



A23 HANDCROSS to WARNINGLID IMPROVEMENT

ENVIRONMENTAL STATEMENT

November 1994

Part 2

Carl Bro Group



Derek Lovejoy Partnership



**HA HIGHWAYS
AGENCY**

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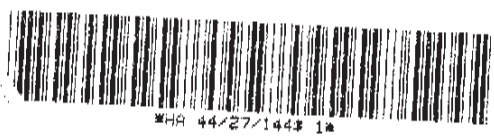
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ENVIRONMENT & LANDSCAPE
Environmental Statement

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**A23 HANDCROSS TO WARNINGLID
IMPROVEMENT – ENVIRONMENTAL
STATEMENT PART 2 11/94**



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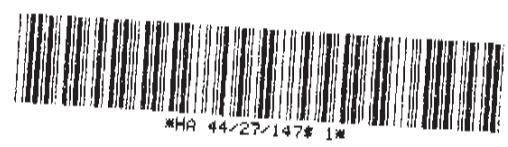
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ENVIRONMENT & LANDSCAPE
Environmental Statement

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**A23 HANDCROSS TO WARNINGLID
IMPROVEMENT – SIDE ROADS ORDER PLANS**



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**THE A23 TRUNK ROAD
(HANDCROSS TO WARINGLID IMPROVEMENT
SIDE ROADS)
ORDER 199**

Key:

ROUTE OF THE TRUNK ROAD (AS TO BE IMPROVED)

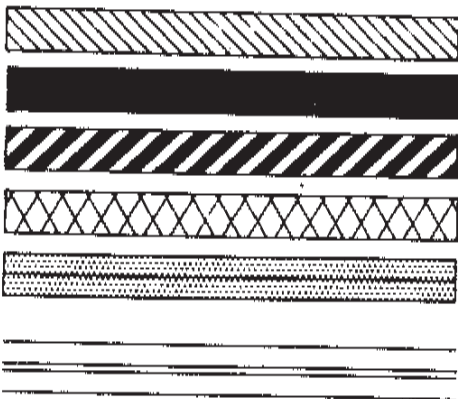
ROUTE OF NEW HIGHWAY

HIGHWAY TO BE IMPROVED

HIGHWAY TO BE STOPPED UP

PRIVATE MEANS OF ACCESS TO BE STOPPED UP

NEW MEANS OF ACCESS



KEY PLAN SCALE 1:10000
SITE PLAN SCALE 1:1250

ANY WIDTHS AND CONSTRUCTION DETAILS SHOWN ON THIS PLAN
ARE FOR ILLUSTRATIVE PURPOSES ONLY, ARE SUBJECT TO ALTERATION
AND DO NOT FORM PART OF THE ORDER.

SIGNED BY AUTHORITY
OF THE
SECRETARY OF STATE
ON
THE
199

PLANS REGISTRY

PSE/0/A23/3C/65/2/1

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1.0 INTRODUCTION.

1.1 INTRODUCTION

- 1.1.1 This volume of the Environmental Statement contains specialist sections which describe the environmental effect of the scheme. Each section identifies the relevant baseline conditions and assesses the scheme's impact on them, taking into account any proposed mitigation measures.

2.0 AIR QUALITY.

2.1 INTRODUCTION

2.1.1 Air Quality, in the context of this statement, is directly linked to the quantity and concentration of certain exhaust gasses which are present in the atmosphere near a road as a result of the combustion of petrol and diesel fuels in vehicle engines.

2.1.2 It has been recognised, for a number of years, that exhaust emissions from road vehicles make a significant contribution to air pollution in general. Since the early 1970's successive statutory limits on emissions of exhaust gasses from petrol engines have been introduced together with more realistic and effective testing. Testing of both heavy and light diesel engines, for emission levels of certain pollutants, has also been implemented to ensure compliance with legislation which limits their emission concentrations.

2.1.3 Carbon monoxide, hydrocarbons and the oxides of nitrogen are the three constituents of exhaust fumes which are assessed in this appraisal. These combine with pollutants from other sources to produce secondary pollutants which may spread over a larger area.

2.1.4 The assessment method, described in Volume 11, Section 3, Part 1 of the Design Manual for Roads and Bridges, has two parts. The first is the Localised Air Quality Assessment and involves estimating pollutant concentration levels at selected locations near a road. This is used to establish whether a scheme would need a more detailed air quality assessment. The second stage is the Overall Impact Assessment which is an assessment of a scheme's contribution to the overall change in air quality.

2.1.5 Lead emitted from petrol engines is recognised as a pollutant. With the limiting of lead additives and the requirement by law that all new car petrol engines must be capable of using unleaded petrol, the overall levels of lead emitted by vehicles are likely to reduce.

2.2 LOCALISED AIR QUALITY ASSESSMENT

2.2.1 The assessment method requires three different pollutant concentration levels to be estimated.

2.2.2 Carbon Monoxide (CO) is measured as the annual maximum 8 hour concentration in parts per million (ppm). This is the maximum average measured over an 8 hour period at the assessment point.

2.2.3 Hydrocarbons (HC) are measured as the average concentration in parts per million during the peak hour. Hydrocarbon concentrations cannot easily be assessed with respect to air quality standards and they are calculated for completeness only.

- 2.2.4 Nitrogen dioxide (NO₂) is measured as the 98th percentile 1 hour concentration in parts per billion (ppb). This is the concentration, measured over a 1 hour period, above which the level does not rise for 98 percent of the time.
- 2.2.5 The pollutant levels above which a more detailed analysis would be required, are 9ppm of carbon monoxide and 105ppb of nitrogen dioxide .
- 2.2.6 Figure 2.1 shows the assessment area, the limit of which is 200 metres either side of the scheme. The extent of this area is the distance at which pollutant levels, associated with vehicle exhausts, have been shown to drop to background levels.
- 2.2.7 Properties within the assessment area are mainly located in Handcross Village. However, there are properties at East Park, in the vicinity of the Garden Centre and near Warninglid Junction. The selected assessment locations are shown on Figure 2.1. Slaugham Village, Slaugham Place, Slaugham Manor, Stanbridge Farm, Stanbridge House and Staplefield Village are all outside the assessment area.
- 2.2.8 The traffic flows and vehicle speeds used for the assessment are shown on Figure 2.2. The use of high growth flows represents the "worst case situation".
- 2.2.9 In assessing the impact of the scheme a comparison has been made between the existing road in 1994 and 1997, and the scheme in 1997. The results of the assessment are shown in Table 2.1.
- 2.2.10 When comparing the existing road with the scheme in 1997, the levels of carbon monoxide and hydrocarbons remain the same or decrease, while the level of nitrogen dioxide remains the same or increases slightly. However, the levels for all three pollutants, for the scheme in 1997, are all lower than those for the existing road in 1994. None of the pollutant levels, either for the scheme or the existing road, in 1997, are high enough to require a more detailed analysis.
- 2.2.11 These results are consistent with the established relationship between speed and emission levels. The scheme would improve the average traffic speed resulting in a reduction in emissions of CO and HC. With the change in emission of NO₂ the relationship between speed and emission would produce an increase in emission at higher speeds.

2.3 OVERALL IMPACT ASSESSMENT

- 2.3.1 The assessment method requires four different pollutant levels to be estimated: carbon monoxide (CO), hydrocarbons (HC), oxides of nitrogen (NO_x) and carbon dioxide (CO₂). Emissions are measured as the total, in tonnes, released into the atmosphere during a 12 month period.
- 2.3.2 In assessing the impact of the scheme a comparison has been made between the existing road and the scheme in the years 1997 and 2012.

- 2.3.3 The traffic flows and vehicle speeds used in the calculation are shown in Figure 2.3 and represent the high growth prediction for the traffic in the appropriate year.
- 2.3.4 Tables 2.2 and 2.3 show the results of the analysis.
- 2.3.5 Table 2.2, comparing the existing road and the scheme in 1997, shows a small change in emission levels for all pollutants. The results are consistent with the established relationship between speed and emissions. The reduction in CO and HC levels are a direct result of the decrease in congestion. The increase in NO_x and CO₂ are a result of the increased average traffic speed.
- 2.3.6 Table 2.3, comparing the existing road and the scheme in 2012, shows a similar pattern in emission changes to that in 1997.
- 2.3.7 The reduction in carbon monoxide, hydrocarbons and oxides of nitrogen between 1997 and 2012 for both the existing road and the scheme, is a result of improved vehicle technology and is not offset by the increase in the number vehicles using the road. The increase in carbon dioxide over the 15 year period is entirely due to the increase in traffic. This is judged to override any reductions due to vehicle technology.

2.4 SUMMARY

- 2.4.1 The improved capacity of the road would reduce traffic congestion, resulting in decreases in carbon monoxide and hydrocarbons emissions immediately after the scheme is complete and in the longer term. This would improve the situation for properties close to the scheme and also for the community as a whole.
- 2.4.2 However, the increased average speed of traffic on the improved road would result in higher emissions of carbon dioxide and oxides of nitrogen.

TABLE 2.1

AIR QUALITY LEVELS AT PROPERTIES WITHIN 200 METRES OF THE SCHEME

Annual maximum 8 hour average Carbon Monoxide (CO) concentration (ppm)
 Average Hydrocarbon (HC) concentration during traffic peak hour (ppm)
 98th percentile of 1 hour Nitrogen Dioxide (NO₂) concentration (ppb)

Location	Existing 1994						1997 Opening Year					
	Existing		Existing		Existing		Existing		Existing		Scheme	
	CO	HC	NO ₂	CO	HC	NO ₂	CO	HC	NO ₂	CO	HC	NO ₂
West Lodge	4.03	1.90	77	3.92	1.89	60	3.43	1.84	69	3.43	1.84	69
Meldawn	4.64	1.94	97	4.41	1.92	74	3.80	1.87	89	3.80	1.87	89
Caburn	4.90	1.95	111	4.56	1.94	87	4.21	1.90	97	4.21	1.90	97
Summer Hill	3.76	1.87	79	3.55	1.86	60	3.18	1.83	64	3.18	1.83	64
East Park Cottage	<3.04	1.76	30	<3.04	1.76	21	<3.04	1.74	21	<3.04	1.74	21
Stanbridge Place	3.83	1.88	79	3.65	1.86	60	3.44	1.84	70	3.44	1.84	70
Little Stanbridge	4.86	1.94	110	4.60	1.92	84	4.06	1.88	92	4.06	1.88	92
Threshold for more detailed study.	9	N/A	105	9	N/A	105	9	N/A	105	9	N/A	105

TABLE 2.2

OVERALL AIR QUALITY ASSESSMENT 1997

	EMISSION (TONES PER YEAR)			
	CO	HC	NO _x	CO ₂
EXISTING	61.12	8.32	33.99	3,392.92
SCHEME	59.03	8.05	35.35	3,408.96
CHANGE IN TOTAL EMISSION (%)	-3.4%	- 3.2%	+ 4.2%	+ 0.5%

- indicates a decrease in emission,

+ indicates an increase in emission

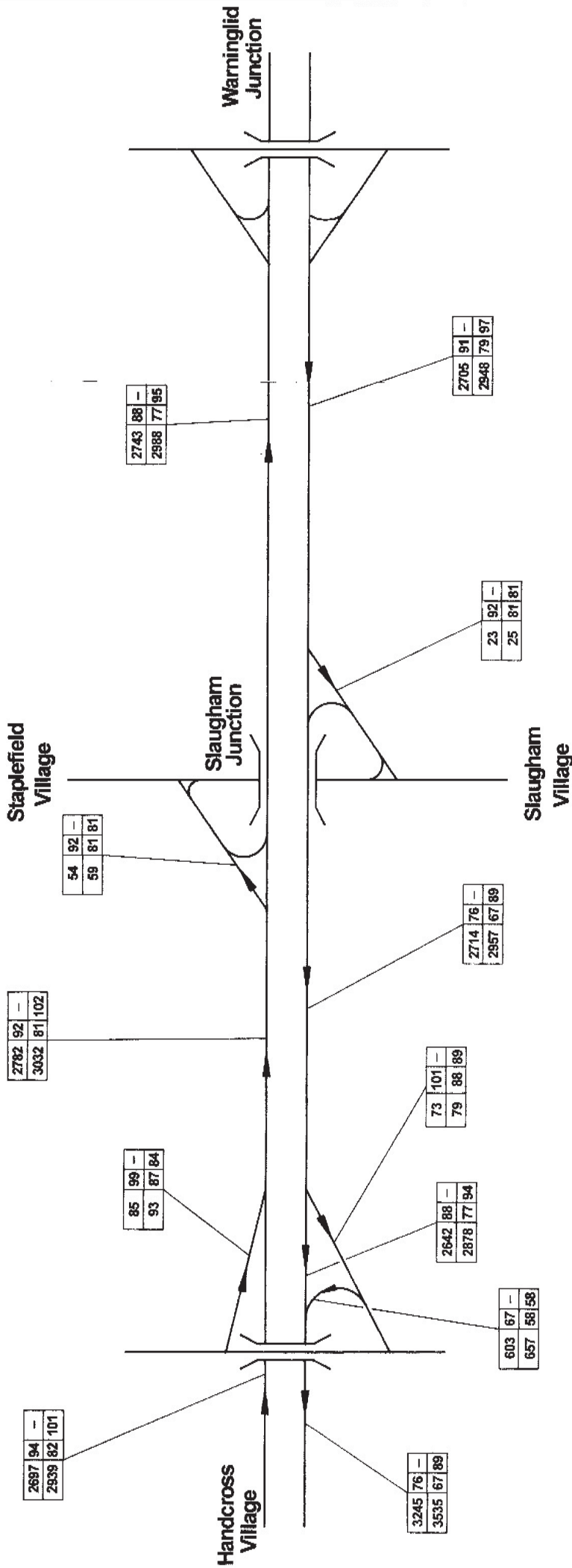
TABLE 2.3

OVERALL AIR QUALITY ASSESSMENT 2012

	EMISSION (TONES PER YEAR)			
	CO	HC	NO _x	CO ₂
EXISTING	35.60	4.01	18.24	4,759.43
SCHEME	34.63	3.85	19.11	4,870.18
CHANGE IN TOTAL EMISSION (%)	-2.7%	- 4.0%	+ 4.8%	+ 2.3%

- indicates a decrease in emission,

+ indicates an increase in emission



PEAK HOUR TRAFFIC FLOWS USED FOR CALCULATING LOCALISED AIR QUALITY ASSESSMENT
Figure 2.2

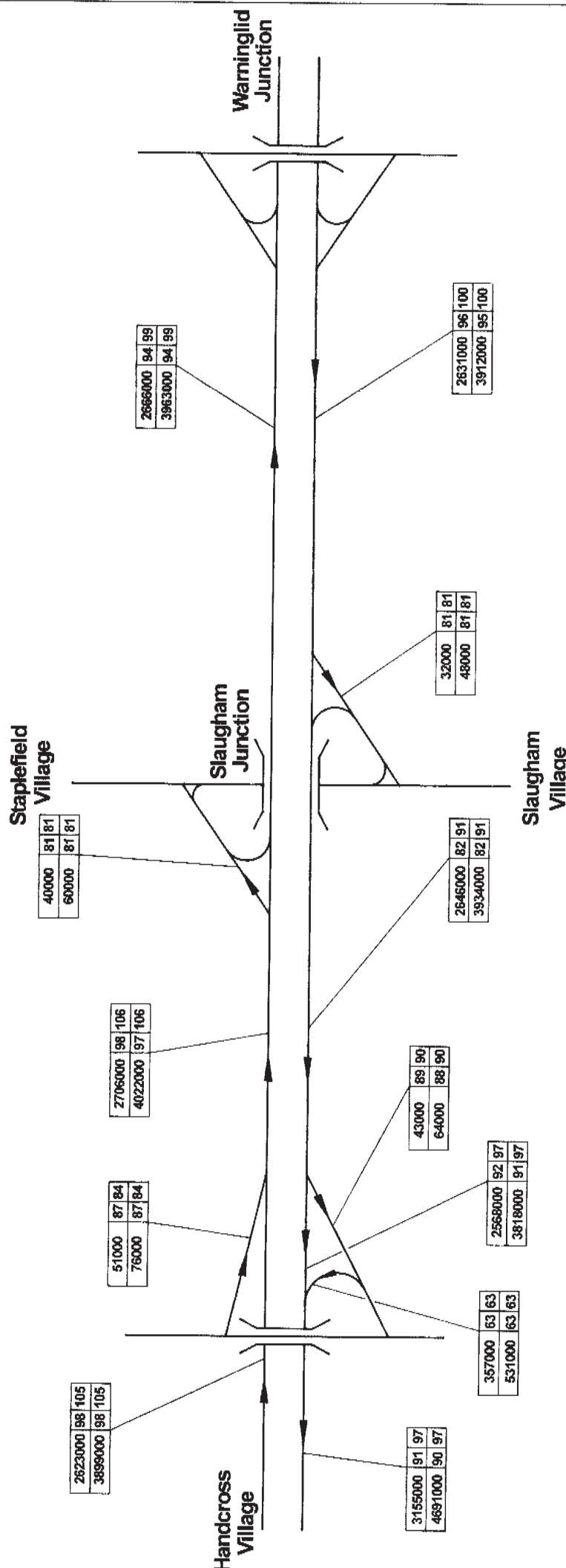


LEGEND

Vehicle Flow per Hour
Existing Scheme Speed (kph)

2687	94	1994
2939	82	1997 (Year of Opening)

Percentage of Heavy Goods Vehicles = 5%



TRAFFIC FLOWS USED FOR CALCULATING OVERALL AIR QUALITY ASSESSMENT
Figure 2.3



LEGEND

Vehicle Flow per Year *	Existing Speed (kph)	Scheme Speed (kph)
3155000	91	97
4691000	90	97

Percentage of Heavy Goods Vehicles = 8%

* Vehicles rounded to nearest thousand

1997 (Year of Opening)

3.0 CULTURAL HERITAGE

3.1 INTRODUCTION

3.1.1 This section describes the effect the scheme would have on ancient monuments, archaeological sites, buildings of special architectural or historic interest, old villages, historic gardens and parkscapes that are an important part of the present day heritage from the past development of our civilisation.

