extra demand for refreshments and overnight accommodation. At Chichester the route would connect to the National Rail Network as well as route 202 (Newhaven to Portsmouth) of the National Cycle Network. The route between Chichester and Midhurst has been designated Regional Route 88.

Sustrans, with the help of funding from the Millennium Commission, recently celebrated the opening of the first 5000 miles of the network, and plan to complete a further 5000 miles - including the South Coast route, by 2005.

This study is the result of a joint initiative by West Sussex County Council, Chichester District Council and Sussex Downs Conservation Board.





Background

In 1994 Sustrans prepared a report on behalf of West Sussex County Council on the possible conversion of the disused railway line between Fishbourne Junction, Chichester and Mid Lavant, to a 'traffic free' Cycle/Pedestrian Path. The County Council adopted the proposal and with the help of funding from English Partnerships work started the following year.

The path, named Centurion Way, was opened in September 1995 and has proved very popular with both cyclists and pedestrians alike. Forming as it does a green corridor on the west of Chichester with access from a large urban area, the path is widely used for both utility purposes - school, shopping etc as well as leisure - particularly at weekends, by dog walkers, families with young children and the disabled. Current use is estimated at over 200,000 trips per year.

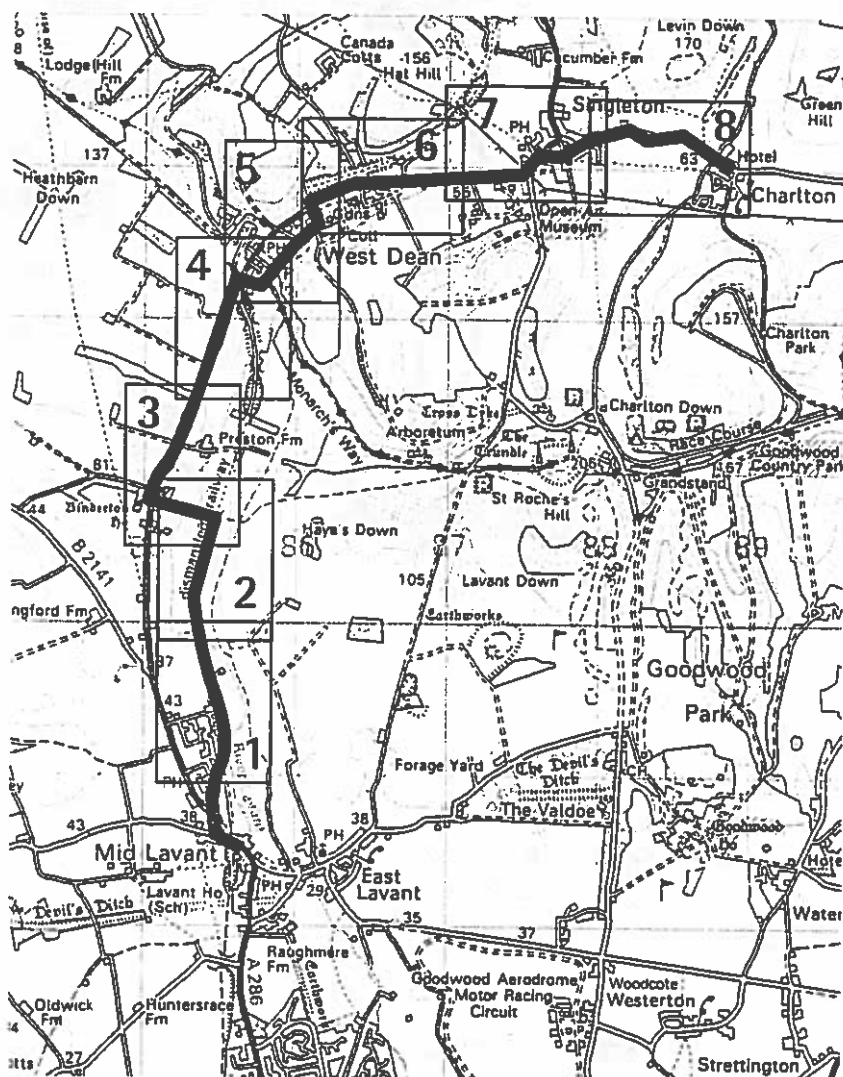
Any extension would logically continue along the line of the former Chichester to Midhurst railway line. However this will need to be modified to take account of the extensive changes in farming use and ownership since the line was closed nearly 50 years ago. In addition there are several long tunnels on the route which are now designated Sites of Special Scientific Interest (SSSI's), and are not considered suitable for public use. The more recent development of tourist attractions in the area also have a considerable influence on any route proposed.

The path alignment and construction as well as its landscaping and signing, will need to be sympathetic to the rural environment and be appropriate for a route which passes through the Sussex Downs Area of Outstanding Natural Beauty (AONB).

In August 2000 Sustrans were asked to prepare a route construction study for an extension of Centurion Way to give direct access to the Downland area. The joint initiative by all 3 authorities in the area, reflecting the need for the study to embrace all aspects of transportation, leisure and tourism, as well as planning and conservation, when making any detailed proposals.

The route forms part of the county-wide cycle network set out in "Pedalling Ahead", the revised cycling strategy for West Sussex (published in July 2000). The network includes both the existing Centurion Way and the proposed extension set out in this report, as well as the National Cycle Network and other Regional Routes in the county. The cycling strategy formed part of the Local Transport Plan for 2001-2006, submitted to the Government in July 2000.

A "Rural Transport Plan for West Sussex" was also published in July 2000, again as part of the LTP process. This includes a commitment to develop Quiet Roads and Greenways through the rural parts of the county. A number of possible projects are listed for future consideration, one of which is the extension of the Centurion Way.

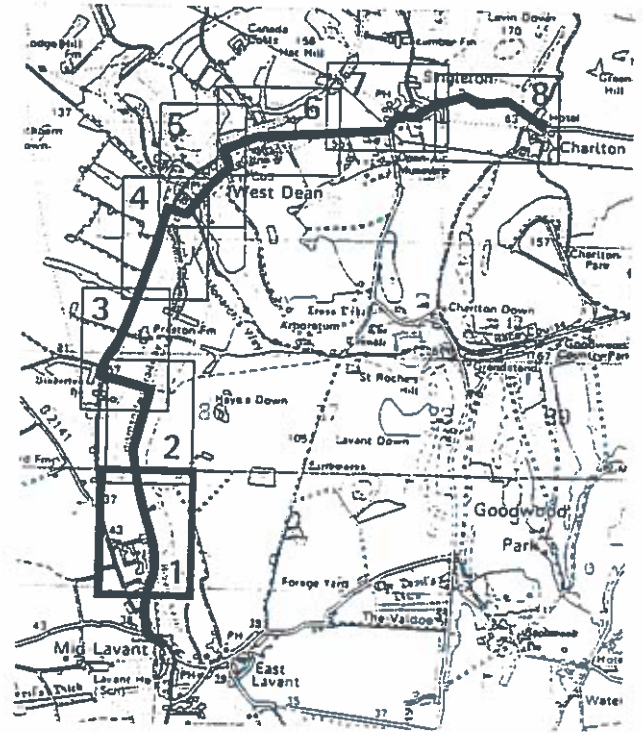


The Proposals

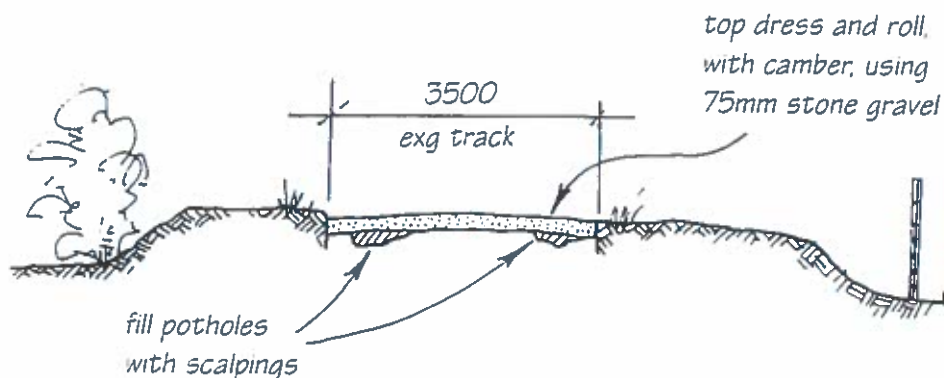
The proposed route from Lavant to Charlton Village is shown on the following pages and described by accompanying notes and sketches. The objective is to create a continuous attractive route which will be suitable for families and novices of all ages.

map 1

- 1 Additional signing and lining required through Lavant Down Estate from the present end of Centurion Way at Mid Lavant.
- 2 Existing gravel track along line of former railway maintained to this point by Portsmouth Water Company for vehicular access to Pumping Station.
- 3 Flood relief culverts (4 no.) under farm access track, possible need to upgrade timber parapets. Install removable bollards at south end to prevent vehicular access.