3.1.2 The following abbreviations have been used throughout this section of the statement.

WSCC	West Sussex County Council.
MSDC	Mid Sussex District Council.
RPGE	Register of Parks and Gardens of Special Historical Interest in England, compiled by English Heritage.
EN	English Nature.

3.2 STUDY METHOD

3.2.1 A desk study was undertaken based upon data contained in the County Sites and Monuments Record (SMR) and other material provided by West Sussex County Council and Mid Sussex District Council. Additional research was undertaken following up references contained in the SMR and other appropriate publications. An examination was also carried out of early maps included in Appendix 3/A and of other sources listed in Appendix 3/B.

3.2.2 Two sets of aerial photographs (Cartographical Services Ltd - 1:3,000 scale dated December 1984 and JAS Air - 1:14,000 scale dated September 1988) were examined for evidence of archaeological remains.

3.2.3 A walk-over survey was undertaken in 1993 to locate all recorded sites on the ground and to look for any additional sites that might be observed. Particular attention was paid to the possibility of locating evidence of Roman and Medieval mining activity and other features in the woodland areas that would not be apparent from the aerial photographs. No new features were identified from either the examination of the aerial photographs or the walk-over survey.

3.2.4 An assessment of the visual impact of the road on sites of cultural heritage importance has been made by the landscape architect, details of which are given in Section 6.0: "Landscape Effects" of this document.

3.2.5 The most important sites in the area are covered by several designations. To avoid repetition a full description is given only once with cross referencing to other entries in the Statement.

3.2.6 The location of all sites of cultural heritage importance are shown on Figure 3.1, and

are cross referenced to the text using their SMR or Listed Building number.

3.3 ARCHAEOLOGICAL SITES

3.3.1 The significance of the archaeological remains has been assessed on the basis of their status in terms of national, regional or local importance.

National Scheduled Ancient Monuments (SAM) or archaeological remains being scheduled and protected under the Ancient Monuments and Archaeological Areas Act 1979 or suitable for scheduling.

Regional Sites listed in the Sites and Monuments Record (SMR) or other sources which are of reasonably well defined extent, nature and date and significant examples in the regional context.

Local Sites listed in the SMR or other sources which are either of very low potential or minor importance.

3.3.2 Scheduled Ancient Monuments

3.3.2.1 *Slaugham Place (refer to photographs in Appendix 3/C)*

SMR Number 4306 (SAM No 143)

Status National.

- Scheduled Ancient Monument
- Grade II* Listed Building (No 184).
- Grade II Listed English Heritage Register RPGE.
- MSDC Archaeological Sensitive Area.

Description Slaugham Place comprises the ruined remains and gardens of an Elizabethan Manor erected by John Thorpe for Sir Walter Covert in 1579-81. Most of the house was demolished c1735 but the ornamental moat remains together with the remnants of two towers, part of the kitchen, hall and three arches which survive from a Doric styled loggia, all of which are contained within a walled garden enclosure. The garden, which lies to the east of the arches comprises formal rows of yews which are the most complete surviving example in Sussex of this early style of garden planting. Early this century, after the present Slaugham Manor was built and the ruins became used as a garden to the new house, an avenue of limes was planted beyond the walls to extend the axis of the garden eastwards. The ruins are presently in private ownership and form part of the garden of the Moat House (see Listed Buildings) which is situated at their south west corner. Work is currently in progress to consolidate the ruins and restore the gardens.

Existing Situation The ruins are situated low in the valley and are largely surrounded by mature woodlands which give the site a secluded setting. Views out are limited to those in a north-westerly direction towards Slaugham Village and north-easterly towards the A23 where it is at distance of 360 metres. During the summer, traffic on the A23 is effectively screened by mature planting on the highway boundary and by mature intervening hedgerows. During winter, traffic is visible intermittently between the River Ouse crossing and north of Slaugham Junction. Traffic on the A23 is audible and detracts from the otherwise rural ambience of the site.

Impact of Scheme

- Land Use - None
- Visual Impact - Slight.

The partial loss of planting on the highway boundary would increase the visibility of traffic on the A23, especially during winter when the trees of the intervening hedgerows are bare of leaves. To mitigate this impact a 10 metre wide strip adjacent to the road would be planted with a woodland mix. This would fairly quickly form an effective screen to traffic but it would be many years before the tops of the lighting columns would be concealed and at night the lampheads would be visible extensively between the Ouse crossing and East Park.

- Traffic Noisc - Slight increase.
Gradual increase resulting from traffic growth.

3.3.3 Other Archaeological Sites Listed in SMR

The Sites and Monuments Record (SMR) is compiled by the County Archaeological Officer (West Sussex County Council) and contains information about all known archaeological remains. Listing in the SMR does not in itself confer any protection on a site, however most are covered by some other designation which does.

3.3.3.1 *Slaugham Mill*

SMR Number 3969

Status Regional

- MSDC Archaeological Sensitive Area
- Grade II Listed Building (No 186)

Description 19th Century watermill now with a turbine engine.

Existing Situation Situated on the west side of Slaugham Place with views westwards over Slaugham Mill Pond. Views towards the A23 are blocked by the mature woodland.

Impact of Scheme None

3.3.3.2 *St Mary's Parish Church, Slaughtam*

SMR Number 3955

Status Regional

- Grade II* Listed Building (No 169)
- MSDC Archaeological Sensitive Area
- MSDC Conservation Area

Description Although much restored and altered during the 19th century, the nave and chancel date from the early 12th century when the church was founded and the south aisle and tower date from the late 13th century. The south chapel was added in 1613.

Existing Situation

Situated at the southern edge of the ridge that extends past Slaughtam Park from Handcross, there are broad views over the Ouse Valley from the graveyard, particularly in a south east direction towards Slaughtam Place.

Traffic on the A23 is screened during summer, but can be glimpsed through occasional gaps between the River Ouse crossing and Slaughtam Junction in winter. At a range of 700 metres it is not intrusive.

Impact of Scheme

- Visual Impact - Slight

The partial loss of planting on the highway boundary would temporarily increase the visibility of traffic during winter, but because of the extent of intervening hedgerows it would not be intrusive. The proposed 10 metre woodland strip, when mature, would close off all views of traffic, however the tops of the lighting columns would not be screened. At a range of 700 metres, they would not be discernible by day, but at night the lampheads are likely to be visible extensively between Slaughtam Junction and Mill Hill as well as south of the Happy Eater.

- Traffic Noise - Slight

Not assessed but considered to be a barely perceptible increase.

- Land Use - None

3.3.3.3 *Slaugham Park*

SMR Number 2782

Status Regional

- WSCC Historic Parkscape
- Grade II Listed Building (No 182)

Description The designated area is shown as parkscape on the 1872-4 OS map, although reference is made to a medieval park at Slaugham, owned by Michael de Poynings from 1296 onwards. The 1795 Gardner and Gream 1" map shows the whole area contained within a triangle formed by Slaugham, Staplefield and Handcross Villages as 'New Park'.

Slaugham Park House which overlooks the parkland, is an early 19th century two storey manor built in a gothic style. 'The Conduit' covered spring which was built shortly after the manor, was erected for the convenience of villagers from Slaugham gathering water.

Existing Situation

The area of the parkland occupies the south facing slope of Handcross Hill. Except for a garden area in front of the House the land is grazed by horses and cattle, and has been subdivided by double fencing. Despite damage caused by the 1987 storm several mature trees remain, and the parkland provides an attractive setting to the manor which has broad views southwards over the Ouse Valley. The A23 is generally screened by the areas of mature woodland (West Park Wood) and intervening hedgerows, however from the highest ground in the vicinity of the house, traffic can be seen through gaps in the trees in the vicinity of Slaugham Junction and again south of the Stanbridge area. At night the lighting in the vicinity of Warninglid Junction is conspicuous.

Traffic on the A23 is audible and detracts from the otherwise rural ambience.

Impact of Scheme

- Visual Impact - Slight

The disturbance to the planting on the highway boundary and the removal of the central reserve trees would increase the visibility of the A23 between Slaugham Junction and Mill Hill. This would be mitigated by the proposed 10 metre woodland strip along the western boundary of the A23 between Slaugham Junction and the Ouse crossing. However, from elevated viewpoints it is unlikely that traffic on the road would be fully screened.

The lighting columns would also be discernible. At a minimum range of 700 metres, they would not be intrusive by day, but at night time the lampheads would be conspicuous from north of Slaugham Junction to Mill Hill and again between the Stanbridge area and Warninglid Junction.

- Traffic Noise - Slight Increase.
There would be a gradual increase in traffic noise in line with traffic growth. The nuisance this would cause would diminish in proportion to the distance of the listener from the road.
- Land Use - The landtake required from the boundary of Slaugham Park Estate would not affect the historic parkland.

3.3.3.4 *Nymans House and Gardens (refer to photographs in Appendix 3/D)*

SMR Number 4301

Status National

- Grade II* Listed English Heritage RPGE
- WSCC Historic Parkscape
- Grade II Listed Building (No 215)
- EN Inventory Ancient Semi-Natural Woodland (part)
- National Trust Ownership (part)
- MSDC Conservation Area (part)

Description

Standing on the site of a medieval house, parts of which, notably the 15th century hall, survive, the house was largely rebuilt in 1839. The main and south wings were again rebuilt by the Messel family between 1925-30 to designs by Sir Walter Trapper in a medieval style intended to be '*... so clever a reproduction of a building begun in the 14th century ... that some future antiquary may well be deceived by it.*'

In 1947 fire destroyed the south-west wing and caused severe damage to other parts of the building. Sufficient of the building stands for its quality and character to be appreciated and the main hall in particular forms a picturesque focus to the grounds which are considered to be one of the great gardens of the Sussex Weald.

The gardens of Nymans were established after the property was bought by Ludwig Messel and were developed mainly on old parkland which surrounded the house, but with an extension planted as an arboretum on an area of East Park that lies to the west of the B2114.

Ludwig Messel was an enthusiastic supporter of seed gathering expeditions and the garden contains a large variety of rare and exotic plants collected by him, and later by his son Sir Leonard who shared his interest. Particular features include a walled garden designed in 1890 by William Robinson and which was visited frequently by Gertrude Jekyll - the first heather garden in England, a Japanese garden, a rock garden, a rose garden, a wild garden and a pinetum.

Since 1954 Nymans has been owned by the National Trust who have opened the gardens to the public.

Existing
Situation

The house and the main part of the garden occupy a ridge of elevated ground that extends from Handcross and which commands views in a south-east to southerly direction across the Ouse Valley. Views towards the A23 are generally screened by the extensive mature woodlands of East Park. However, traffic is visible intermittently through gaps in the planting on the highway boundary in the vicinity of Mill Hill and again south of the Stanbridge area from the southern part of the gardens. At a range in excess of 1,500 metres its impact is slight and the road does not intrude significantly on the quality of the gardens setting. At night the lighting at Warninglid Junction is conspicuous.

The woodland garden west of the B2114 is generally effectively screened from the A23 by the broad and dense areas of woodland between it and the road. At its northern end, however, the land between the A23 is open and screening is achieved only by a narrow strip of planting along the highway boundary. The northern part of the woodland is also itself more open having been badly damaged by the 1987 storm, and part of the area is occupied by lock up garages and used for stockpiling materials, giving it an untidy appearance. At night the lighting in the vicinity of Handcross Junction can be seen through the trees.

The extent to which the A23 is audible varies with range. In East Park Wood the noise of traffic is intrusive, but within the main garden although the sound of traffic on the A23 can be heard in the background, it is not intrusive compared with the traffic on the B2114 which follows the western boundary of the garden.

Impact of Scheme

- Visual Impact - Slight

From the main garden, although the widening of the road would be discernible south of Mill Hill, the range of view is such that it would remain unobtrusive, except at night when the lighting would be visible continuously between Mill Hill and Warninglid Junction.

From the area of East Park Wood, disturbance to the highway boundary planting fronting the open field would temporarily increase the visibility of traffic along this section until the proposed new planting had matured. The replacement of the existing low pressure sodium at Handcross with high pressure sodium fitted with cut off heads would reduce the impact of the highway lighting in this area.

The new access road to East Park and Handcross Market Garden would pass through the area of the woodland that is used for parking and stockpiling estate materials, and is aligned to avoid the felling of any trees

- Traffic Noise

House and Garden - None

East Park - Slight to Moderate

- Land Use

House and Garden - None

East Park - The proposed new private means of access to Handcross Market Garden and the three residential properties at East Park, all of which are on National Trust land, would be routed through the northern part of woodland garden. Since the area through which the new access would pass is already used for estate management purposes, the proposal would not have any significant effect on the areas of heritage importance, and the routing has been agreed with the Trust.

3.3.3.5 *Roman Altar Stones, Nymans*

SMR Number 4300
Status Regional

Description Three Roman altar stones displayed in the gardens at Nymans which were imported from abroad by Ludwig Messel in c1890.

Impact None

3.3.3.6 *Blackfold Furnace*

SMR Number 4298
Status Regional
MSDC Archaeological Sensitive Area

Description Site of medieval iron furnace and pond bay.

Existing Situation The site is situated in the valley on the east side of the ridge occupied by Nymans and has no view of the A23 corridor.

Impact None

3.3.3.7 *Roman Pottery, Hillhouse Farm*

SMR Number 4299
Status Local

Description Roman pottery was found in arable field in 1962. (SMR incorrectly refers to Millhouse Farm)

Impact None

3.3.3.8 *Staplefield Place (now School)*

SMR Number 2783
Status Regional

Description A parkscape is shown on the 1872-4 OS map.

Existing Situation The parkland provides a setting for Staplefield Place which is situated on the eastern edge of Staplefield Common. The main view is west towards the A23, but the extensive woodlands and hedgerows which intervene screen the road except in winter when traffic can be glimpsed intermittently between Slaugham Junction and Mill Hill, and again south of the Stanbridge area.
Traffic on the A23 is audible but not intrusive.

Impact of Scheme

- Visual Impact - Slight.

The partial loss of planting on the highway boundary would increase the visibility of traffic on the A23, during winter when the trees are bare of leaves. The proposed 10 metre wide woodland strip would quickly form an effective screen that would benefit

the view by day. Although the lighting columns would not be conspicuous by day, by night the lamp heads are likely to be visible extensively between Slaugham Junction and Warninglid Junction.

- Noise -

Not assessed but considered to have no significant change.

3.3.3.9 *Stanbridge House*

SMR Number
Status

2785

Regional

- WSCC Historic Parkscape

Description

A parkscape is shown on the 1899 OS map.

Existing
Situation

The parkland is situated to the east and north of Stanbridge House (once known as Stanbridge Grange) and provides a setting for the house which is orientated to the east with views down the River Ouse Valley. Traffic on the A23 is seen intermittently through gaps in the intervening hedgerows between Slaugham Junction and Warninglid, but is not intrusive. The lighting at Warninglid Junction is conspicuous at night, and lighting can also be seen at Handcross. Traffic on the A23 is audible but not intrusive.

Impact of
Scheme

- Visual Impact - Slight.

The partial loss of vegetation on the highway boundary would increase the visibility of traffic between Slaugham Junction and the Stanbridge area until the proposed planting is established. North of Slaugham Junction the widened road would be apparent as a break in the woodland canopy of Handcross Hill, and its increased scale would be emphasised by the straightening of the carriageways opposite East Park and the removal of trees from the central reserve.

The lighting columns would not be conspicuous by day, but at night the lampheads would be seen from elevated parts of the parkland continuously between Handcross and Warninglid Junctions.

- Noise - Slight

There would be a gradual increase in traffic noise in line with traffic growth.

3.3.3.10 *Palaeolithic Hand Axe, Southland Farm*

SMR Number 3967
Status Local

Description A Palaeolithic hand axe was found in the sandy arable field after ploughing in 1941.

Impact None

3.3.3.11 *Roman Coin, Knaresborough House*

SMR Number 3968
Status Local

Description A Roman coin of Victorinus, 268 AD, found in 1916 on the ground surface within the orchard of Knaresborough House.

Impact None

3.3.3.12 *Prehistoric Flint Pick, Truggers*

SMR Number 3957
Status Local

Description Prehistoric flint pick found in garden in 1961.

Impact None

3.3.3.13 *Flints, Southland Farm*

SMR Number 3964, 3965, 3966
Status Local

Description Finds of mesolithic, neolithic and bronze age flints in fields after ploughing.

Impact None

3.4 CONSERVATION AREAS

Areas of land or groups of buildings that are considered to be of special architectural or historic interest, the character or appearance of which it is sought to preserve or enhance, may be designated by Local Planning Authorities as 'Conservation Areas' under the Planning (Listed Buildings and Conservation Areas) Act 1990. Although a local designation, conservation areas may also be of national importance.

3.4.1 Handcross Village

3.4.1.1 *Description*

Handcross is one of the larger villages in the area and is split into two sections by the A23. The buildings of the western section comprise mostly of 20th century housing estate development, much of which were built by the local authority after 1945. The eastern section is older and is centred on the High Street which was the main A23 Brighton Road until the trunk road was constructed, since when it has been renumbered as the A279. Although most of the buildings are Victorian, some which are listed, date back to the 18th century or earlier. Despite the impact of traffic on the A279 this part of the village remains visually attractive and was designated as a Conservation Area in 1990.

3.4.1.2 *Existing Situation*

The conservation area of the village is completely screened from the Handcross to Warninglid section of the A23 by intervening buildings or by mature woodland. At night, the properties on the east side of the B2114 at the southern end of the conservation area are slightly affected by lightspill from the low pressure sodium lighting on the A23. Traffic on the A23 is audible, but it is noise from the A279 and the B2114 that has the greater impact on the conservation area.

3.4.1.3 *Impact of Scheme*

- Visual Impact - Slight benefit.

The proposed change from low pressure sodium lighting to high pressure sodium with cut-off lampheads would eliminate light spill, otherwise there would be no change.

- Noise and Severance - Slight benefit.

The improvement of the A23 would be likely to attract some travellers who presently use the A279 and B2114 as an alternative route. This would reduce traffic levels in the conservation area.

3.4.2 Warninglid Village

3.4.2.1 *Description*

This small village is located at the cross-roads of the B2115 (Cuckfield Lane) and Slaugham Lane/The Street, approximately 1.5km west of the A23. Dating back to Saxon times, the village has later connections with the medieval iron industry of the area. The Street, which is the original core of the village, contains a number of listed buildings some of which date back to the 16th century and forms the focus of the Conservation Area which was designated in 1969. During the 20th century the village has spread eastwards along Cuckfield Lane, but most recent

development has been restricted to infilling gap sites, including a small local authority housing scheme. On the eastern edge of the village the former Hollingbury Court School (shown as Colwood on some maps), which stands in a sizeable area of parkland, has been converted into a number of flats and houses.

3.4.2.2 *Existing Situation*

Although situated on the ridge of hills followed by the B2115, which forms the southern watershed of the Ouse Valley, views northwards and eastwards from the village towards the A23 are restricted by the large areas of mature woodland that lie between it and the road, and the A23 is not visible from the conservation area. Traffic on the A23 is audible at the eastern edge of the village, but has no impact on the conservation area.

3.4.2.3 *Impact of Scheme*

None.

3.4.3 **Staplefield Village**

3.4.3.1 *Description*

Staplefield is located at its nearest point approximately 1 km east of the A23 at the junction of the B2114 (the pre 1800 road to Brighton) with several minor rural roads. The village is centred on a large triangular green known as Staplefield Common, and its overall character is one of low density housing interspersed with open spaces and fields. The buildings in the village are predominantly residential and comprise a range of ages and styles. Few of the houses are listed as being of special merit, but generally they are of high quality with mature gardens, and their variety adds to the character of the village. The village was designated as a Conservation Area in 1984.

3.4.3.2 *Existing Situation*

Viewed from the south the village is seen against a backdrop of trees and fields which occupy the rising ground to the north. The village also contains many individual specimens and groups of mature trees which are important elements of its character and the presence of major groups of trees along the western and eastern boundaries prevent views out other than in a southerly direction. During summer these trees together with the intervening land form block views of the A23 except where the road rises towards Warninglid Junction. During winter, traffic on the A23 can be glimpsed intermittently south of Mill Hill. The lighting at Warninglid is conspicuous. Traffic on the A23 is audible but not intrusive, and the noise from traffic on the B2114 is more significant.

3.4.3.3 *Impact of Scheme*

- **Visual Impact - Slight.**

No change would be discernible during summer, but during winter the disturbance to the existing planting on the east boundary of the highway would slightly increase the visibility of traffic between Slaugham Junction and Stanbridge. After the proposed 10 metre woodland strip had established these views would be effectively screened. The lighting columns would not be discernible by day, but at night, particularly in winter, the lampheads would be visible extensively south of Mill Hill, and from some locations at the north of the village between Slaugham Junction and East Park.

- **Noise - No significant change.**

- **Traffic - The improvement to the A23 would be likely to attract some travellers who presently use the B2114 as an alternative route. This would reduce traffic levels in the conservation area.**

3.4.4 **Slaugham Village**

3.4.4.1 *Description*

This small village is located less than 1 km west of the A23, and was formerly one of the 'iron villages' of the Sussex Weald. The village has a linear shape (See Fig 3.2) comprising approximately 25 buildings tightly grouped on either side of Park Road (which continues as a private road/bridleway northwards through Slaugham Park to Handcross). The road widens out towards its junction with Staplefield Road to form a small green. A variety of building styles and ages are exhibited in the village, with houses dating back to the 15th century onwards, and 12 are listed as being of special architectural or historical significance. At the southern end of the Park Road, the parish church of St Mary's forms an attractive focal point to the village (refer to 3.3.3.2). The entire village was designated as a Conservation Area in 1984.

3.4.4.2 *Existing Situation*

The village is situated on a ridge between the gill valleys of Homestead Wood to the west and the Conduit to the east and, being surrounded by farmland and mature woodland, has an attractive setting with a fine outlook southwards over the Ouse Valley. Views towards the A23 however are restricted by a combination of the intervening landform and woodland, and in summer the road can only be seen in the vicinity of the Happy Eater, at which range that it is not intrusive. During winter, when the trees of the intervening hedgerows are bare of leaves, traffic can also be glimpsed occasionally between Slaugham Junction and Mill Hill, but again it has little impact. The lighting at Warninglid Junction is conspicuous at night. Traffic on the A23 is audible as a background sound but is not intrusive.

3.4.4.3 *Impact of Scheme*

- Visual Impact - Slight.

There would be no discernible change in the impact of the road by day, but at night the lighting would be visible from the eastern and southern edge of the village, and during winter, on sections between East Park - Slaugham Junction (north), Slaugham Junction (south) - Mill Hill and the Stanbridge area - Warninglid Junction. During summer it is likely that most of the lampheads would be screened by trees, but it is possible that some would be visible between Slaugham Junction - Mill Hill and south of the Stanbridge area until the proposed planting on the highway boundary had matured.

- Noise - Slight (barely perceptible) increase.

- Traffic - the improvement of the A23 would reduce the incidence of the need to divert traffic through the village as a result of accidents or works on Handcross Hill.

3.5 LISTED BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST

3.5.1 Lists of buildings considered to be of special architectural or historic interest are compiled by the Secretary of State for National Heritage on advice from English Heritage, under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act, 1990.

3.5.2 Listed buildings are classified in grades to show their relative importance.

Grade I Buildings of exceptional interest (only about 1.4% of listed buildings are in this category).

Grade II* Particularly important buildings of more than special interest (approximately 4% of listed buildings).

Grade II Buildings of special interest.

3.5.3 St Mary's Parish Church, Slaugham

List No 169

Status Grade II*

- MSDC Archaeological Sensitive Area (SMR 3955)
- Slaugham Conservation Area

Description Parish Church dating from 12th century at south end of Slaugham Village (refer to 3.3.3.2. for detail).

Impact Slight Visual Impact (refer to 3.3.3.2 for detail).

3.5.4 Rock Cottage, Slaugham

List No 170
Status Grade II
• Slaugham Conservation Area

Description Timber framed cottage dating from 17th century at south-east corner of village.

Impact Slight Visual Impact
Lighting would be visible in winter between Slaugham Junction - Mill Hill and south of Stanbridge area.

3.5.5 Bosworths, Slaugham

List No 171
Status Grade II
• Slaugham Conservation Area

Description 15th/16th century timber framed farmhouse south-east corner of The Green, Slaugham.

Impact Slight Visual Impact
Lighting would be visible in winter between Slaugham Junction - Mill Hill, south of the Stanbridge area and possibly also through trees between East Park and Slaugham Junction (north).

3.5.6 Chantry House, Slaugham

List No 172
Status Grade II
• Slaugham Conservation Area

Description 17th century cottage on east side of The Green, Slaugham.

Impact None.

3.5.7 No 7 The Green, Slaugham

List No 173
Status Grade II
• Slaugham Conservation Area

Description 18th century cottage on east side of The Green, Slaugham.

Impact None.

3.5.8 No 9 The Green, Slaughtam

List No 174
Status Grade II
• Slaughtam Conservation Area

Description Early 19th century two storey house on east side of The Green, Slaughtam.

Impact None.

3.5.9 Foyles, Slaughtam

List No 175
Status Grade II
• Slaughtam Conservation Area

Description 17th century two storey house, set back from road on east side of The Green, Slaughtam.

Impact Slight visual impact.
Lighting would be visible through trees in winter between East Park - Slaughtam Junction (north).

3.5.10 Nos 1 and 3 Bosworths Cottages, Slaughtam

List No 176
Status Grade II
• Slaughtam Conservation Area

Description Early 18th century two storey cottage on east side of Park Road, Slaughtam.

Impact None.

3.5.11 Kent Cottage, Slaughtam

List No 177
Status Grade II
• Slaughtam Conservation Area

Description 18th century two storey cottage on east side of Park Road, Slaughtam.

Impact Slight visual impact.
Lighting would be visible through trees in winter between East Park - Slaughtam Junction (north).

3.5.12 Nos 1 and 3 Carpenters Arms, Slaugham

List No 178
Status Grade II
• Slaugham Conservation Area

Description Early 19th century building probably originally a public house on east side of Park Road, Slaugham.

Impact Slight visual impact.
Lighting would be visible through trees in winter between East Park - Slaugham Junction (north).

3.5.13 No 6 The Green, Slaugham

List No 179
Status Grade II
• Slaugham Conservation Area

Description Early 19th century two storey cottage overlooking Green at south end of Park Road, Slaugham.

Impact Slight visual impact.
Restricted view of lighting in winter between Slaugham Junction - Mill Hill.

3.5.14 Gonners, Slaugham

List No 180
Status Grade II
• Slaugham Conservation Area

Description Early 17th century timber frame cottage overlooking the Green at south end of Park Road, Slaugham.

Impact Slight visual impact.
Restricted view of lighting in winter between Slaugham Junction - Mill Hill.

3.5.15 Nos 1 and 2 The Cottage, Slaugham

List No 181
Status Grade II
• Slaugham Conservation Area

Description Early 19th century two storey cottages on west side of Park Road at north end of village.

Impact None

3.5.16 Naylands, Slaugham

List No 183
Status Grade II

Description 17th century timber frame two storey cottage to west of village.

Impact Slight visual impact.
Restricted view of lighting in winter between Slaugham Junction-Mill Hill.

3.5.17 Slaugham Place

List No 184
Status Grade II*
• Scheduled Ancient Monument
• Grade II Listed English Heritage RPGI
• MSDC Archaeological Sensitive Area

Description Ruin of Elizabethan manor and gardens
(see 3.3.2.1 for detailed description)

Impact Slight visual impact
(see 3.3.2.1 for detailed description)

3.5.18 The Moat House, Slaugham Place

List No 185
Status Grade II
• Grade II listed English Heritage RPGE

Description 18th century house in grounds of Slaugham Place situated at south-east corner of moat. Constructed using masonry salvaged from the demolished manor.

Impact Slight visual impact
There would be no impact viewed from the house, but there would be an impact on Slaugham Place which is the private garden of this property. (Refer to 3.3.2.1 for detailed description).

3.5.19 Stanbridge Farm (House)

List No 186
Status Grade II

Description 17th century farmhouse, restored in the 19th century and refaced

with red brick on ground floor and tile hanging above, situated approximately 200 metres east of the A23 in fairly open countryside.

Impact Moderate visual impact.
Although the road would continue to be screened where it is closest, partial loss of vegetation on the highway boundary between Anne's Wood Stream and Slaugham Junction would increase the visibility of traffic on the road until the proposed 10 metre wide woodland strip is established. North of Slaugham Junction the widened road would be apparent as a break in the woodland canopy of Handcross Hill and its increased scale would be emphasised by the realignment opposite East Park and the removal of trees from the central reserve. The lighting columns would not be conspicuous by day, but at night the lampheads would be visible continuously between Handcross and Warninglid Junction.

3.5.20 Old Park

List No 187
Status Grade II

Description 17th century timber frame farmhouse, subsequently restored and enlarged and with modern additions. Situated on a ridge of elevated ground approximately 1 km west of the A23, views towards the road are restricted by the farm buildings on the east side of the house and elsewhere by intervening landform or woodland.

Impact Slight visual impact
No change would be discernible by day, but at night the lighting is likely to be visible through the trees in winter between East Park - Slaugham Junction and in the vicinity of the Happy Eater - Stanbridge View.

3.5.21 Coldharbour, Warninglid

List No 188
Status Grade II

Description 17th century timber framed cottage on north side of B2115, Cuckfield Lane, approximately 500 metres west of A23. View to east is blocked by landform and woods, but A23 corridor is visible intermittently north of the Stanbridge area to Handcross.