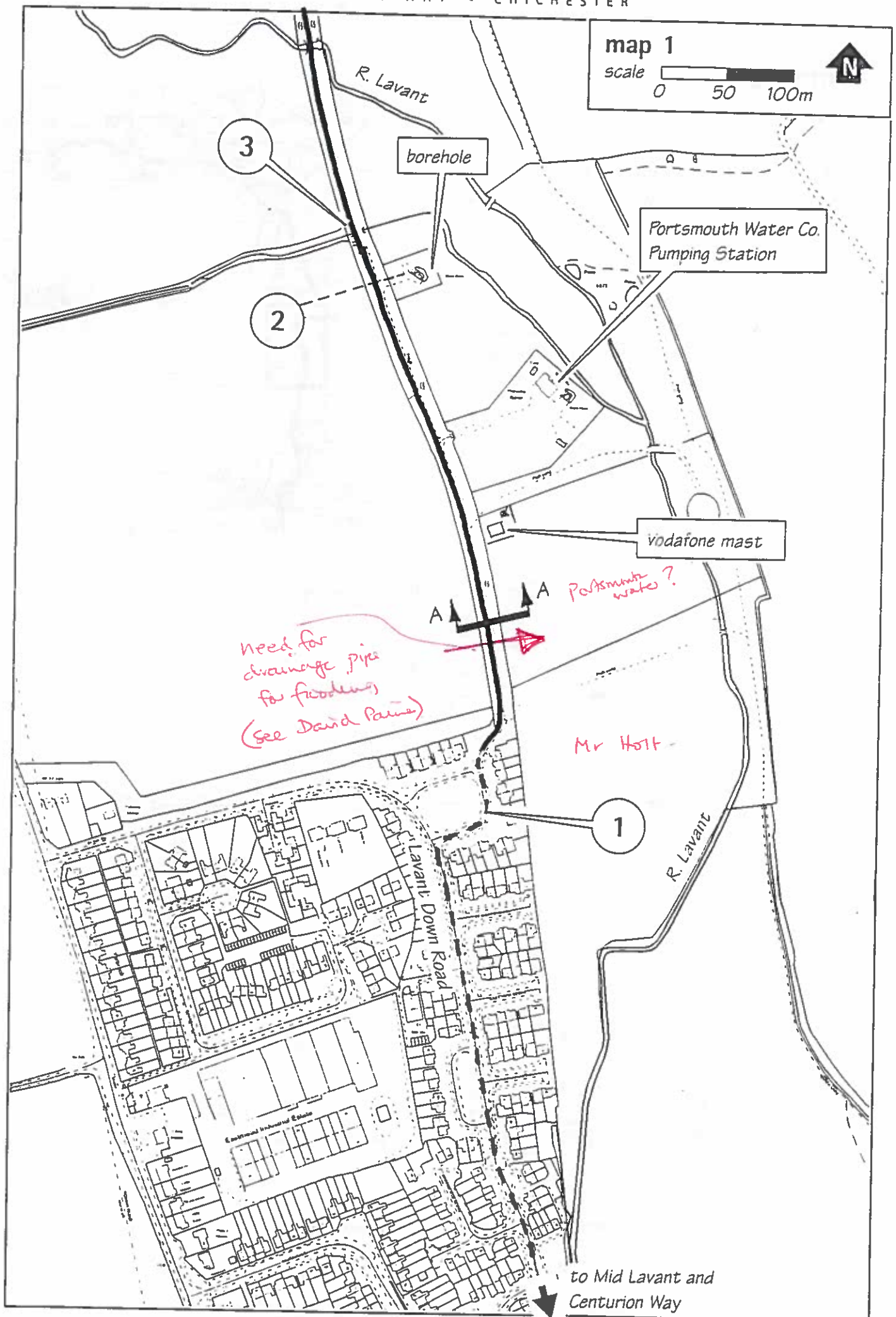


*Section A looking north
(existing vehicular access for
Portsmouth Water Co and Vodafone)*