Impact Slight visual impact
The increased scale of the road would be evident, especially between the Ouse crossing - Slaugham Junction and opposite East

Park where the trees would be removed from the central reserve. Because of the range of view the impact would only be slight. At night, the illuminated road corridor would be visible extensively between the Stanbridge area and Handcross.

3.5.22 Knaresborough House, Warninglid

List No 189
Status Grade II

Description 17th century timber framed farmhouse set back from south side of B2115, Cuckfield Lane with no view of the Handcross to Warninglid section of the A23.

Impact None.

3.5.23 Fridays Farmhouse, Warninglid

List No 190
Status Grade II

Description 17th century timber framed farmhouse on south side of B2115, Cuckfield Lane with views towards Handcross - Warninglid section of A23 from upper floors only.

Impact Slight visual impact
No change would be discernible by day, but at night it is likely that the lighting would be visible in the vicinity of the Stanbridge area and between Slaugham Junction - Handcross.

3.5.24 Hillbury, Handcross

List No 208
Status Grade II

Description Early 18th century two storey house situated on south corner of Handcross cross-roads, with all views towards A23 blocked by surrounding property.

Impact None.

3.5.25 Royal Oak Public House, Handcross

List No 209
Status Grade II

Description 17th century timber framed Inn on north side of Horsham Road (A279), Handcross, with no views towards A23.

Impact None.

3.5.26 Nymans House, Handcross

List No 215
Status Grade II
 • Grade II* Listed English Heritage RPGE
 • WSCC Historic Parkscape
 • National Trust ownership

Description Semi-ruin of house dating from 15th century, standing in large garden and parkland (refer to 3.3.3.4 for detail).

Impact Slight visual impact
 (refer to 3.3.3.4 for detail).

3.5.27 Slaugham Park House

List No 182
Status Grade II
 • WSCC Historic Parkscape

Description Early 19th century, two storey manor house, overlooking parkland with broad view south across Ouse Valley (see 3.3.3.3 for detail).

Impact Slight visual impact

3.5.28 White House Farm

List No 299
Status Grade II

Description 18th century cottage on east side of Warninglid - Staplefield Road, in secluded setting with no view of traffic on A23, however some light spill from lighting at Warninglid Junction.

Impact None

3.5.29 Whitehouse Cottage

List No 300
Status Grade II

Description 18th century cottage on east side of Warninglid - Staplefield Road, in secluded setting with no view of traffic on A23, however some light spill from Warninglid Junction.

Impact None.

3.5.30 North Hall Cottage

List No 302
Status Grade II

Description 18th century cottage on Mallion's Lane, surrounded by mature trees. A23 is not visible.

Impact Slight visual impact
No change discernible by day, but it is likely that some lighting would be visible between Stanbridge View and Mill Hill at night.

3.5.31 North Hall

List No 301
Status Grade II

Description 17th century timber frame house adjacent to Mallion's Lane. A23 is not visible.

Impact Slight visual impact
No change discernible by day, but it is likely that some lighting would be visible between Stanbridge View and Mill Hill at night.

3.5.32 Barn (North Hall)

List No 301A
Status Grade II

Description 18th century barn adjacent to North Hall.

Impact Slight visual impact
No change discernible by day, but it is likely that some lighting would be visible between Stanbridge View and Mill Hill at night.

3.5.33 The Jolly Tanners, Staplefield

List No 305
Status Grade II

Description Early 19th century Inn on east side of B2114. No view of the A23.

Impact None

3.5.34 Farthings, Handcross

List No	306
Status	Grade II
	• WSCC Historic Parkland
Description	18th century cottage situated on ridge south east of Nymans with broad views across Ouse Valley. (The location of this property is incorrect on English Heritage map).
Impact	Slight visual impact Little change would be discernible by day because of the range of view, but at night the illuminated road corridor would be visible extensively between Slaugham Junction and Warninglid Junction.

3.6 HISTORIC PARKSCAPES

3.6.1 English Heritage Register of Parks and Gardens of Special Historical Interest in England (RPGE)

3.6.1.1 English Heritage compiles a non-statutory Register of Parks and Gardens of Special Historic Interest, the purpose of which '... is to record their existence so that highway, planning authorities and developers know that they should try to safeguard them when planning new road schemes and new developments generally.'

3.6.1.2 Registered park and gardens are classified to show their relative importance.

Grade I Parks and gardens which by reason of their historic layout, features and architectural ornaments considered together make them of exceptional interest.

Grade II* Parks and gardens which by reason of their historic layout, features and architectural ornaments considered together make them, if not of exceptional interest, nevertheless of great quality.

Grade II Parks and gardens which by reason of their historic layout, features and architectural ornaments considered together make them of special interest.

3.6.1.3 *Nymans House and Gardens, Grade II**

Refer to 3.3.3.4 for description and assessment of impacts.

3.6.1.4 *Slaugham Place, Grade II*

Refer to 3.3.2.1 for description and assessment of impacts. The designated area extends to encompass all the parkscape that surrounds Slaugham Place.

3.6.2 **Historic Parksapes Listed by West Sussex County Council**

The designated boundaries of these parksapes have been taken as shown on historical Ordnance Survey maps.

3.6.2.1 *Nymans*

Refer to 3.3.3.4 for description and assessment of impacts. The designated area includes the gardens of Nymans but also extends south-east following the ridge between the B2114 and Cow Wood.

3.6.2.2 *Staplefield Place (now School)*

Refer to 3.3.3.8 for description.

3.6.2.3 *Stanbridge Grange (now House)*

Refer to 3.3.3.9 for description and assessment of impacts.

3.6.3 **Effect of the Scheme on Historic Parksapes**

Although the proposals would have a slight visual impact when viewed from these areas, the effect would be limited to a generally very small loss of amenity and would not significantly alter the setting of the properties with which they are associated.

3.7 **NATIONAL TRUST PROPERTY**

3.7.1 **Nymans Estate**

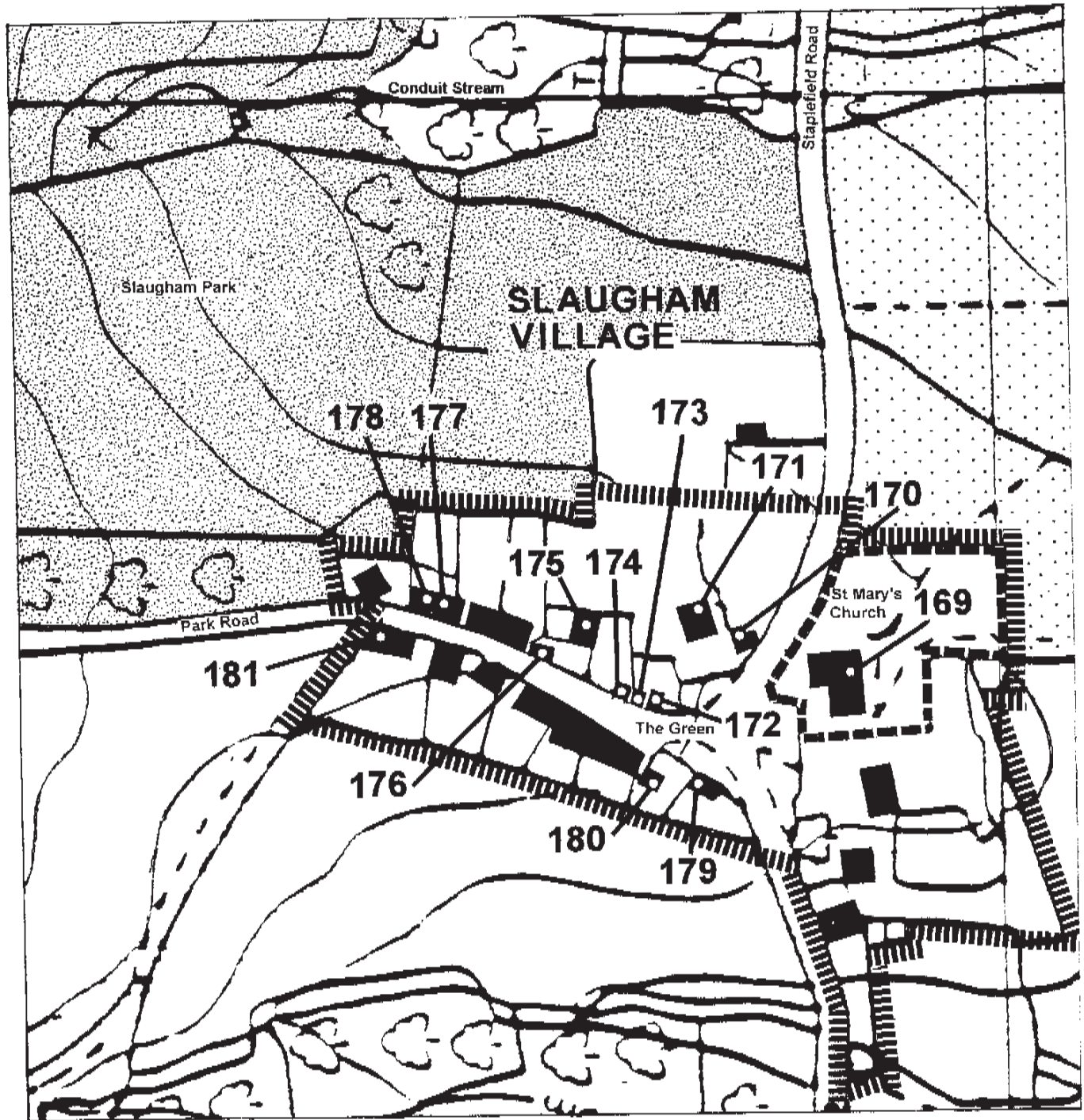
3.7.1.1 Nymans is a large estate which occupies much of the land on the east side of the A23 between Handcross and Slaugham Junction. Since 1954 it has been owned by the National Trust at which time it was declared 'inalienable'.

3.7.1.2 The most important part of the estate with regard to cultural heritage is Nymans House and Gardens that has been described under 3.3.3.4 which is opened to the public. The agricultural land of the estate has been tenanted to a local farmer and the houses at East Park leased as private residences, and the National Trust has indicated that it would be prepared in principle to sell the land required to construct the proposed scheme. The total area of land required would be about 0.781 hectares. Other

effects of the proposals are described in the appropriate section of the Environmental Statement.






3.8 SUMMARY

- 3.8.1 There are several recorded sites of archaeological or cultural heritage interest in the study area, the most important of which is Slaugham Place which is a Scheduled Ancient Monument.
- 3.8.2 No further sites were discovered from the examination of aerial photographs nor from the walk-over survey that was undertaken. Since West Sussex has been well studied by antiquarians and archaeologists it was not considered that further field work was warranted. Nevertheless, the consultant archaeologist would be retained to offer advice, and arrangements would be made for recording any unexpected archaeological finds discovered during the construction period.
- 3.8.3 The only direct impact on any area of cultural heritage interest would be the landtake of about 0.781 hectares of 'inalienable' land at East Park owned by the National Trust. This area is well away from Nymans house and gardens however and is not considered to be of special heritage value and the Trust has agreed in principle that there would be no objection to its acquisition.
- 3.8.4 The proposed scheme would increase the visual impact of the A23 when viewed from several of the areas of cultural heritage interest, although generally this would be mitigated when the proposed screen planting is established. In particular, the proposed 10 metres woodland strip to be planted along the eastern boundary between Slaugham Junction and Mill Hill would reduce the impact of traffic along that section of the road when viewed from Slaugham Place and Slaugham Village. The introduction of lighting would, however, have a more significant effect, and would in some cases result in the route being visible at night, especially in winter, from areas which otherwise would have no view of the road or traffic. The effect would be mainly limited to a loss of amenity and there would be no significant alteration to the historical setting of any of the sites.



SCALE 1 / 2500 0 50 100 200 metres

LEGEND

-  Listed Buildings
Listed Building No (West Sussex Planning Department Records)
-  Conservation Area
-  Archaeological Sensitive Area
-  Listed Park or Garden
-  Historic Parkscape



SLAUGHAM VILLAGE

Figure 3.2

Base map reproduced from Ordnance Survey Map © Crown Copyright.

Appendix 3/A - Historical Maps
Key Sheets and Sheets 1-10

HISTORICAL MAPS

- 1 Ordnance Survey
Map of Roman Britain
1 to 625 000
- 2 1795 - Gardner and Cream
1" Survey of Sussex
- 3 1813 - Ordnance Survey
1st Edition 1" to 1 mile
- 4 1825 - Christopher & Greenwood
1" Survey of Sussex
- 5/6 1879 - Ordnance Survey
1st Edition 6" to 1 mile
(north/south)
- 7/8 1899 - Ordnance Survey
2nd Edition 6" to 1 mile
(north/south)
- 9/10 1912/13-Ordnance Survey
3rd Edition 6" to 1 mile
(north/south)

HISTORICAL MAPS

Appendix 3/A : Key Sheet

1879 (North)

Ordnance Survey
Sheet XIV.

1st Edition - Surveyed 1874
Published 1879

Scale : 6" to 1 mile
(17.5% reduced)

Observations:

- New London to Brighton Road on line of present A23 except passes through Handcross village.
- Park House (now known as Slaugham Park).
- Park Farm East.
- Land between Park Farm East and Nymans cleared of planting.



HISTORICAL MAPS

Appendix 3/A : Sheet 5

Base map reproduced from Ordnance Survey Map © Crown Copyright.

1879 (South)

Ordnance Survey

Sheet XXV

1st Edition - Surveyed 1874-5

Published 1879

Scale : 6" to 1 mile
(17.5% reduced)

Observations:

- New London to Brighton road on line of present A23.
- Anne's Wood approximately as present, although cleared 'areas' evident between Anne's Wood East and The Paddock.



HISTORICAL MAPS

Appendix 3/A : Sheet 6

Base map reproduced from Ordnance Survey Map © Crown Copyright.

1899 (North)

Ordnance Survey

Sheet XIV

2nd Edition - Published 1899

Scale : 6" to 1 mile

Observations:

- Distance to Brighton on milestone near Nymans - old road 18 miles - A23 route 16½ miles
- Land between East Park and Nymans still clear of wood.
- Brick field (disused).
- Footpaths demarked.

HISTORICAL MAPS

Appendix 3/A : Sheet 7

Base map reproduced from Ordnance Survey Map © Crown Copyright.



1899 (South)

Ordnance Survey

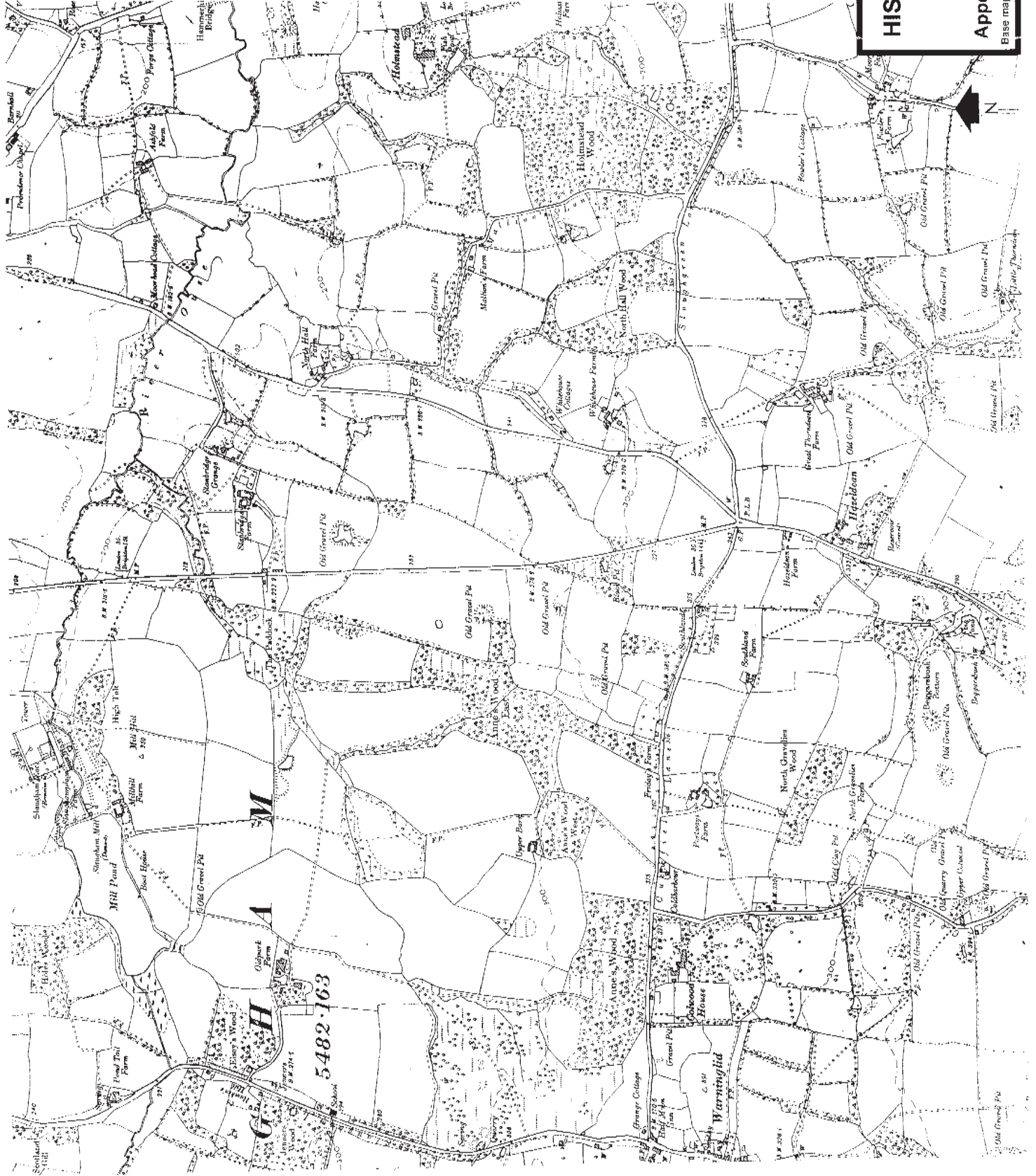
Sheet XXV

2nd Edition - Published 1899

Scale : 6" to 1 mile

Observations:

- Area of Anne's Wood between A23 West and The Paddock still cleared.
- Excavations annotated as 'Old Gravel Pits'.
- Footpaths demarked.



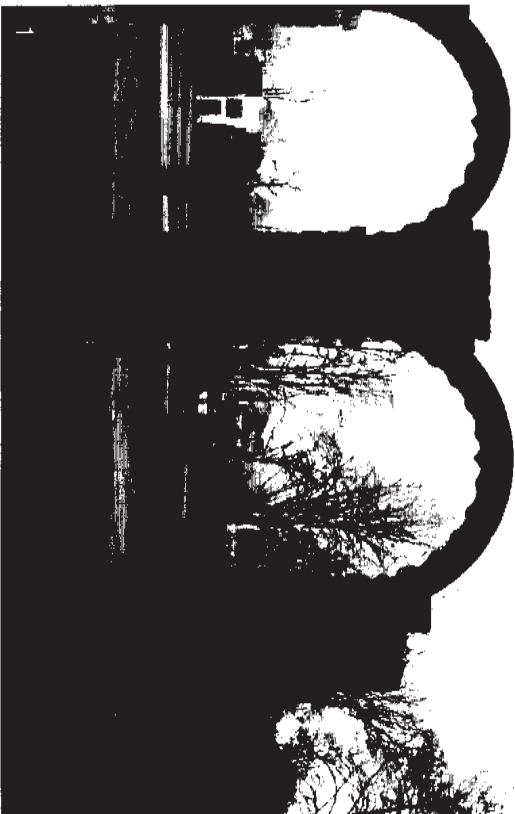
HISTORICAL MAPS

Appendix 3/A : Sheet 8

Base map reproduced from Ordnance Survey Map © Crown Copyright.

1879 O/S	25": 1 mile
1879 O/X 1st Edition	6": 1 mile North and South
1899 O/S 2nd Edition	6": 1 mile North and South
1912/13 O/S 3rd Edition	6": 1 mile North and South
1940 O/S	1": 1 mile
1980 Soil Map of England and Wales	1:250,000
1990 O/S Sheet 1268 (TQ 22/32)	1:25,000
1991 O/S Sheet 187	1:50,000

● **Appendix 3/C - Slaugham Place Photographs**



Slaugham Place
View eastward from ruin across walled garden.



Slaugham Place
View eastwards from east gate of walled garden looking down avenue of limes towards A23. A large vehicle can be seen through gap in roadside planting behind furthest tree on right side of avenue.



Slaugham Place
View west along moat on south end of walled garden towards the Moat House.



Slaugham Place
Moat House

Appendix 3/D - Nymans Gardens Photographs

A23/Happy Eater ▼



Nymans House & Garden

Ruined south and west wings from garden to south of house.



Nymans House & Garden

View southwards from mound in garden to south of house. The A23 is visible south of Happy Eater to Warninglid Junction, but is otherwise screened.



Nymans Gardens (Woodland Garden)

Views out are generally completely screened by woodland.



Nymans Gardens (Woodland Garden)

View southwards from southern edge of woodland. The A23 is visible from south of the River Ouse to Warninglid Junction.

4.0 DISRUPTION DUE TO CONSTRUCTION.

4.1 INTRODUCTION

4.1.1 This section of the statement seeks to address the problems which may arise as a result of the construction work, either within the site of the main works or as a result of diversions which may have to take place in advance at a distance from the main work. However, with this particular scheme it is not envisaged that any diversions in advance would be necessary.

4.1.2 The impacts include nuisance due to noise, dust or vibration or may be in the form of longer travel times, loss of convenience and amenity or the impact on wildlife, ecology and adjacent watercourses and the impact of construction traffic, including earth moving operations, in the adjacent area.

4.1.3 The scheme, which involves the removal of some 70,000 cu m of surplus material from the old carriageway construction and cuttings, is programmed to take 24 months to construct.

4.2 EXISTING SITUATION

4.2.1 This section of the A23 is a dual carriageway whose geometric features are below the current standards as defined in TD9/93 (Highway Link Design).

4.2.2 The section of road to the north of this scheme (A23 Pease Pottage to Handcross) has recently been improved to dual 3 lane standard and the road to the south (Warninglid Flyover to Sayers Common) has also recently been improved to the same standards.

4.2.3 The existing flows are high and the local road network is not of sufficiently high standard to accept large volumes of diverted traffic.

4.2.4 The area through which the road passes is within the St. Leonard's Forest District of the High Weald Area of Outstanding Natural Beauty.

4.3 IMPACT AND MITIGATION

4.3.1 Travellers.

4.3.1.1 As the scheme is an on-line improvement and the new carriageway is mostly within the existing highway or very near it, there would be the need to re-construct parts to the existing carriageway and provide new accesses.

4.3.1.2. In order to limit the impact on travellers in general, the Contractor would be required, under the Contract, to programme the sequence of construction to enable two lanes of traffic to flow in each direction for the majority of the construction period. This could be achieved by narrow lanes or other approved means. Short term tidal working might be introduced during peak periods to assist in the traffic flows.

4.3.1.3 The Contractor would also be required to maintain a reasonable standard of

access to all properties and premises which currently have access from the A23, either by the construction of the permanent new private means of access, by construction of temporary accesses or by other agreed methods.

4.3.2 Occupiers - Nuisance.

- 4.3.2.1 Research has shown (TRRL Supplementary Report SR 562 "Nuisance from Road Construction: A study of the A31 Poulner Lane Diversion, Ringwood) that beyond 100m from the site boundary only 1 in 5 people are seriously bothered by construction nuisance. The area of consideration has therefore been defined using this value and Figure 4.1 shows the extent.
- 4.3.2.2 There are 97 properties within the assessment area of which 14 in Handcross are within the conservation area as defined by Mid Sussex District Council in March 1990.
- 4.3.2.3 Other locations outside the 100m band - Slaugham Park, Slaugham Village, Slaugham Place, Stanbridge House, Stanbridge Farm, the Home Farm and Nymans - all have a reduced likelihood of experiencing nuisance by reason of their greater distance from the works. However, the occupiers might experience disruption as road users and would be generally aware of the work.
- 4.3.2.4 The Contractor would be bound under the Contract to limit the noise emission from the construction of the scheme. Levels would be agreed with the Local Authority and included in the Contract along with a control and monitoring system.
- 4.3.2.5 Where individual properties would be eligible for secondary glazing under the Noise Insulations Regulations (See Section 8.0 of this Volume), it would be possible, with the agreement of the property owners, to install this before the start of construction. This would go some way to reducing the impact of construction noise.
- 4.3.2.6 Whilst it is not anticipated that any property or location would be subject to a nuisance level such that it would be reasonably impossible to occupy the building, legislation exists, under the Land Compensation Act (1973) as implemented by the Noise Insulation Regulations (1975), for temporary rehousing.
- 4.3.2.7 The dust and dirt which is likely to be produced during the earthworks, would be required, under the Contract, to be controlled by the Contractor by the use of water bowsers and tyre washing facilities if appropriate.
- 4.3.2.8 The access to and from the scheme to the north and south is good, both sections having recently been improved, and the Contract would prohibit the use of the local road network by all construction vehicles except light vans and cars.

4.3.3

Occupiers - Construction Noise Assessment.

- 4.3.3.1 An assessment has been made of the likely construction noise levels at selected locations, in accordance with the method in BS 5228 "Noise Control on Construction and Open Sites, part 1", "Code of practice for basic information and procedure for noise control".
- 4.3.3.2 The following properties have been assessed for the impact of construction noise: Caburn, West Lodge, Summer Hill, North Lodge, East Park House, East Park Cottage, Home Farm Cottages, Merrivale, Little Stanbridge, Stanbridge Place and Stanbridge View. These have been selected either because of their proximity to the scheme or because they are likely to be representative of other neighbouring groups of properties.
- 4.3.3.3 The property known as Summer Hill on Brighton Road at Handcross Village is likely to be subject to noise levels of up to 86dB(A) for 3 periods of less than 1 week during tie-in operations. This predicted noise level is 10dB(A) above the existing level.
- 4.3.3.4 With the properties in Handcross, only those nearest the work ie. adjacent to the existing road, would have any significant noise increases. The maximum level is likely to be 3dB(A) for 3 periods of less than a duration of 1 week.
- 4.3.3.5 East Park House and East Park Cottage can expect to be subject to levels approx 2dB(A) above the existing 68dB(A) for the period to construct an embankment and cutting. The work is estimated to take about 12 weeks although because of the need to work on each separately it is likely to be done in two 6 week sessions.
- 4.3.3.6 Home Farm Cottages, although outside the 100 metre band, are directly opposite the bridge work at Slaugham Junction. Noise levels might be expected to be in the region of 73dB(A), if no mitigation measures were undertaken, for possibly 3 periods of 2 weeks during any piling operations. However, construction noise levels contained within the Contract would place a limit on the Contractor which would reduce the impact on this property due to construction noise.
- 4.3.3.7 The properties known as Merrivale and Little Stanbridge, together with the properties at Stanbridge Place, are assessed as being subject to noise levels in the region of 95dB(A), due to their proximity to the carriageway, for a period of 4 weeks while the existing carriageway is being broken out and up to 80dB(A) for possibly 3 periods of about a week for carriageway re-construction. Merrivale is also likely to experience levels in the region of 85dB(A) for 3 periods of about a month during the 3 months when Anne's Wood Stream culvert is constructed.
- 4.3.3.8 The property Stanbridge View is likely to be subject to noise levels of up to 80dB(A) for possibly 3 periods of about a week during carriageway re-construction.

4.3.4 Ecological and Archaeological Sites Affected by Construction

4.3.4.1 *Ecological Sites*

There are two semi-natural ancient woodlands in the assessment area: East Park and West Park (see Figure 5.1). West Park, where Orange Gill forms the centre for a variety of flora and rich habitats, is of particular importance.

4.3.4.2 The scheme has been designed to reduce the impact on these woodlands and during the construction period, Contract Conditions and restrictions would ensure these areas are protected from contaminated run-off.

4.3.4.3 The design of the scheme requires the retention of certain areas of existing vegetation within the highway. Again Contract Conditions and access restriction would be used to protect the appropriate areas.

4.3.4.4 Surveys of water quality have confirmed the watercourses in the area as being "good" and the River Ouse as being classified as a Class 1B River by the NRA.

4.3.4.5 During the construction of the new culverts on the River Ouse, Anne's Wood Stream and the pipe on the diverted Stanbridge stream, Contract Conditions and restrictions would be imposed to control pollution from the construction works.

4.3.4.6 *Archaeological Sites*

There are no sites of archaeological interest within the assessment area that would be affected by the works (see Figure 3.1).

4.3.5 Environmental Effect of Earth Removal

4.3.5.1 Preliminary estimates show that there would be some 70,000 cu m of excess material that would need disposal off site.

4.3.5.2 In consultation with the Planning Department of West Sussex County Council, two possible disposal sites have been identified; Warnham (north of Horsham); Small Dole (north of Shoreham). The environmental impact of these disposal sites has already been taken into account by the local planning authority. Both are approximately 12 miles from Handcross although the site at Warnham has the better road links. However, the disposal of surplus material is left to the Contractor, working within the legal framework of Planning Law.

4.3.5.3 It is estimated that 100 lorry movements a day for a period not greater than 5 months would be required to remove the surplus material. The Contract would prohibit the Contractor from using local roads to reach disposal sites. In addition, it is anticipated that there would be a certain amount of double handling of material and a suitable storage area might be found within the site boundary. The Contractor would be required to restore any land used for

this purpose to its existing condition.

4.4 SUMMARY

- 4.4.1 The scheme is in an Area of Outstanding Natural Beauty, it impinges on a Site of Nature Conservation Importance (SNCI) and has a Class 1B river flowing through it. See Section 5.0 of this Volume for more detailed information.
- 4.4.2 Controls under the Contract and other existing legislation would ensure that the Contractor, during construction, would reduce or eliminate adverse impacts of the works.

5.0 ECOLOGY AND NATURE CONSERVATION.

5.1 INTRODUCTION

5.1.1 General

5.1.1.1 This section describes the effect that the proposals would have on the ecology of the area adjacent to the road and to its value for nature conservation.

5.1.1.2 Ecology is the scientific study of living organisms and their relationship both with their environment and with each other. Nature conservation is concerned with maintaining a viable population of the Country's (or more locally, an area's) characteristic flora and fauna and the communities they comprise.

5.1.2 Study Method

5.1.2.1 A desk study of the existing ecology was undertaken based upon material provided by English Nature, West Sussex County Council's County Ecologist, Mid Sussex District Council Planning Department and Sussex Wildlife Trust.

5.1.2.2 Historical maps were examined with regard to the age of the woodland areas (refer to plans in Section 3.0: "Cultural Heritage" of this document) and their present composition ascertained by site inspection.

5.1.2.3 Designated Sites of Special Scientific Interest (SSSIs), Sites of Nature Conservation Importance (SNCIs), Ancient Woodlands and other Old Woodlands, and Tree Preservation Orders within the study area are shown on Figure 5.1.

5.1.2.4 An ecological survey of parts of East and West Park Wood was undertaken by the International Centre of Landscape Ecology, Loughborough University (ICOLE) in June - September 1991. This was repeated and extended to encompass all areas adjacent to the road in June - October 1992.

5.1.2.5 A specialist survey of badger activity in the vicinity of the route was undertaken by the Mid Sussex Badger Protection Group in March 1993.

5.1.2.6 A Chemical and Biological Assessment of the Water Quality of the watercourses adjacent to the A23 was undertaken by ICOLE in November 1993.

5.1.2.7 A specialist survey of Bryophytes in East and West Park Woodlands was undertaken by Howard Matcham of Chris Blandford Associates in

December 1993.