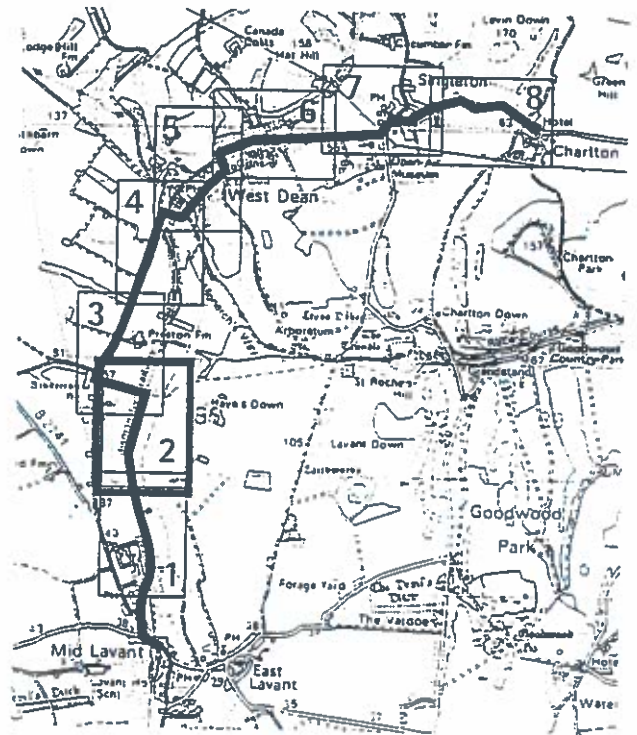
map 1

scale 0 50 100m

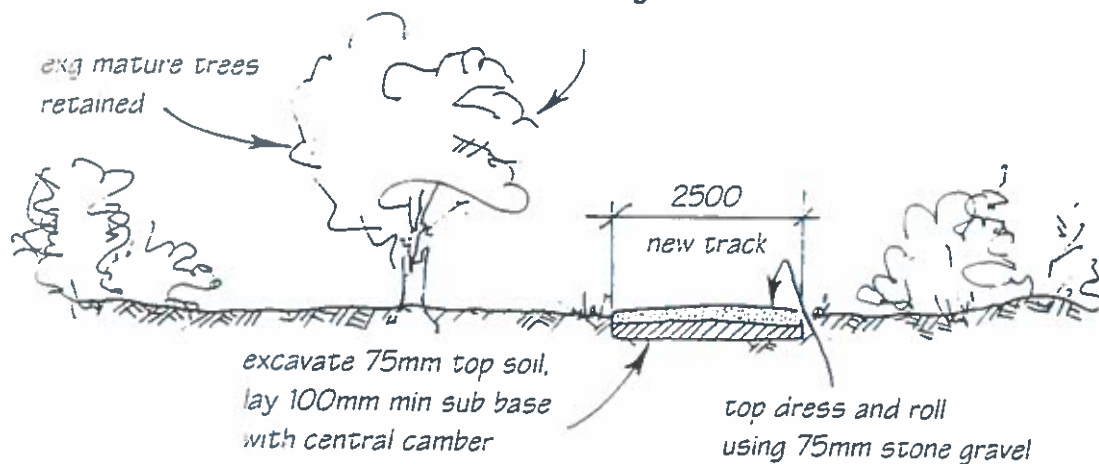


map 2

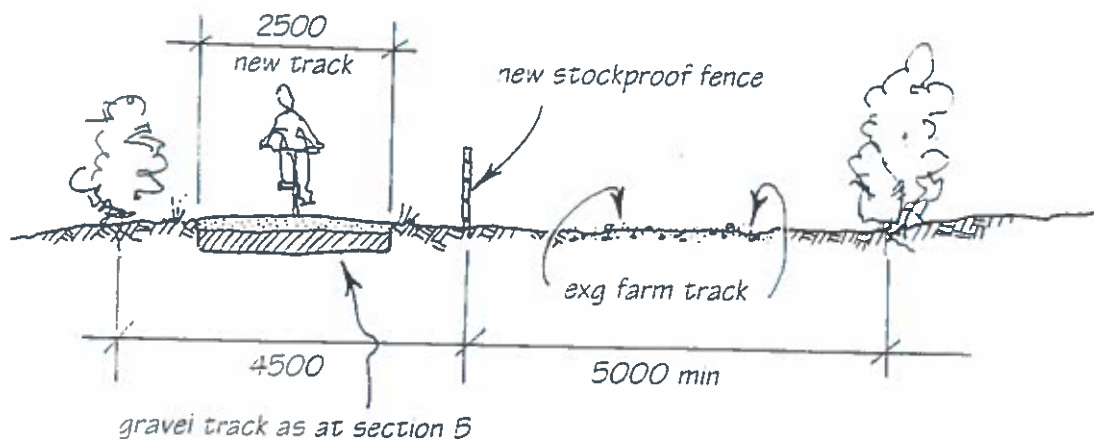
- 4 Existing former railway bridge over River Lavant, now used for farm access, site path centrally. Some minor repairs required to engineering brick parapets.
- 5 Gravel topped path 2.5m wide, along former railway line - path to meander as agreed on site to keep the clearance of trees and bushes to a minimum.



Section B looking north



Section C looking north



map 2

scale 0 50 100m



to A286 Midhurst Road

R. Lavant

former accommodation bridge over railway - now bridleway 455

boundary of West Dean Estate - possible site for milestone



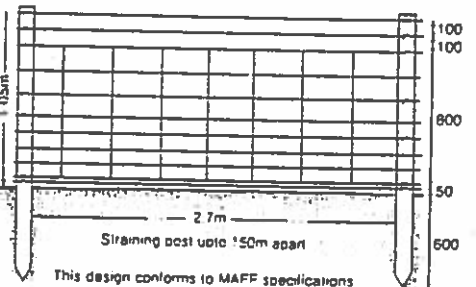
typical stockproof fence

for cattle, horses and sheep: for lambs use C8/80/15 netting

Slakes (round)
1 7m x 63mm diaStraining posts (round)
2 1m x 125mm diaStruts (round)
2 1m x 100mm diaStock netting
88/80/30

Wire 4mm mild steel

Staples 40mm

This design conforms to MAFF specifications
Standard Costs Part 1

5

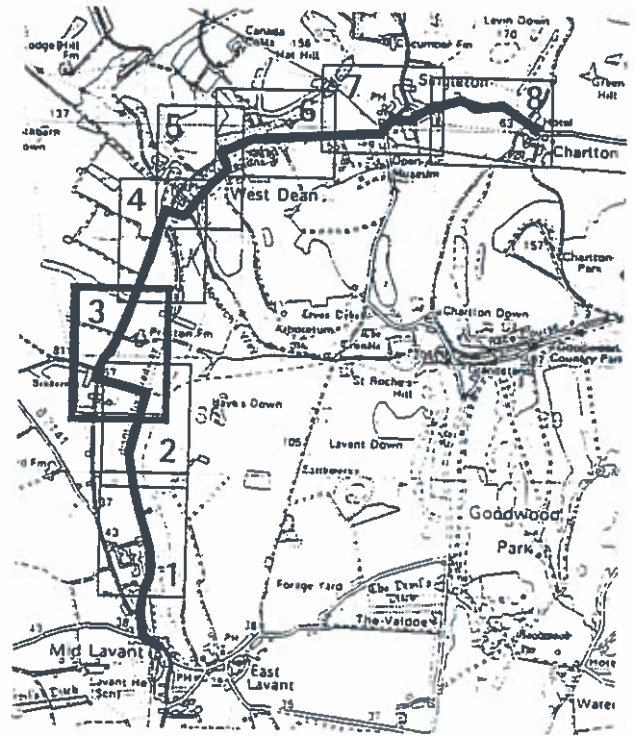


4

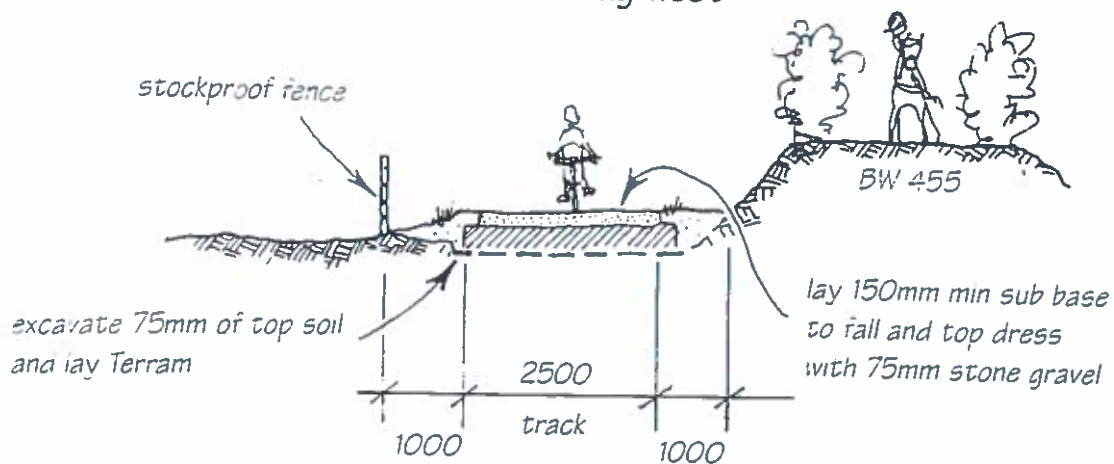
R. Lavant

map 3

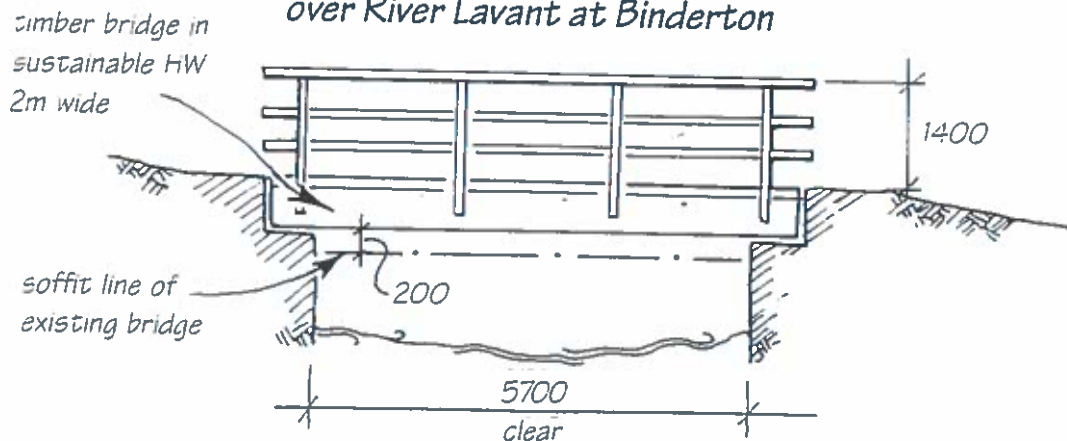
- 6 Upgrade existing 1m nominal wide footway to 2m minimum width for shared use - cut back hedge line and raise level of areas subject to ponding. Install porous pipe cross drainage at these locations.
- 7 Site of recent road improvement - re-align footway behind mature tree remaining. Consideration to some re-planting in this area?
- 8 Quiet lane and bridleway to West Dean Woods and Chilgrove.