- 5.1.2.8 A survey of wintering birds adjacent to the A23 was undertaken by ICOLE in December 1993 - February 1994.
- 5.1.2.9 The existing habitat and vegetation on either side of the road has been mapped at 1/2500 scale. An overlay of the proposed scheme plotted on this map (see Figure 5.2) has been used in the assessment of the impact of the scheme on the ecology and nature conservation value of the area.

5.2 NATURE CONSERVATION STATUS

- 5.2.1 There are no Nature Reserves or Sites of Special Scientific Interest in the immediate vicinity of the section of the road under study, or likely to be affected by the on-line widening. The A23 between Handcross and Warninglid passes through an area of countryside of significant ecological interest and nature conservation value, particularly between Handcross and Slaugham Junction where most of the mature woodland on both sides of the road is designated as ancient semi-natural woodland and the area to the west of the road has also been designated as a Site of Nature Conservation Importance by West Sussex County Council.
- 5.2.2 All the scheme is within the St Leonard's Forest district of the High Weald Area of Outstanding Natural Beauty, a designation that confers equal importance to nature conservation as it does to landscape.

5.3 ANCIENT WOODLAND

5.3.1 Existing Conditions

- 5.3.1.1 Ancient woodlands are those which have had a continuous woodland cover since 1600 AD. Their importance is that many of them are believed to be the surviving remnants of, or to closely resemble, the primeval forests which are the natural climax vegetation of this country. They have had a long time to acquire species and to form stable floral and faunal communities and their soils have remained largely undisturbed. The extent of these areas has diminished greatly (a Nature Conservancy Council report in 1984 estimated that 30-50% of ancient woodland had been lost since 1949), and those which remain are considered to be a valuable natural resource to be protected. The Sussex Inventory lists three Ancient Woodlands adjacent to the road corridor.

5.3.1.2 *East Park Wood (refer to photographs in Appendix 5/E)*

Owned by the National Trust, the wood forms part of Nymans Estate (refer to Volume 1, Section 6.0: "Cultural Heritage"). The wood is divided into two parts. East Park Wood (north) lies to the north of East Park

House and adjoins the western boundary of the A23 between chainage 600 - 900. Most of the wood is classed as 'semi-natural', but the area between the two accesses to East Park was replanted with conifers. Part of the latter area was cleared in 1992 following windblow damage. East Park Wood (south), which is all classed as 'semi-natural' adjoins the southbound slip road at Slaugham Junction. The two ancient woodland areas are joined together by mature woodland to form a large continuous wooded area.

5.3.1.3 *West Park Wood (refer to photographs in Appendix 5/F.1 and 5/F.2)*

This area is also sometimes referred to as Orange Gill Wood. It is privately owned and forms part of Slaugham Park Estate. The wood is mainly classed as 'semi-natural' although sections have been replanted with conifers at its northern and southern end. The A23 forms the eastern boundary of the woodland along its length between Handcross and Slaugham Junction. A feature of the area is the stream Orange Gill, which flows through the wood in a steep sided valley. Such gill woodlands are considered to be important in Sussex, and the area has been designated by West Sussex County Council as a Site of Nature Conservation Importance (SNCI).

5.3.1.4 *Anne's Wood*

Anne's Wood lies to the west of the A23 and extends from Country Gardens to Warninglid. The ancient woodland part of Anne's Wood is set back from the highway, but the northern end of the wood which follows Anne's Wood Stream extends to the edge of the A23 by Merrivale.

5.3.1.5 A study of the historic maps of the area revealed that there may be some error in English Nature's designation of which parts of East Park Wood should have been classified as 'ancient'. It was considered more important, however, to assess the present value of the woodland areas than to clarify their status on paper. To this end a specialist ecological study was commissioned from the International Centre of Landscape Ecology, Loughborough University (ICOLE) in 1991 which was repeated and extended in 1992. ICOLE's report, '*An Ecological Survey of the Proposed Improvements to the A23 Handcross to Warninglid, August 1993*', which includes abstracts from English Nature's Inventory and West Sussex County Council's List of Sites of Nature Conservation Importance, is included in this statement as Appendix 5/A. ICOLE's study confirmed the high conservation value of the designated ancient woodland areas, compared with the other mature woodland.

5.3.1.6 West Park Wood was found to be particularly interesting. It comprises a rich and diverse floral and faunal community which, although no individual rarities were found, was considered to be an excellent example of a semi-natural ancient gill woodland. East Park Wood was considered to be less

interesting by comparison and ICOLE concluded that it would be less damaging in ecological terms to take land from the east side of the road.

5.3.1.7 West Park Wood was also considered to be the most interesting area for birds, with species notes typical of a woodland with a varied age structure. Because the ecological surveys were undertaken during summer, a separate survey of the wintering bird population was commissioned from ICOLE in 1993/4, their report *Winter Bird Survey of Land Adjacent to the A23 Handcross - Warninglid, March 1994*, is included in this statement as Appendix 5/B. Only common woodland species were noted, but again West Park Wood was found to be the more valuable area.

5.3.1.8 A feature of ancient woodlands is that they frequently provide a habitat for a large number of lower plant species. To examine this a specialist survey was commissioned from Chris Blandford Associates in 1993. Their report '*Bryophyte Survey, A23 at Handcross, West Sussex, January 1994*' is included in this statement as Appendix 5/C. Generally all the areas were found to be species poor. The reason for this was attributed to the proximity of the road as epiphytic plants are sensitive to air pollution. West Park Wood had the greatest number of species. However, East Park Wood (north), which contained the nationally rare (very rare in Sussex) moss *Ephemerum recurvifolium* and the local liverwort *Riccia fluitans*, was considered to be the better area. By comparison the bryophyte population of both East Park Wood (south) and East Park Garden were of little value.

5.3.2 Effect of the Scheme

5.3.2.1 The alignment of the preferred route was selected and the design of the scheme was developed to reduce the impact of the proposals on the ancient woodland areas, and the loss of designated semi-natural Ancient Woodland has been limited to about 0.597 hectares, comprising:

5.3.2.2 *East Park Wood (north)*

There would be no encroachment along the highway boundary, but the new access road between the B2114 and the properties at East Park, which generally follows the line of an existing track would require some clearance on both sides to allow for the passage of larger vehicles. A total of about 0.393 hectares would be required. There would be no disturbance to the sites of *Ephemerus* or *Riccia*.

5.3.2.3 *East Park Wood (south)*

A narrow strip of about 0.069 hectares would be disturbed along the edge of this area of the southbound slip road at Slaugham Junction.

5.3.2.4 *West Park Wood (Site of Nature Conservation Importance)*

An area of about 0.135 hectares would be required from this woodland. Generally only the less mature vegetation inside the present highway boundary would be lost, but the works would also encroach as a narrow strip into the ancient woodland area between chainage 595 - 700, 900 - 1020 and 1395 - 1520. Some clearance would also be required to construct the drainage outfalls and the diverted pipe to the Sewage Works.

5.3.2.5 Since it is an irreplaceable and nationally rapidly diminishing resource, the destruction of any area of ancient woodland is a potentially serious loss. Compared with their total area, (East Park Wood = 19 hectares/West Park Wood = 28.5 hectares) the loss would be small in percentage terms (East Park Wood = 1.85% West Park Wood = 0.25%) and should not be critical to the viability of the remaining woodland as a habitat or the ability of the communities to maintain themselves in their present state.

5.3.2.6 The loss of the existing vegetation from the highway verge would have the effect of opening up the edge of the woodlands. This would result in a reduction of their seclusion and an increased risk of damage from windblow. Judging by the evidence following the 1987 storm damage, the edge of the semi-natural woodlands would recover quickly through natural regeneration. Nevertheless extensive planting of the verges with native species would be undertaken, and this, combined with the natural regeneration, would result in the habitat recovering to a condition similar to the present in the long term.

5.3.2.7 The proposed works in West Park Wood would avoid any direct disturbance to Orange Gill, or its tributaries, or to the flushes of ground water that are a feature of the valley bottom. To protect the water quality of these watercourses, all carriageway drainage would be piped to discharge points outside the ancient woodland areas. Ground water, however, would be culverted under the road to maintain their existing dry weather flow pattern. A full description of Water Quality and Drainage is given in Section 11.0 of this document.

5.3.2.8 Badger activity is present in both East and West Park Woods. A separate assessment of badgers has been undertaken and is described below in subsection 5.12.

5.3.2.9 A benefit of the proposed scheme is that the removal of the lay-bys and the wide verges used for informal parking would reduce the extent of rubbish tipping and trespass which at present is a particular problem in West Park Wood.

5.4 OTHER MATURE WOODLAND AND HEDGEROWS

5.4.1 Existing Conditions

- 5.4.1.1 In addition to the designated ancient woodlands described above, there are several other areas of mature broad-leaved woodland and long established hedgerows adjacent to the A23. Examination of the historical maps shows that some of these areas have been under continuous woodland cover since at least 1795 AD, and it is possible that some could date back to 1600 AD.
- 5.4.1.2 Notwithstanding their lack of classification, not only are these woodlands and hedgerows important elements in the landscape of the Area of Outstanding Natural Beauty generally, and the A23 route in particular, but they also make a significant contribution to the conservation value of the area. In addition to the vegetation itself, they provide a variety of habitats in their own right and, because they adjoin the areas of ancient woodland, form a network of wildlife corridors which link these areas of special interest together. Particularly important in this respect are the wooded banks of the River Ouse and its tributaries which, although overgrown and neglected, provide linear habitats along which the wildlife of the watercourses can move.

5.4.2 Effect of the Scheme

Generally there would be little disturbance to the mature woodland and hedgerows adjacent to the A23 but the following areas would be affected.

5.4.2.1 *East Park (refer to photographs in Appendix 5/E)*

The excavation of the cutting on the east side of the road between chainage 1100 - 1400 would result in the loss of approximately 0.314 hectares of woodland that forms part of the gardens of East Park House. The area has been under continuous woodland cover since at least 1795 AD and contains many mature trees and provides a mature woodland habitat that is complimentary to the adjacent areas of ancient woodland. The area has been underplanted with introduced species and intensively maintained. As substantiated by the surveys undertaken, these actions have reduced its value as a habitat compared with West Park Wood or the designated semi-natural areas of East Park Wood. The loss of this area is nevertheless a significant impact, and the opening up of the edge would increase the risk of windblow damage, particularly because the remaining trees are exposed on the crest of the ridge. The detailed consideration of which trees would be felled or retained on the boundary would be made after the boundary line had been set out on the ground. Many of the ornamental shrubs, which are relatively immature could be transplanted elsewhere in the garden by agreement with the landowner. The new cutting slope would be planted with a mixture of native species of trees and shrubs. In the long term this would restore the woodland edge to a condition similar to the present.

5.4.2.2 *West Park Wood*

In addition to the ancient woodland areas referred to in 5.3.2.4, the proposals would result in the loss of about 0.240 hectares of other mature woodland from West Park. The largest part of the area affected is conifer plantation at the northern end of the wood which is of low conservation interest where about 0.170 hectares would be lost between chainage 350 - 510. An area of about 0.070 hectares of mature mixed woodland, which is of greater value as it is complementary to the ancient woodland, would however be lost between chainage 510 - 595 and 1520 -1565. The main effect of these losses would be the opening up of the woodland edge which would be restored when the proposed new edge planting was established. Some clearance would be required to construct the diverted pipe to the Sewage Works.

5.4.2.3 *Chainage 1750 - 2000 West*

The widening of the road and improvement of its vertical alignment across the east ridge of Mill Hill would result in extensive disturbance along the western boundary along this section. Although mostly only semi-mature highway verge planting would be affected (refer to 5.7 below) this section of the verge also contains several mature trees that were retained when the road was dualled. A total of 17 trees would be lost comprising 8 limes, 5 oak, 2 birch, a false acacia and a crack willow. Although some are healthy, the majority are damaged or otherwise in poor condition. Because of their isolation from the main areas of woodland, these trees are not considered to be of particular conservation value and their loss would have minor ecological significance.

5.4.2.4 *Anne's Wood*

Although outside that part of Anne's Wood which has been designated as Ancient Woodland, the strip of woodland that follows the course of Anne's Wood Stream on both sides of the A23 has been under continuous woodland cover since 1795 AD and comprises a mixture of native deciduous species showing a variety of age and condition and a rich herbaceous ground cover. The woodland also forms a corridor for wildlife. The construction of the service road tapers and the new access road to the Stanbridge area together with the regrading of the Garden Centre Stream would result in the loss of about 0.318 hectares of woodland. However, as only the tip of the areas closest to the A23 and the Garden Centre Stream would be affected, the impact on their conservation value would only be slight. Measures to protect badgers are described in sub-section 5.12.

5.4.2.5 *Stanbridge Access Road*

In addition to the area referred to in 5.4.2.4, the new access road would

result in the loss of about 0.036 hectares of woodland where it crosses the River Ouse, and would breach the mature hedgerow at its junction with the Staplefield Road.

5.5 CENTRAL RESERVE

5.5.1 Existing Condition *(refer to photographs in Appendix 5/G)*

5.5.1.1 Between chainages 800 - 1300 and 1500 - 2000 the wide central reserve of the existing road contains several mature trees which were retained when the dual carriageway was constructed and groups of semi-mature trees and bushes planted at the same time.

5.5.1.2 The mature trees are of the same species as the adjacent ancient woodland areas. Many are in a poor condition, being overmature and having been damaged in the storms of 1987. They may also have suffered from disturbance caused by the construction of the second carriageway despite the brick wells which were built around their trunks where the ground level was raised.

5.5.2 Effect of Scheme

5.5.2.1 The scheme would result in the loss of all 49 of the mature trees in the central reserve, comprising 29 Oaks, 16 Beech, 3 Ash and 1 Holly.

5.5.2.2 Whereas in woodland areas, the retention of old, damaged and dead trees adds to the diversity of habitat, such trees are of less value as individual specimens. Despite the contribution they make to the character of the road, and the contribution they make to the woodland canopy when viewed from afar, it is not considered that they warrant special protection, especially as their retention would necessitate an increase in the extent of disturbance to the adjacent woodland areas, which are considered to be more valuable.

5.6 TREE PRESERVATION ORDERS

5.6.1 Existing Conditions

5.6.1.1 Tree Preservation Orders in the study area have been notified by Mid Sussex District Council.

SV/1/TPO/84 Individual tree in the grounds of the Red House at the southern edge of Handcross Village.

SV/1/TPO/89 Group of trees on Mill Hill on eastern side of Slaugham Manor. This group of trees add significantly to the effect of the landform of Mill Hill in screening parts of the road from several viewpoints to the west.

5.6.2 Effect of the Scheme

5.6.2.1 Neither of the above areas would be affected by the proposals.

5.7 HIGHWAY VERGE PLANTING

5.7.1 Existing Conditions

5.7.1.1 Extensive planting of the highway verges was carried out when the dual carriageway was constructed in 1964. With the invasion of many self-sown indigenous species of trees and shrubs, the planting has taken on a natural character which complements the surroundings.

5.7.1.2 The predominant tree species are oak, birch and willow, with some beech, ash and pine. Hawthorn and blackthorn are also present but the shrub layer is dominated in many areas by extensive patches of bramble which have developed through natural colonisation.

5.7.1.3 The verge vegetation is now fairly mature and forms an integral part of the landscape of the existing road. This is especially true where it fronts the woodland areas and it provides an edge to the canopy.

5.7.2 Effect of the Scheme

5.7.2.1 The proposals would result in the loss of most of the highway verge vegetation on both sides of the road. The only substantial areas that would be unaffected would be the islands of planting at Handcross northbound and Slaughtam southbound junctions and on the embankment on the west side of the road opposite East Park. The latter area is important for wildlife. The overall loss of verge planting would amount to about 3.650 hectares.

5.7.2.2 The most noticeable aspect of the loss of this vegetation would be visual. However, because it is fairly mature (about 30 years old) and comprises mostly native species, it would also represent the loss of a significant area of semi-natural habitat. This would be the case particularly where it fronts and has become an integral part of the mature woodlands and hedgerows. Not only would there be a loss of habitat, but also an opening up of the woodland edge with the resulting loss of seclusion and increased risk of damage from windblow.