Section D looking west



elevation of replacement bridge over River Lavant at Binderton

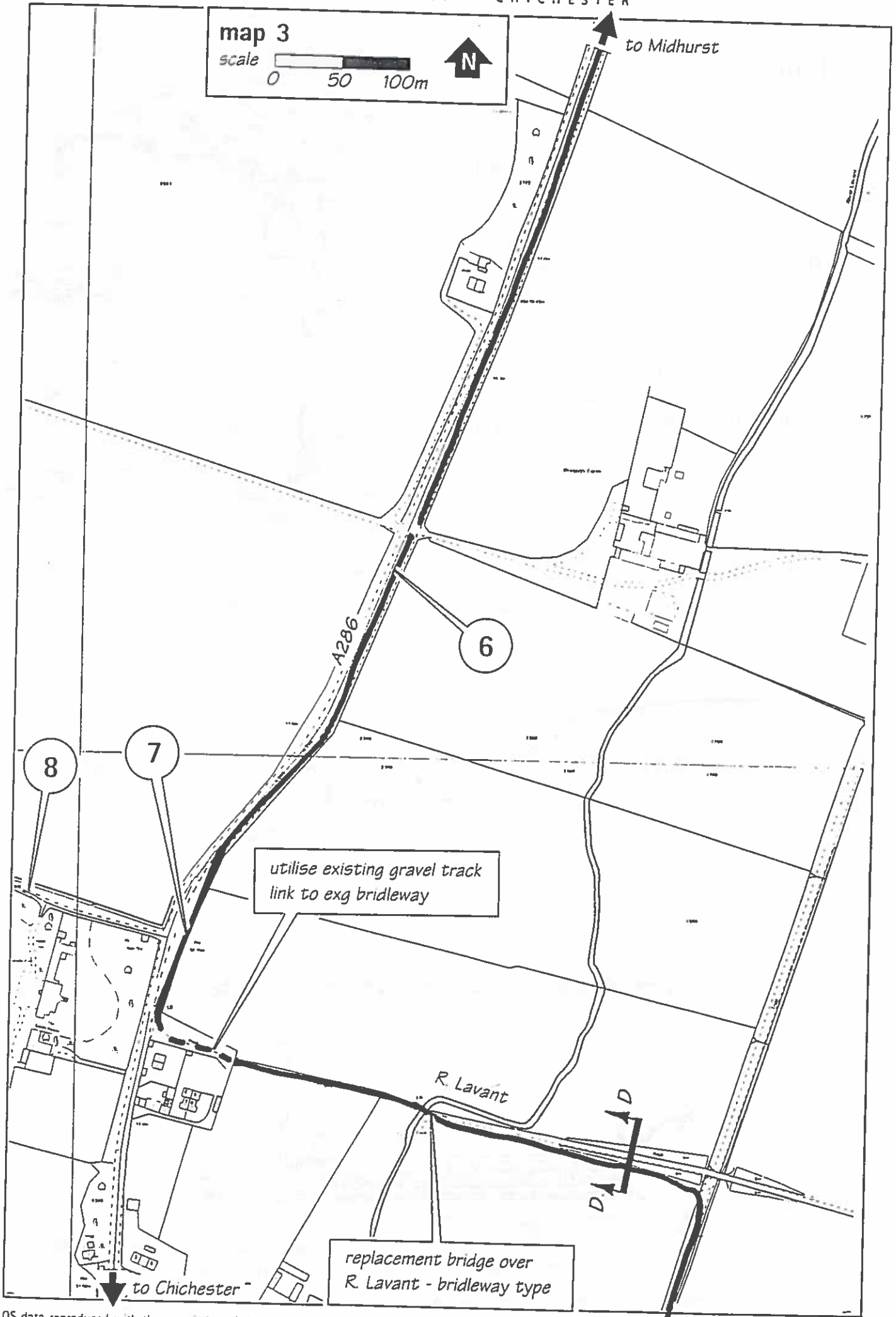


map 3

scale 0 50 100m

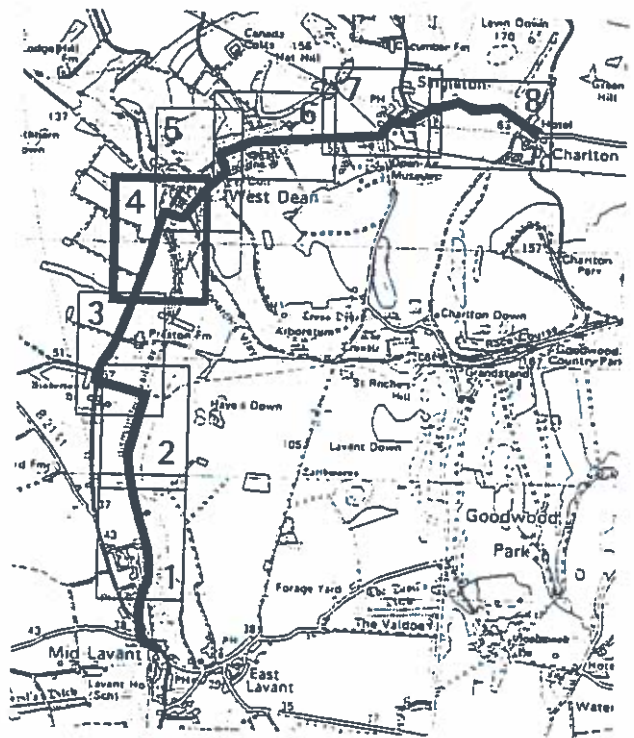


to Midhurst

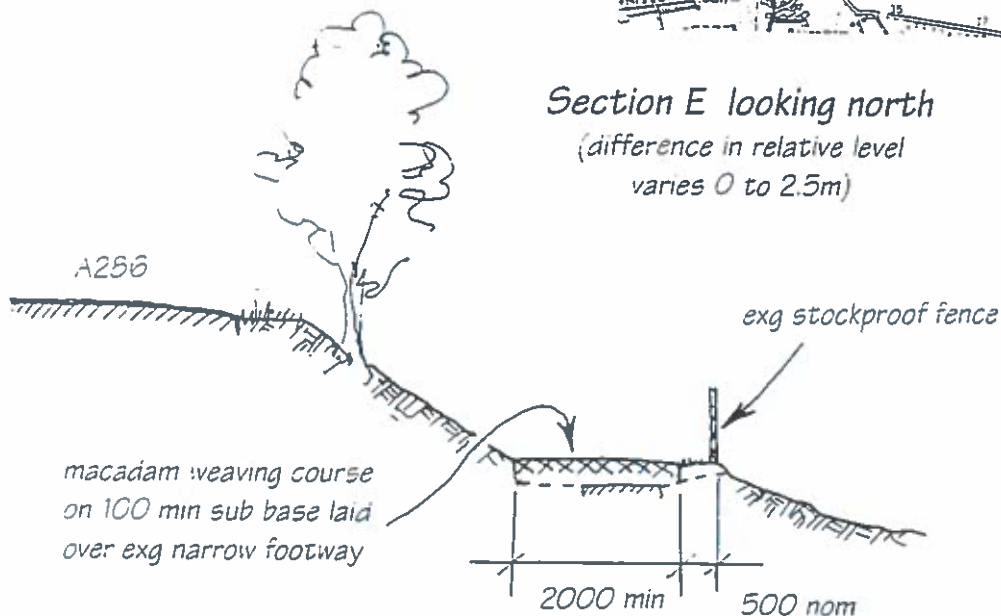


map 4

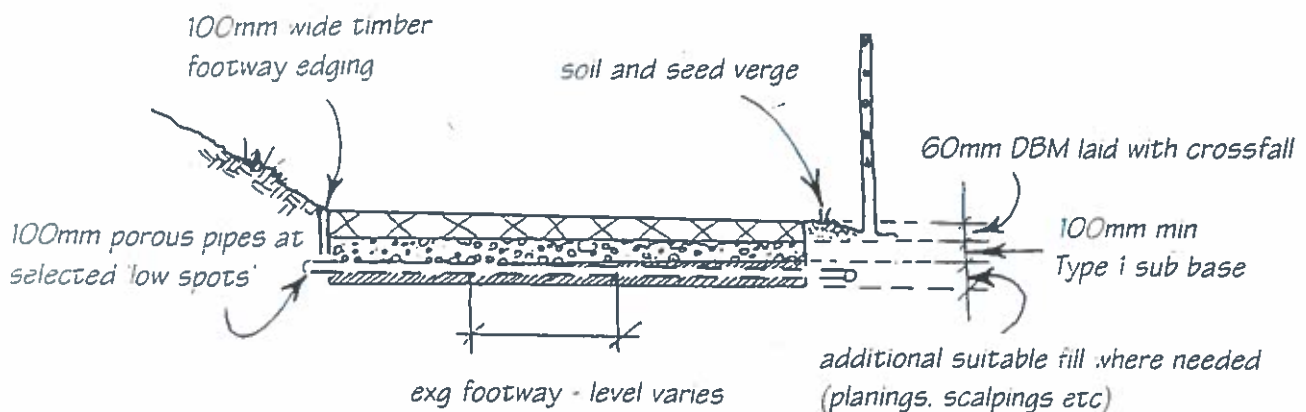
- 9 Continue upgraded footway to a 2m min wide shared use path along east side of A286 Chichester/Midhurst road.
- 10 Path raised up to 450mm max, with land drainage under, for a length of some 50m in low area.
- 11 New length of shared use path required between old railway bridge and farm lane, on grassed area within the highway.



Section E looking north
(difference in relative level
varies 0 to 2.5m)



typical path construction adjacent to A286