5.7.2.3 Extensive tree and shrub planting using native species is proposed which when mature, would restore the woodland edge and boundary vegetation to a condition similar to the present.

5.7.2.4 Between Slaughtam Junction - Anne's Wood Stream and Stanbridge Place - Stanbridge Stream on the east, and between Slaughtam Junction - Mill Hill and Country Gardens - Happy Eater on the west, a 10 metre wide

woodland strip would be planted along the highway boundary. Although primarily intended to provide visual screening, these strips would form substantial areas of habitat that would be complimentary to, and link together, the areas of mature woodland. The total area of planting proposed amounts to about 1.578 hectares.

- 5.7.2.5 During the bird surveys many species were seen in the verge areas, but it was felt that their presence was related more to the value of the adjoining habitat than the nature conservation value of the verges. No area appeared to be more attractive to birds than any other part. Similar habitats are common in the adjoining areas and it was considered that the temporary loss of the highway verge planting would therefore not have a significant impact on the overall bird population.

5.8 SCRUB

5.8.1 Existing Conditions

- 5.8.1.1 There are two areas of scrub land in the vicinity of the road which would be affected by the proposals.

5.8.1.2 *West Park*

A vegetation of bracken with scattered scrub has developed on the area at the north end of West Park Wood which was, until 1990, a mature conifer plantation. Several young birch and oak trees have established themselves through natural regeneration and if allowed the area would develop into a woodland resembling the adjacent area of semi-natural ancient woodland.

5.8.1.3 *Country Gardens/Happy Eater*

A large area of scrub has developed between the A23 at the eastern edge of Anne's Wood on land which appears to be a mixture of abandoned pasture and wasteland associated with the nearby clay pits. The land appears to have been left in an abandoned condition for several years, and is now largely covered with a scrub woodland vegetation comprising willow, hawthorn, blackthorn and alder, with several more mature oak, ash and sycamore trees. If allowed, the area would develop into a woodland resembling the adjacent semi-natural ancient woodland.

5.8.2 Effect of the Scheme

5.8.2.1 *West Park*

The realignment of the northbound slip road to Handcross would require a land take of about 0.201 hectares. Apart from the direct loss of habitat that would result, there would be no adverse effect.

5.8.2.2 *Country Gardens/Happy Eater*

The construction of the service road and new access would necessitate only a limited encroachment onto the edge of the area. However, construction of the reedbed interceptor would result in an overall land take in the region of 0.681 hectares. The reedbed would be sited where the existing ground conditions are damp, and would therefore be an appropriate feature in this area that would add to rather than detract from the value of the habitat.

5.9 HEDGES

5.9.1 Existing Condition

5.9.1.1 Hedges were planted along the highway boundary when the dual carriageway at Handcross Junction northbound, south of East Park and extensively along both sides of the road south of Slaugham Junction. These comprise mostly hawthorn and have been maintained by regular clipping, so that apart from a few planted trees, few other species have invaded. They are therefore of only modest conservation interest, although they do form a linear route for wildlife between the more substantial areas of vegetation that abut the road.

5.9.2 Effect of the Scheme

5.9.2.1 The proposals would result in the loss of the boundary hedge between North Lodge and West Park Wood, East Park Garden and East Park Wood (south), Slaugham northbound slip road, River Ouse crossing west, south of Country Garden Centre - Happy Eater, Stanbridge Stream - chainage 3075 east and Stanbridge View frontage, amounting to a total of approximately 1,325 metres.

5.9.2.2 In all cases the hedge would be reinstated, in several sections with the addition of substantial widths of mixed tree and shrub planting to form woodland strips along the boundary of the road. When established this planting would provide a reinforced linear habitat, that would be of much greater conservation value than the present hedges.

5.10 AGRICULTURAL LAND

5.10.1 Existing Condition

5.10.1.1 Most of the farmland in the area is resown grassland used for grazing cattle and horses with some fields used for arable cropping in rotation. This land is of no special conservation value.

5.10.1.2 Field 5600/5792 which is south-east of Slaugham Junction is an exception. It comprises a rough grazing on semi-improved grassland with areas of marsh, on which hard rush has established, and other areas of gorse.

Overgrazing has made this field of moderate conservation value.

5.10.2 Effect of Scheme

- 5.10.2.1 The scheme would result in the loss of a total of about 3.858 hectares of agricultural land. Of this, approximately 2.465 hectares comprises improved grass or arable land, a large part of which would be taken for woodland planting which would substantially enhance the conservation value of the land.
- 5.10.2.2 The landtake from field 5600/5792 which comprises semi-improved pasture amounts to about 1.393 hectares. Part of this area would be required for the new access track to Stanbridge, but the majority would be taken to establish the woodland strip along the eastern boundary and to form the reedbeds for water treatment. Both of these uses would enhance the overall conservation value of the area.

5.11 WATERCOURSES

5.11.1 Existing Conditions

5.11.1.1 *Survey*

A detailed description of the hydrology of the area and of the highway drainage is given in Section 11.0: "Water Quality and Drainage". This sub-section focuses on their ecological and nature conservation value.

- 5.11.1.2 Samples of aquatic invertebrates were taken by ICOLE from Orange Gill and the River Ouse during their ecological survey in 1992, and a full chemical and biological assessment of all the watercourses was carried out by ICOLE in 1993. Their report '*Chemical and Biological Assessment of the Water Quality of Watercourses Adjacent to the A23 Handcross to Warninglid, March 1994*' is included in this statement as Appendix 5/D.

5.11.1.3 *River Ouse (refer to photographs in Appendix 5/H)*

This river is the main watercourse of the area and flows from west to east through a culvert under the A23 at chainage 1990. It is in fact little more than a stream at this point and flows in a shallow overgrown bed which varies in width between 1.5 and 2.5 metres.

- 5.11.1.4 The National Rivers Authority which tests the water quality at Stanbridge Bridge sampling point (approximately 1 kilometre downstream of the A23) gives the River Ouse a 1B classification which is 'good' and would meet the standard for a '*cyprinid river*' under the EC Fish Directive, 1978. The results of ICOLE's assessment were generally consistent with this classification. However, the overall scores for invertebrates and macrophytes were low and the watercourse would not be considered to be

of particular importance for its aquatic flora and fauna.

5.11.1.5 Several tributaries of the River Ouse come within the study area. For ease of identification, those which are unnamed on the Ordnance Survey maps have been accorded appropriate names on Figures 5.1 and 5.2.

5.11.1.6 *Orange Gill (refer to photographs in Appendix 5/F)*

This stream has its source at the north end of West Park Wood near the sewage works, which discharges to it, and flows in a southerly direction roughly parallel with the A23 to its junction with the Ouse approximately 100 metres upstream of the road.

5.11.1.7 The stream is an essential component of the habitat of West Park Wood. Within this area it has three tributaries on its east bank which emanate from culverts under the A23 and which carry drainage from land to the east of the road. During wet weather, flows in these tributaries are added to by surface water run-off from the A23.

5.11.1.8 Orange Gill is also fed by flushes of waterlogged ground which occur where ground water seeps from water bearing strata which outcrop on both sides of the valley. The varied vegetation of these areas adds significantly to the diversity of habitat in the woodland and they are therefore considered to be important features.

5.11.1.9 A further feature of Orange Gill within West Park Wood is the area shown as a pond at chainage 1500. Originally formed c1890s as an earth dam constructed across the stream, the dam has subsequently been breached and the area is presently an expanse of marshy ground on which a stand of alders has become established. This area was found to be popular with Siskin during the winter bird survey.

5.11.1.10 The overall scores for invertebrates found during ICOLE's assessment were low. However, the presence of stone flies and cased caddis indicate general good water quality, and the low scores were attributed to overshadowing by the dense woodland cover. The highest scores were found downstream. This correlated with the chemical assessment, which found relatively high levels of ammonia and BOD at the sewage outfall but which improved downstream.

5.11.1.11 *East Park Stream*

This stream has its source at the north end of East Park Wood and flows initially in a south-easterly direction on the east side of the ridge occupied by East Park House before turning south-west to its junction with the Ouse just downstream of the A23. The northern part of East Park stream is unaffected by the A23. However, highway drainage is discharged into the stream where it is culverted under the Staplefield Road.

5.11.1.12 The results of ICOLE's sampling show a reduced invertebrate score and increased BOD downstream of the outfall, but the presence of pollution sensitive species would indicate that generally there is not a significant problem.

5.11.1.13 Downstream of the Staplefield Road the stream flows in a shallow, hedge lined watercourse, the side of which have been heavily eroded by stock. The land adjacent to this section of the stream is poorly drained with some areas of hard rush and other wetland vegetation.

5.11.1.14 *Anne's Wood Stream (refer to photographs in Appendix 5/H)*

This watercourse, which is culverted under the A23 at chainage 2350, is a significant tributary of the River Ouse and is of a similar size. West of the A23 it combines several minor streams and ditches which drain a large catchment between Mill Hill and the B2115, many of which issue from springs. Generally the banks of these streams are wooded and for the most part flow through the area of Anne's Wood ancient woodland. Downstream of the A23, the gradient of the stream slackens, and its bed meanders through a woodland strip to its junction with the Ouse approximately 300 metres east of the highway boundary.

5.11.1.15 The results of the sampling undertaken by ICOLE were similar to those obtained for the Ouse and would be compatible with the stream being classified as a cyprinid river. Bullhead fish (*Cottus gobio*) were netted during the invertebrate sampling. Highway drainage is discharged into the stream on both side of the road.

5.11.1.16 *Garden Centre Stream*

This minor watercourses, which is little more than a ditch, emerges from the hedgerows on the west boundary of the A23 at chainage 2745 where it is fed by highway drains. The watercourse used to be fed also from the stream on the east side of the A23 which flowed westwards to a 450mm diameter culvert at chainage 2785, until that ditch was altered as part of the Warminglid to Sayers Common Scheme (see below). From its issue, the stream flows in a north-westerly direction in a shallow heavily vegetated ditch on the edge of a narrow strip of mature woodland and scrub to connect with Anne's Wood Stream via a small pond adjacent to the Garden Centre.

5.11.1.17 Sampling was complicated by low flow conditions and dense vegetation. However, the invertebrate count would indicate that there are no significant pollution problems.

5.11.1.18 *Stanbridge Stream*

Prior to the work carried out under the Warninglid to Sayers Common scheme this minor stream which issues from the pond at the abandoned clay pit, flowed westwards and was culverted under the A23. In 1992 the ditch was re-cut to drain eastwards and now takes the highway drainage from the A23 into the stream which flows north-eastwards between Stanbridge House and Stanbridge Grange Farm before joining the River Ouse approximately 500 metres downstream of the A23.

- 5.11.1.19 In the grounds of Stanbridge House the stream passes through an ornamental pond. Shortly after the works described above were completed it was reported that fish in the pond had died and it was suspected that the cause had been contamination from the cement filled sandbags used to stabilise the sides of the recently constructed section of ditch. The analysis undertaken by ICOLÉ revealed that the water had a relatively high pH, probably as a result of the presence of cementitious materials, but that otherwise the water in the stream was of good quality despite it being supplied mainly by run-off from the road.

5.11.2 **Effect of the Scheme**

5.11.2.1 *Generally*

The proposed drainage system would separate ground water drainage from the surface water run-off from the highway. This would allow the road drainage to be treated, initially through interceptors, but additionally by passing the effluent through reedbeds before discharge into the surrounding watercourses. The reedbeds would be bunded to form balancing ponds sized to attenuate peak flows during storms. This storage capacity would also allow for the discharge to be contained and treated in the event of an incident involving the spillage of toxic materials. The proposals would thus improve the water quality of the streams and protect them from accidental pollution following a road accident.

- 5.11.2.2 A further benefit of the reedbeds would be the habitat provided for wildlife. A total area of about 0.30 hectares of wetland would be created on what is presently mostly relatively uninteresting grassland.

5.11.2.3 *Orange Gill*

Although the least expensive solution would have been to discharge the drainage from the A23 north of Slaugham Junction into Orange Gill, this would have resulted in a greater extent of disturbance to the woodland area and the risk that the increased volume would scour the bed of the stream. All the surface water drainage from the northern part of the A23 would therefore be collected to a single outfall which would discharge into Stanbridge Stream to the east. The proposal would therefore eliminate the

present risk of contamination to this area of nature conservation importance.

5.11.2.4 To maintain the dry weather flows in the stream, the culverts which transfer ground water from the east side of the road to the existing tributaries would be maintained. These tributaries would also receive discharge from the ground drains that would be formed along the toe of embankments. It is not expected that the proposals would alter the existing pattern of ground water movement that feed the flushes at the bottom of the valley as the water bearing strata are well below the level affected by any earthworks.

5.11.2.5 The only section of carriageway drainage that would be discharged into Orange Gill would be from the northbound Slaugham slip road. This would be connected via an interceptor and through a reedbed to an outfall south of Slaugham Junction.

5.11.2.6 *East Park Stream*

East Park Stream would receive all the carriageway drainage from north of Slaugham Junction, which would be treated first by an interceptor then through a large reedbed to be constructed in field 5600/5962, before being discharged approximately 100 metres south of Staplefield Road. The watercourse downstream would probably have to be re-cut to repair the present damage caused by stock, but the reedbed would be bunded to create a balancing pond to limit the discharge rate during wet weather so that the flows would be no greater than at present. There would therefore be no long term adverse effect, and the treatment of the effluent would improve the water quality compared with the present untreated discharge from the road. The reedbed would be sited to the area of the field which is presently marshy and would extend the area of wetland habitat.

5.11.2.7 A second smaller outfall would be constructed to East Park Stream close to its junction with the River Ouse. This would receive the surface water drainage from the A23 between Slaugham Junction and Mill Hill, which would be treated by a second interceptor and reedbed sited at the southern end of field 5600/5792.

5.11.2.8 *River Ouse*

The existing surface water drains which discharge directly into the Ouse both upstream and downstream of the road would be replaced by the single outfall described above.

5.11.2.9 The existing culvert under the A23 would be replaced, and extended eastwards to provide a crossing for the new access road to the Stanbridge area. This work would have a significant short term impact in the vicinity of these structures but, after restoration, there would be no long term

adverse effect.

5.11.2.10 *Anne's Wood Stream*

The existing surface water drains which discharge directly into the stream both upstream and downstream of the road would be replaced by a single outfall downstream. As there is no convenient site for a reedbed adjacent to the road this would be located approximately 200 metres to the east in an area that has recently been planted as a new woodland.

5.11.2.11 The existing culvert under the A23 would be replaced and extended eastwards to provide a crossing for the new access road to the Stanbridge area. This work would have a significant short term impact in the vicinity of these structures but, after restoration, there would be no long term adverse effect.

5.11.2.12 *Garden Centre Stream/Stanbridge Stream*

It is proposed to restore the flows in these watercourses to the pattern that existed prior to the Warninglid to Sayers Common scheme. Stanbridge Stream would be terminated at the highway boundary and the outfall from the Warninglid to Sayers Common scheme would be redirected through a new culvert under the A23 to discharge through an interceptor and reedbed into the Garden Centre Stream. This system would also receive the surface water run-off from the A23 south of the Stanbridge area. This stream would have to be cleared of vegetation and re-cut from the west boundary of the A23 to its junction with Anne's Wood Stream.

5.11.2.13 In addition to improving the water quality in the watercourses and the ability to control pollution from an accidental spillage of toxic materials, the proposals would protect the ornamental pools at Stanbridge House.

5.12 BADGERS

5.12.1 A survey undertaken by the Mid Sussex Badger Protection Group during March 1993 located ten setts belonging to four groups of badgers in the vicinity of the A23. Two crossing points were identified where several deaths have been recorded.

5.12.2 The proposed scheme would not directly affect any of the setts, but the increased width of the road would make it more hazardous for badgers, which have little traffic sense, to cross. In the interest of safety for both animals and travellers alike a wildlife fence would be erected, along the boundary of the highway, and tunnels provided at the crossing points. Although this would increase the barrier effect of the road, it is thought that there is sufficient suitable habitat on each side of the road for this not to matter. The Staplefield Road underpass would continue to provide a relatively safe crossing point.