map 4

scale 0 50 100m



existing road bridge over disused
railway line - short length of
restricted path width

West Dean Village

11

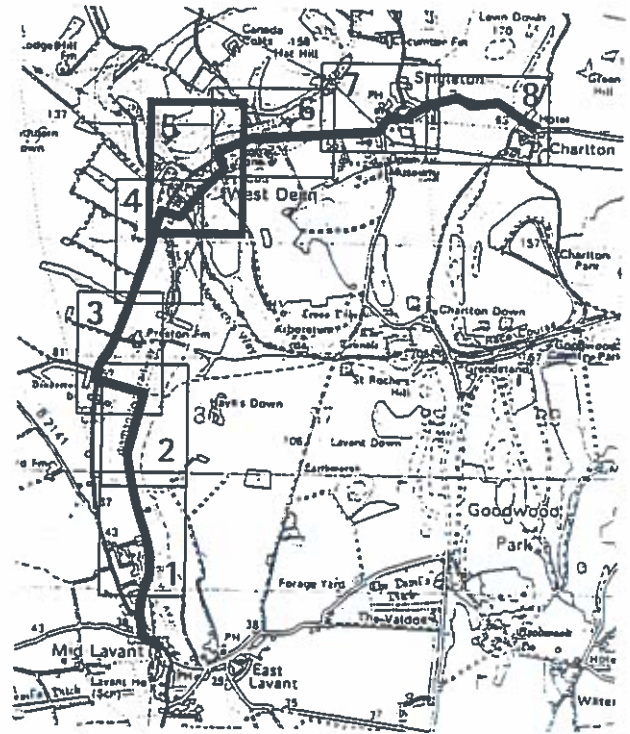
9

10

to Chichester

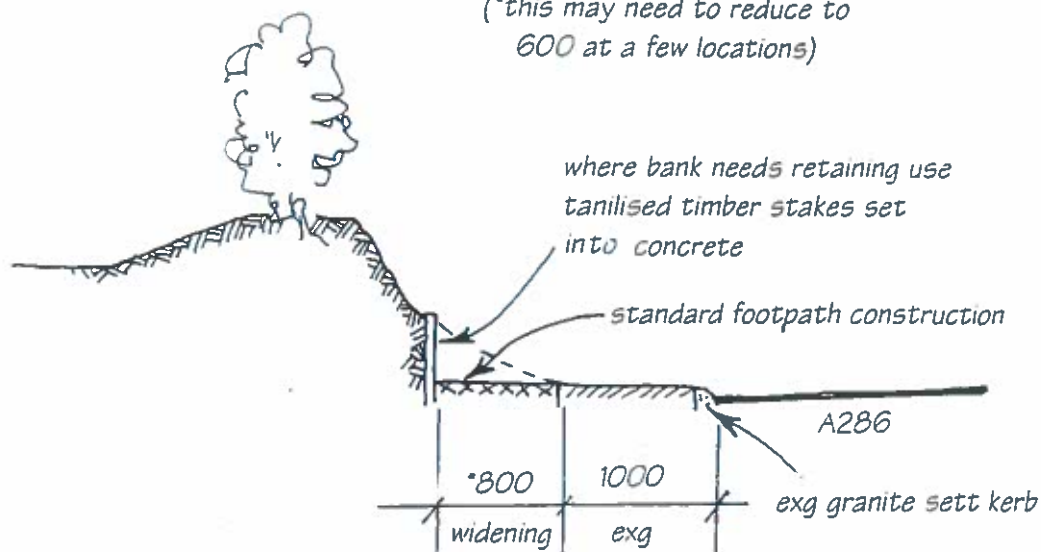
map 5

- 12 Church Lane following along bank of River Lavant and climbing up to existing 'T' junction on the A286 Midhurst Road.
- 13 Lane leading to Selsey Arms PH, post office and shop and to the village primary school. Quiet lane on far side of A286 leading to West Dean Woods and Chilgrove village - Inn with restaurant.
- 14 Junction improvement required - (village gate type with priority for oncoming vehicles?) - to provide a safe crossing for path users to north footway of A286.



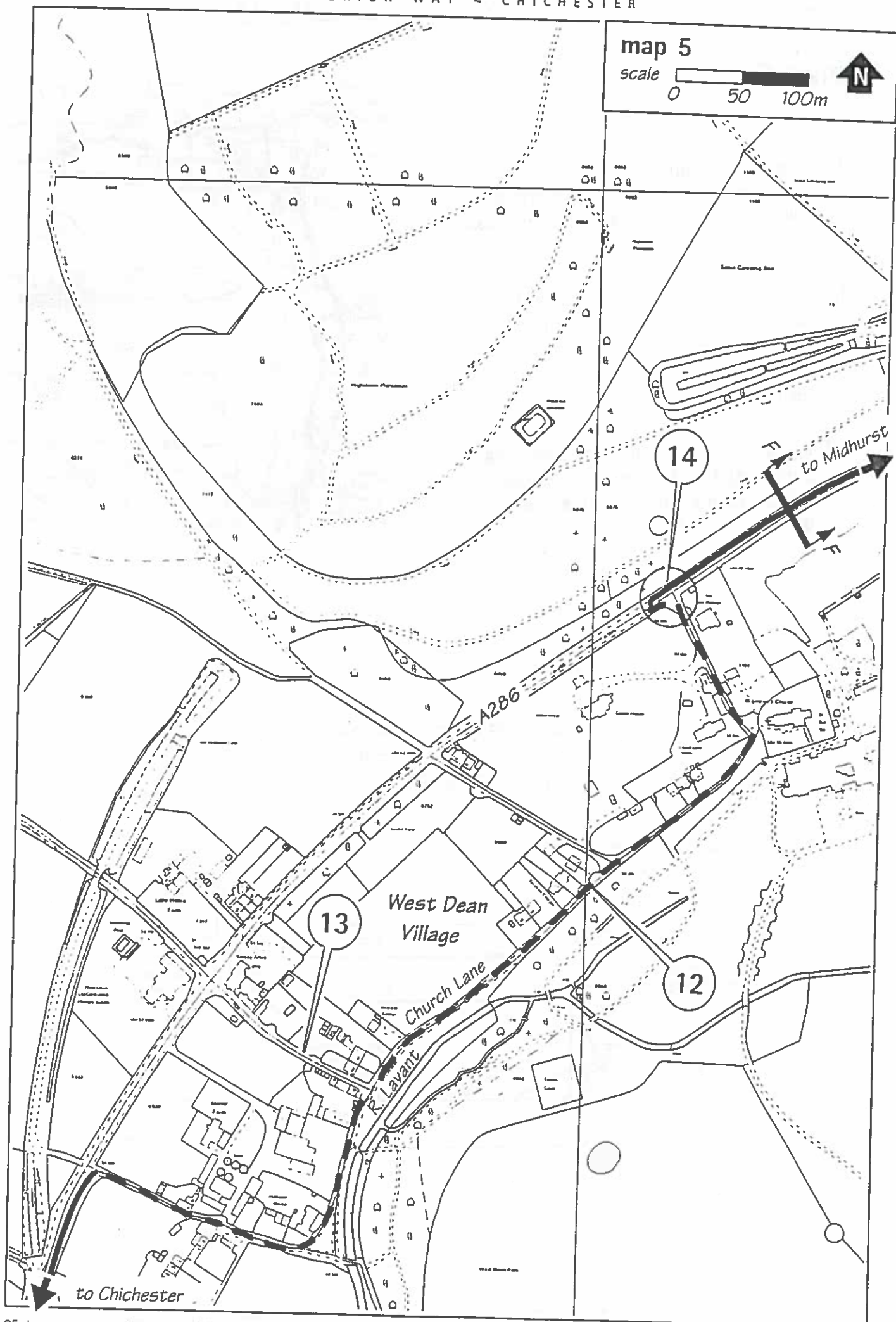
Section F looking east

(*this may need to reduce to 600 at a few locations)



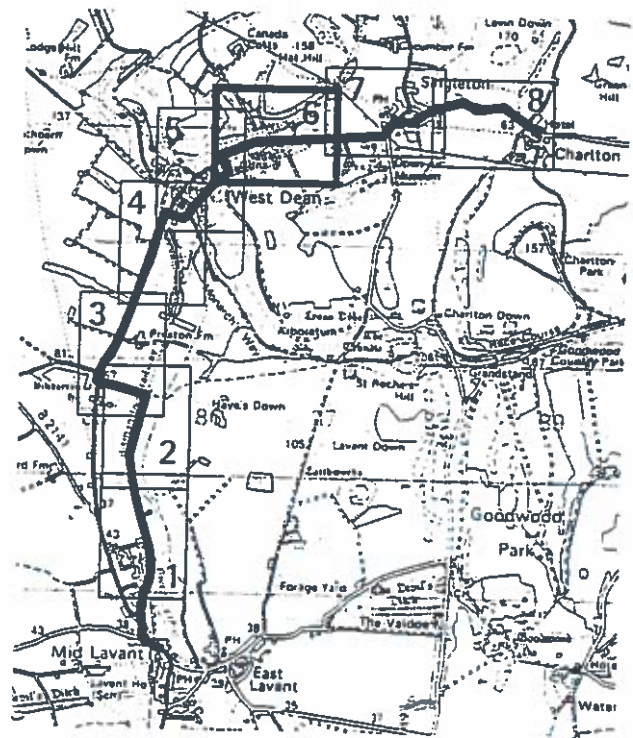
map 5

scale 0 50 100m

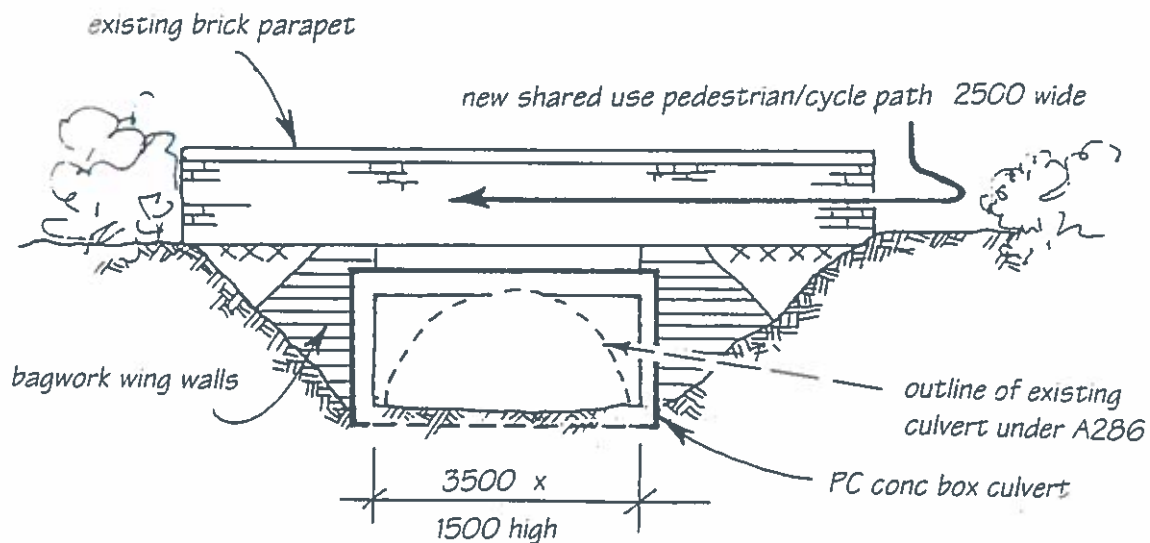


map 6

- 15 Continue widening of existing footway for 'shared use' to a minimum width of 1800mm, by cutting back grassed banks - see typical section at F.
- 16 Pave entrance to The Old Station to accommodate a 1500mm 'jug-handle' for path users wishing to visit West Dean Gardens - lunches and teas at visitor centre.
- 17 Deviate path at this point behind bridge parapet and cross river by an extension of the existing culvert running under the A286 (see sketch).

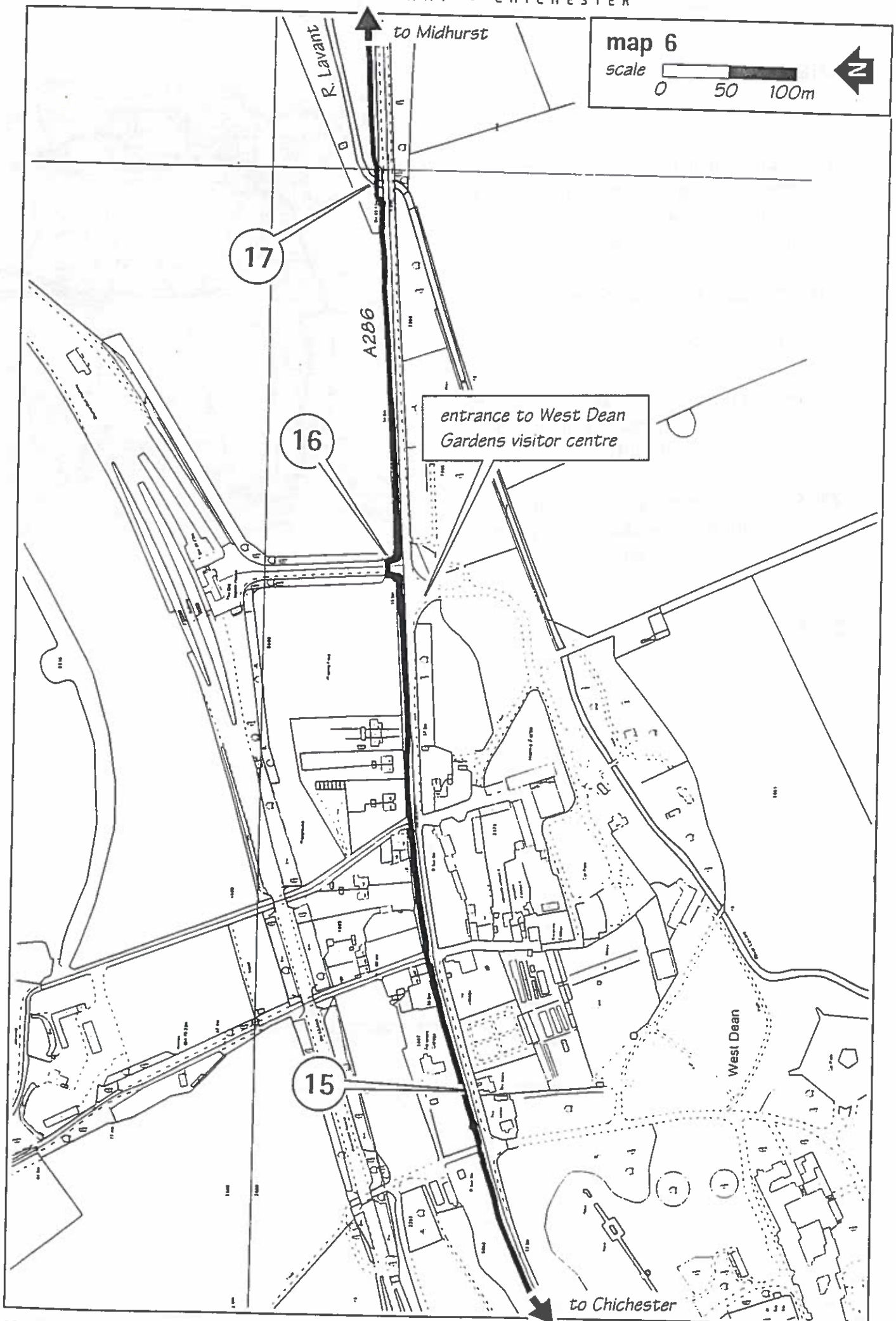


*elevation of extension to
existing culvert under A286
West Dean Gardens*



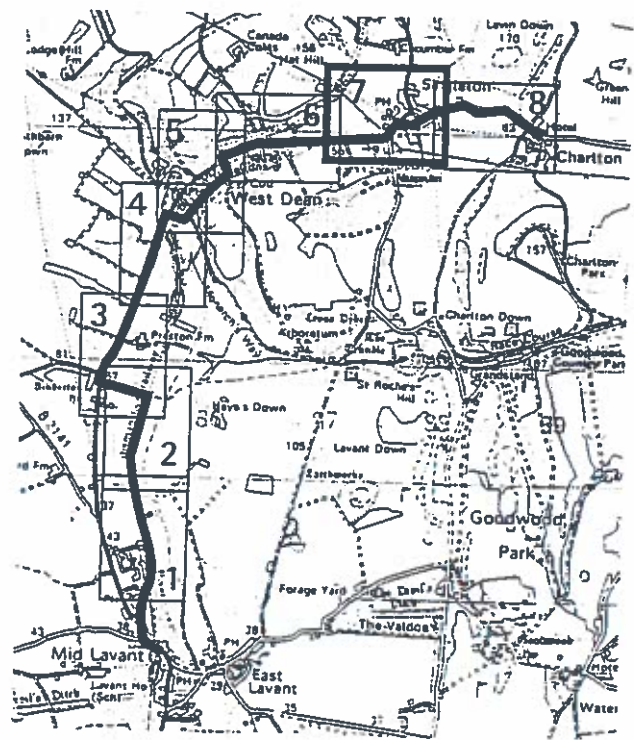
map 6

scale 0 50 100m

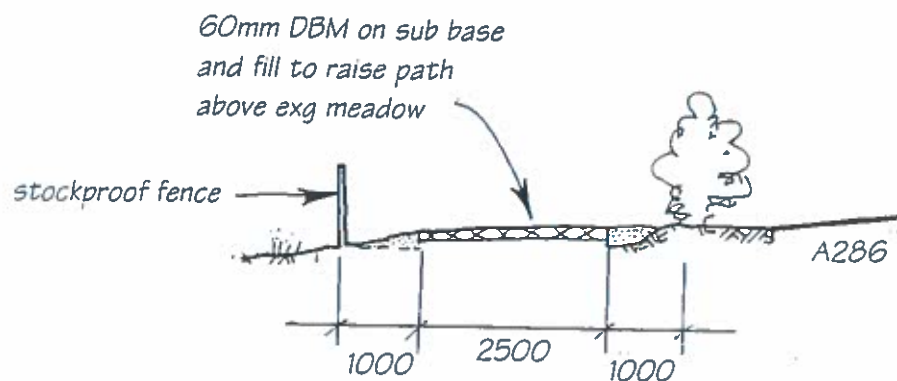


map 7

- 18 Shared use path to continue behind existing hedge/railings. Construct on a shallow causeway at east end approaching road crossing.
- 19 HW timber brideway bridge to give access to path leading to the Drovers Estate (National Trust property).
- 20 Dangerous road crossing with traffic in three directions - essential to provide a toucan crossing facility.
- 21 Set back garden wall to Old Cottage, widen footway for shared use, and erect pedestrian barrier adjacent to 'T' junction.
- 22 Route to follow existing village street pattern.



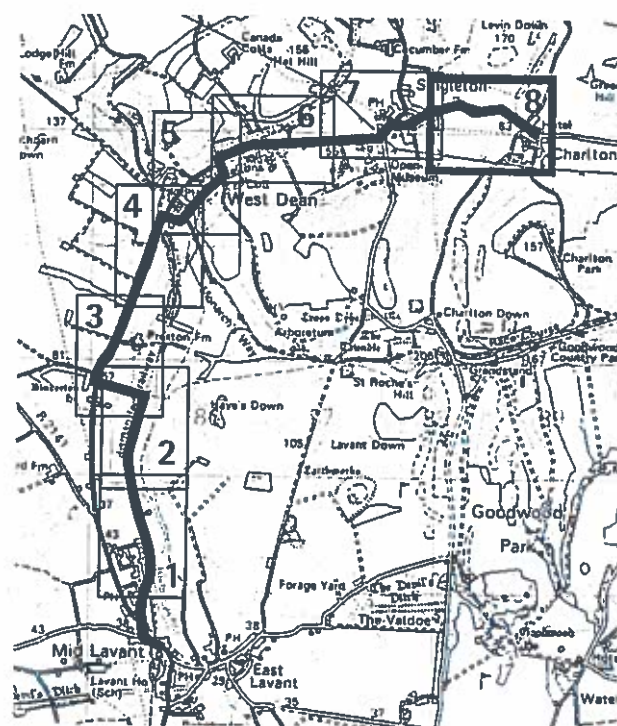
Section G looking east





map 8

- 23 Continue route along quiet country lane running east to East Dean and A285 Petworth Road at Cold Waltham.
- 24 Care required passing long parking bay - improve road markings.
- 25 Single track chalk lane connecting to South Downs Way (National Trail) - some potential for improving surface without impacting on local environment.



Potential rail/cycle rail options (routes generally via quiet lanes)

a. Petersfield to Chichester via London (Waterloo)

Leave Petersfield via 'greenway'* to east, leading to Nyewood. Follow lanes to Elstead and Cocking, then south over South Downs Way through the Drovers Estate to Singleton. Continue along Centurion Way to Chichester TC.

*E. Hants DC and Chichester DC hope to complete this route in the next 3 years.

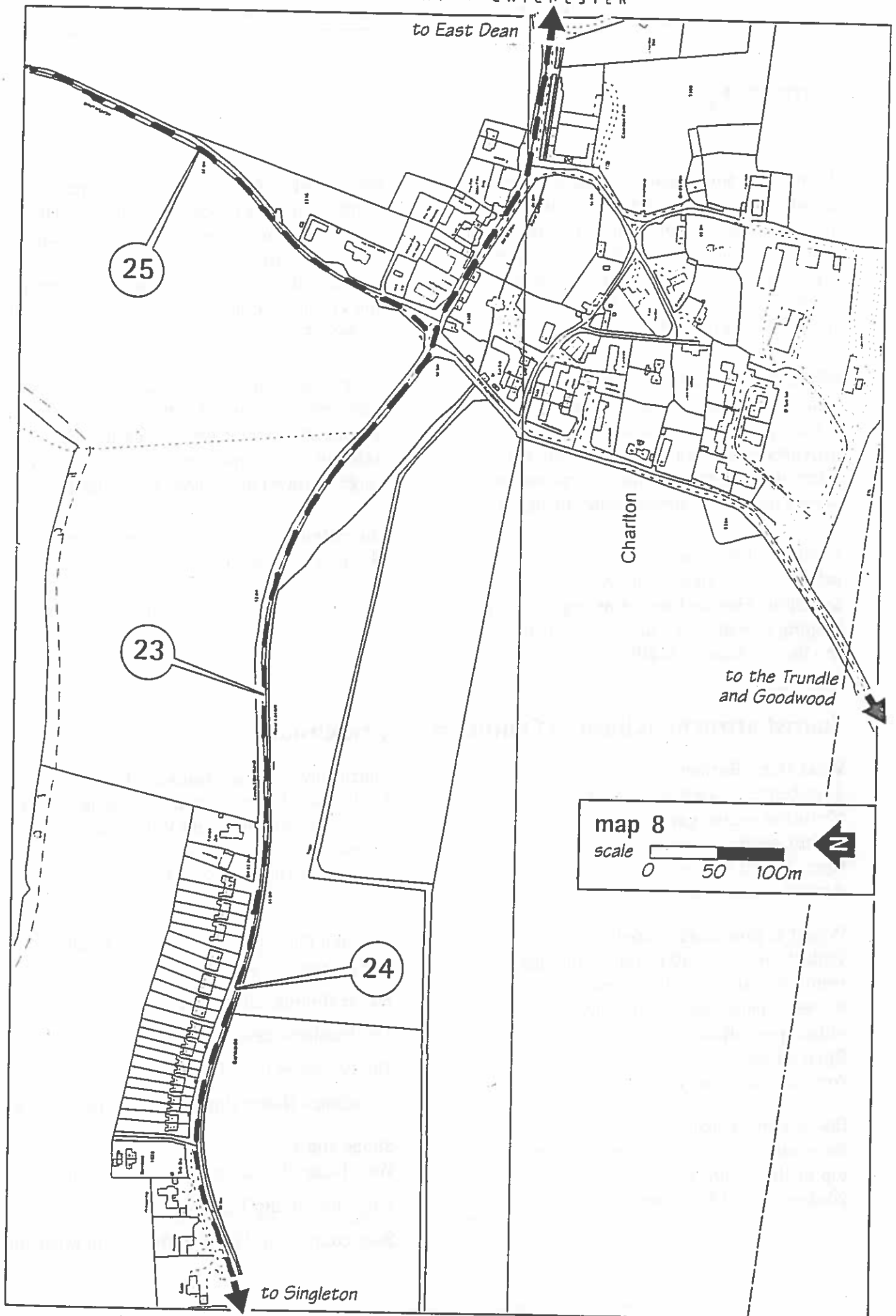
b. Amberley to Chichester via London (Victoria)

Leave Amberley via South Downs Way over River Arun and continue south and then west via Bury, Bignor, Sutton and then south via A285 over Duncton Hill to Cold Waltham. Turn west to East Dean and Charlton and then continue down Centurion Way to Chichester.

Bus services

a. Chichester/Midhurst via West Dean and Singleton - daily hourly service including Sundays.

b. Chichester to Pulborough via Singleton - twice weekly service.



map 8

scale 0 50 100m



Summary

There is no doubt that with the current level of use of the existing length of Centurion Way, and the growth of tourism and recreational activities in the South Downs area, that there is, considerable demand for continuation of a safe, and largely traffic free route northwards.

While it is not possible to use the disused Chichester/Midhurst railway line exclusively, it is considered that the route studied, provides a safe, practical and attractive alternative for pedestrians and cyclists to access the South Downs from Chichester.

Creation of the route would assist in achieving key aims of the West Sussex Transport Plan and would be important in helping to reduce the impact of traffic in the Sussex Downs AONB.

Because of its contribution to sustainable leisure and recreational activities as well as 'green tourism', an extension could qualify for funding from the Sports Council, Countryside Agency etc, as well as Central and Local Government by inclusion in Local Transport Plans.

It may take some years to achieve the complete route, and it is therefore broken into stages, each of which, link to existing rights of way or quiet roads to provide a range of travel and leisure opportunities.

The estimate of costs for the phases to Charlton is given on the next pages.

Tourist attractions local to Centurion Way extension

West Dean Gardens

17th century parkland and restored Victorian walled gardens.
Visitor centre, lunches and teas.
Open March to October.
Annual visitor no. 40,000.

Weald & Downland Museum

Collection of over 40 historic buildings restored to their original form.
Refreshments, visitor centre and village post office.
Open all year.
Annual visitor no. 140,000.

Goodwood Racecourse

Racecourse in a spectacular setting at the top of the South Downs.
20 days racing May-Sept.

South Downs Way – National Trail

Chalk track for walkers and off-road cyclists between Eastbourne and Winchester, accessible all year round.
No. of user trips p.a. 100,000

Inns and Pubs (all providing hot food)

Selsy Arms, West Dean

Fox & Hounds, Singleton

The Hurdlemakers, East Dean

The Fox Goes Free, Charlton

Woodstock House Hotel, Charlton (accomm.)

Shops and cafe

West Dean PO and stores - teas available

Singleton Studio Tea Room

Singleton PO (in Weald & Downland Museum)

Preliminary estimate of costs

PHASE 1 Lavant to West Dean Village 3.3km

£

1	Prelim (offices and mess)		1,000
2	Site clearance (10-50% shrubs)	5,000m ² at £0.8/m ²	4,000
3	Stockproof fence 670m and 2No 3.6m gates	670m at £6.50/m	5,500
4	Excavation of top soil and deposition in small areas	800m ² at £4/m ²	3,200
5	Imported suitable material in low areas	100m ³ at £10/m ³	1,000
6	Drainage and Terram		4,000
7	Filling potholes - Water Co Track		2,000
8	Supply and deposit Type 1 sub base in 100mm nom layers	450m ³ at £30/m ³	13,500
9	Top dress 'off road section' with 75mm nom stone gravel	4,500m ² at £3.50/m ²	15,750
10	New HW footbridge over R. Lavant incl. new mass conc foundation		8,000
11	Wooden footway edging along upgraded footpath (A286) incl. shallow excavation	3140m at £3.50m	10,990
12	60mm DBM footway surfacing, incl. weed killer treatment and stone finish	3140m ² at £7.50m ²	23,550
13	Signing and lining		3,000
14	Tree/hedging planting and seeding verges		5,000
15	Engineering and management		10,000
16	Contingencies		5,000

Total say 118,000

PHASE 2 West Dean Village to Charlton Village 3.7km - 2.1km on quiet lanes **£**

1 Prelim (offices and mess)		1,000
2 Site clearance (10-50% shrubs)	2,000m ² at £1/m ²	2,000
3 Stockproof fence	600m at £6.50/m	3,900
4 Repairs to visibility fence		1,000
5 Excavation of top soil and deposition in small areas	280m ² at £4/m ²	1,120
6 Imported suitable material (causeway area)	390m ³ at £10/m ³	3,900
7 Drainage and Terram		4,000
8 Supply and deposit Type 1 subbase in 100mm nom layers	380m ³ at £30/m ³	11,400
9 60mm DBM footway surfacing, incl. weed killer treatment and stone finish	2250m ² at £7.50m ²	16,875
10 Excavate existing bank adjacent to A286 footway by approx 800mm and retain with tanilised stakes set in concrete (height varies)	600m at £12/m	7,200
11 A286 West Dean, Church Lane junction modification		25,000
12 A286 Singleton crossing (toucan)		30,000
13 Extension to A286 R. Lavant culvert for new path		8,000
14 Provide HW footbridge access to Singleton Cricket Ground		10,000
15 Signing and lining		3,000
16 Tree/hedge planting and seeding verges		4,000
17 Accommodation Works in Singleton village and possible widening of path to Weald & Downland Museum		25,000
18 Engineering and management		10,000
19 Contingencies		6,000
Total say		175,000

Budget estimates for remaining phases**Charlton to South Downs Way 4.2km**

Minor improvements to surface of chalk track at £6,500/k **27,300**

Singleton to South Downs Way 4.0km (mainly National Trust)

50% derelict railway, remainder bridleway requiring upgrading
average rate say (£120k + £40k) ÷ 2 = £80,000/k

320,000**South Downs Way to Midhurst 4.8km (mainly on disused railway track)**

60% derelict railway, remainder bridleway requiring upgrading
average rate say £90,000/k

432,000