5.12.3 The loss of the woodland edge would reduce the seclusion of the woodlands until the new boundary planting was established. However, the removal of the lay-bys and informal parking on the verges would remove the present problem of trespass for the road, and the disturbance this causes.

5.13 DEER

5.13.1 Roe and Muntjac deer have been seen in the woods on either side of the road. However, there have not been any reports of accidents involving deer on this section of the A23. It is assumed that this is because the long established route acts as a barrier to the deer which, unlike badgers, are shy and do not blindly follow habitual routes.

5.13.2 Consideration was given to providing deer fencing. However, conservationists advise that there would be some risk that the deer might gain access into the road corridor at junctions and could become trapped there by the fencing. The wildlife fencing would in any case act as a partial barrier that would deter deer from straying onto the road under normal circumstances but which they would be able to jump if necessary.

5.13.3 As described above, the boundary changes would temporarily reduce the seclusion of the wood, however the removal of the lay-bys would also remove the present problem of disturbance by trespassers.

5.14 SUMMARY

5.14.1 The extent of disturbance to existing habitats is summarised in the following table.

Woodland	hectares
Semi-natural Ancient Woodland	0.597
Replanted Ancient Woodland	none
Mature Mixed Woodland	0.738
Mature Conifer Plantation	0.170
Scrub Woodland	0.882
Semi-mature verges	<u>3.650</u>
	6.037
Individual Mature Trees	number
Centre Reserve	49
West Verge	<u>17</u>
	66
Hedges	metres
Old Hedgerows	20
Maintained hedge	<u>1,325</u>
	1,345

Grassland	hectares
Improved Pasture	2.465
Semi-Improved Pasture	1.393
Amenity Grass	<u>0.467</u>
	4.325

Water Courses	metres
River Ouse	15
Anne's Wood Stream	5
East Park Stream : regraded	210
Garden Centre Stream : regraded	<u>375</u>
	605

- 5.14.2 The most significant ecological impact would be the loss of mature woodland, especially the semi-natural ancient woodland at West Park which forms part of Orange Gill SNCI. The area affected is relatively small, however, and should not be critical to the viability of the remaining habitat.
- 5.14.3 The loss of the other less mature areas of woodland, hedgerow and verge planting would also be significant because they either form an edge to, or link together, the areas of ancient woodland, and are therefore an integral part of the overall woodland habitat. This loss would be mitigated by the proposed replanting which when established would more or less recreate and, in some situations, improve on the existing conditions.
- 5.14.4 The loss of the mature trees from the central reserve would be of minor ecological significance.
- 5.14.5 Since the widening would be contained within or immediately adjacent to the existing corridor of what is presently a major road, it is not likely that there would be a significant increase in its impact on wildlife in its vicinity. No rare or protected species were found that would be directly affected by the works. The construction of two tunnel crossings and the provision of fencing would protect badgers from road accidents without adversely affecting their access to suitable habitat. The removal of the lay-bys would reduce any problems caused at present by trespass from the road.
- 5.14.6 The replacement of the major culverts on the River Ouse and Anne's Wood Stream would cause only temporary disturbance to these watercourses.
- 5.14.7 The proposed drainage system would allow for the treatment of surface water effluent from the road and its containment in the event of an accidental spillage of toxic materials. The existing pattern of groundwater movement and dry weather flows would be maintained. The proposals would improve the water quality in the watercourses as well as protecting the environment of the areas of special ecological value. The reedbeds would create a useful additional habitat type.

● **Appendix 5/A - Ecological Survey**

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1. INTRODUCTION

In 1991 the International Centre of Landscape Ecology (ICOLE), Loughborough University, was requested by Derek Lovejoy Partnership, Edinburgh, to carry out an ecological survey of woodland (West Park Wood and East Park Wood) affected by the proposed road improvements to the A23 near Handcross, West Sussex. At the request of the Department of Transport, Dorking, ICOLE was also asked to assess levels of lead in the soils of West Park Wood adjacent to the A23 (**Appendix 6**)

In 1992 ICOLE was requested to make an overall survey of the area likely to be affected by the proposed improvement to the A23 from the Handcross interchange south to the junction with the Warringlid to Sayers Common contract close to the 'Happy Eater' restaurant, a distance of approximately 2.5 km (Figure 1).

This report combines information gathered during 1991/2, including surveys made on 17 June, 6 August, and 19 September 1991 and 26 July, 28 August and 4 October 1992. A discussion about West Park Wood was held on site on 17 June 1991 with Dr. A. Whitbread, Conservation Officer of the Sussex Wildlife Trust. Discussions were also held with English Nature, South East England Region, Lewes, Sussex, County Ecologist of West Sussex County Council, the Mid-Sussex Badger Protection Group and the Canterbury and Pevensey Offices of the National Rivers Authority (Southern Region). Throughout the report the terms 'West Park Wood' and 'East Park Wood' have been used for convenience and refer to the woodland in the study area to the west and east of the A23.

2. GEOLOGY AND SOILS

The area is underlain by Upper Tunbridge Wells Sand, sandstones, sands and clays of varying compactness from the Hastings Beds of the Cretaceous period. In part of the valley bottom these sandstones and clays are overlain with acid sandy loam and sandy loam (pH 4.4-4.8) and clay loam (pH 5.8).

The soils developed in the Upper Tunbridge Wells Sand are of the South Petherton association (typical brown earths) and pass to soft weathered siltstone or fine-grained sandstone at moderate depth. These typical brown earths are generally permeable and deep, well drained silty soils (Wetness Class I, i.e. the soil profile is not waterlogged within 70cm depth for more than 30 days in most years), though those on steep slopes suffer some run-off.

The distribution of these underlying aquatic sands is relatively restricted in Sussex. They provide the conditions for an unusual ground flora in what are known as gill woodlands. Gill woodlands are wooded valleys, with streams or gills, which support a floral community associated with old or ancient woodlands.

3. ECOLOGICAL SURVEY

The area surveyed included the immediate vicinity of both sides of the existing A23 and in particular more extensive surveys of the woodlands of West Park Wood (shown as Orange Gill on Figure 2) and East Park (Nymans Estate). The area surveyed lies within the High Weald Area of Outstanding Natural Beauty.

Samples of aquatic invertebrates were also taken from Orange Gill and the River Ouse to assess the biological importance of these water courses (Figure 2). The report examines those areas of nature conservation interest likely to be impacted by the road proposals:

- (a) Woodland
- (b) Other habitats in the study area including the roadside and central reservation.
- (c) Orange Gill, River Ouse and an unnamed stream.

The distribution of the different types of land use either side of the A23 corridor is shown in Figure 3.

3.1 Woodland

West Park Wood (Orange Gill) and East Park (Nymans Estate) are both ancient semi-natural woodland (Figure 2). Ancient semi-natural woodlands are a type of ancient woods which have had a continuous woodland cover since at least 1600 AD and have only been cleared for underwood or timber production (for further description see **Appendix 1**).

3.1.1 West Park Wood (Orange Gill)

The area of ancient semi-natural woodland (Figure 2) consists of a dense canopy of mature woodland that slopes steeply from west of the A23 down to the Orange Gill. A ground flora community indicative of ancient woodlands is present, including species such as Dog's Mercury (*Mercurialis perennis*), Bluebell (*Endymion non-scriptus*), Yellow Archangel (*Lamiastrum galeobdolon*) and Wood Sorrel (*Oxalis acetosella*). A complete list of species found during the site visits is given in **Appendix 2**. This woodland is ancient semi-natural woodland and classified as a wood where semi-natural stands have been modified by planting (**Appendix 1** 'Ancient semi-natural Woodland' variation 3).

Gill woodlands such as West Park Wood, are "of particular importance in Sussex as they often contain a particularly rare type of ancient woodland community".... "ferns, mosses, liverworts and lichens - these tend to form the rare plant community associated with gill woodland" (Letter from Dr. A. Whitbread, Sussex Wildlife Trust, 26 April 1991). In 1991 West Sussex County Council adopted the concept of Sites of Nature Conservation Importance (SNCIs) as part of their conservation strategy for West Sussex (A Nature Conservation Strategy for West Sussex April 1991). The Conservation Strategy identified ancient semi-natural broadleaved woodland as a habitat that would score high in any county survey. In May 1992 West Park Wood referred to as Orange Gill Wood together with the adjoining Homestead Wood was identified as a SNCI (**Appendix 5**).

The northern part of the wood is dominated by Oak (*Quercus robur*) and Ash (*Fraxinus excelsior*) with Beech (*Fagus sylvatica*) and Holly (*Ilex aquifolium*) and a middle storey of Hazel (*Corylus avellana*). Moving south, the woodland structure gradually becomes Alder (*Alnus glutinosa*) and Oak (*Quercus robur*) dominated. There are occasional Scots Pines (*Pinus sylvestris*) and Rowan (*Sorbus aucuparia*) with some Rhododendron (*Rhododendron ponticum*) and Guelder-rose (*Viburnum opulus*). Ivy (*Hedera helix*) cover is extensive both on trees and on the ground. Much of the woodland floor has a dense cover of Bramble (*Rubus fruticosus* agg.), Bracken (*Pteridium aquilinum*), Nettle (*Urtica dioica*) and Honeysuckle (*Lonicera periclymenum*) with patches of Bluebell (*Endymion non-scriptus*) and Foxglove (*Digitalis purpurea*). In places fallen trees, apparently the result of wind damage, have opened the canopy and this has allowed regeneration of Ash (*Fraxinus excelsior*) and Holly (*Ilex aquifolium*).

Small streams or flushes running into Orange Gill maintain areas of wet ground with patches of Pendulous Sedge (*Carex pendula*), Yellow Pimpernel (*Lysimachia nemorum*), Water Mint (*Mentha aquatica*), Water Figwort (*Scrophularia auriculata*) and Skullcap (*Scutellaria galericulata*). Orange Gill runs into a silted pond at the southern end of West Park Wood characterised by wetland plants such as pendulous sedge (*Carex pendula*), branched bur reed (*Sparganium erectum*) and reed mace (*Typha latifolia*) with stands of alder (*Alnus glutinosa*) and oak (*Quercus robur*). The gill then flows south for approximately 400m before discharging into the river Ouse.

Broad Buckler-fern (*Dryopteris dilatata*), Lady Fern (*Athyrium filix-femina*), Male-fern (*Dryopteris filix-mas*), Scaly Male-fern (*Dryopteris pseudomas*), Hard Fern (*Blechnum spicant*) and Lemon-scented Fern (*Thelypteris limbosperma*) were noted.

Birds present, included Spotted Flycatcher, Nuthatch, Marsh Tit, Long-tailed Tit, and Chiffchaff. A full list of species noted during site visits is given in **Appendix 2d**. Deer, Fox and Rabbit were seen, with both Adder and Grass Snake reported. Evidence of Badger activity was seen and the likelihood of badgers using the wood was confirmed by the Mid Sussex Badger Group. Common Frogs were seen near Orange Gill.

There are two areas of land, one open the other mature woodland, which lie immediately outside of the boundary of West Park Wood ancient semi-natural woodland (Figure 2) but are part of the what was the original woodland area. They have both been included in the woodland area shown as 1 on Figure 3. The open area of what was once a plantation lies north of the ancient woodland boundary extending up to the Handcross interchange. This area is now regenerating with Oak (*Quercus robur*) and Birch (*Betula pendula*) with extensive growth of Bracken (*Pteridium aquilinum*). To the south of the cleared area and east of the Handcross sewage works is a parcel of mature woodland consisting of Oak (*Quercus robur*), Birch (*Betula pendula*) and Scots Pine (*Pinus sylvestris*).

3.1.2 East Park (Nymans Estate)

This consists of two separate areas of ancient woodland on the Nymans Estate on the east side of the A23 (Figure 2). The northern area is composed of mainly mature Ash (*Fraxinus excelsior*), Silver Birch (*Betula pendula*), Hawthorn (*Crataegus monogyna*) and Oak (*Quercus robur*) with a thin under storey of Hazel (*Corylus avellana*) and Holly (*Ilex aquifolium*). In places the Hawthorn (*Crataegus monogyna*) has developed into a dense thicket.

Where the canopy is thickest ground cover is bare or sparse being mainly Bramble (*Rubus fruticosus* agg.), Lords-and-Ladies (*Arum maculatum*) and Ground-ivy (*Glechoma hederacea*). There are occasional Scot's Pines (*Pinus sylvestris*) with Guelder-rose (*Viburnum opulus*) and Rhododendron (*Rhododendron ponticum*) and Foxglove (*Digitalis purpurea*), Wood Sage (*Teucrium scorodonia*) and Honeysuckle (*Lonicera periclymenum*). In wetter areas there is Pendulous Sedge (*Carex pendula*). There are a number of introduced tree and shrub species.

The southern area of East Park Wood is composed of Oak (*Quercus robur*) and Birch (*Betula pendula*) with Rowan (*Sorbus aucuparia*) and Elder (*Sambucus nigra*). The understorey is dominated by bracken (*Pteridium aquilinum*) and bramble (*Rubus fruticosus* agg.). A section nearest the Slaugham junction of the A23 consists of dense birch and Willow coppice (*Salix spp.*) with some Oak (*Quercus robur*). In the vicinity of a small stream alder dominates with Birch (*Betula pendula*) and Oak (*Quercus robur*). In places there are dense growths of Blackthorn (*Prunus spinosa*), Hawthorn (*Crataegus monogyna*) and Grey Willow (*Salix cinerea*). A complete list of species found during site visits is given in **Appendix 3**.

Some common woodland birds were seen (Wren, Blackbird, Robin, Crow and Jackdaw) and Rabbits and Squirrel were also present (**Appendix 3d**).

Both West Park Wood and East Park Wood were surveyed in 1982 for the Sussex Wildlife Trust and the RSPB (An Ecological Survey of Woodland in N. E. Sussex Site reports Vol 2: Horsham Area - **Appendix 3e**).

3.2 Other Habitat in the Study Area Including the Roadside and Central Reservation

3.2.1 West Side A23

South of West Park Wood and the Slaughtam road junction land use is composed of improved grassland (2 on Figure 3) dropping down to the river Ouse. The land then rises on the southern bank of the Ouse, arable use dominating (3 on Fig 3) up to an unnamed stream. The unnamed stream, a tributary of the Ouse, lies in a steep valley over shadowed by Hawthorn (*Crateagus monogyna*), Birch (*Betula pendula*), Ash (*Fraxinus excelsior*), Elder (*Sambucus niger*) and Holly (*Ilex aquifolium*). This valley and its trees is part of a belt of woodland which further south connects with Annes Wood, an ancient woodland outside of the area of survey. Further south there is a garden centre with attached gardens (5 on Figure 3) and an area of scrub Oak (*Quercus robur*) and Birch (*Betula pendula*) to the west of the Happy Eater (1 on Figure 3).

With the exception of the River Ouse and its unnamed tributary this part of the road corridor has little or no conservation value.

3.2.2 East Side A23

The land use on this side of the A23 is more varied (Fig 3). From the Handcross interchange south there are two fields, one is improved grassland the other cultivated for horticultural purposes (2 and 5 on Figure 3). Between East Park Farm and the A23 is a plantation of mature Western Red Cedar (*Thuja plicata*) (4 on Figure 3), partly felled during 1992. The grounds of East Park House reach down to the verge of the A23 (5 on Figure 3). Although the grounds contain a number of mature tree species there are many introduced species. A line of mature oak (*Quercus robur*) marks the border of the grounds and the road verge. There is an understorey of Bracken (*Pteridium aquilinum*) and Hazel (*Corylus avellana*) with a predominance of Rhododendron (*Rhododendron ponticum*). As well as mature Scots pine (*Pinus sylvestris*) there are a number of introduced pine and conifer species. Rowan (*Sorbus aucuparia*) and Yew (*Taxus baccata*) and Birch (*Betula pendula*) and guelder rose add to the variety of tree and shrub species. The grounds of East Park House have a limited conservation value mainly as a feeding area for common garden birds.

South of the grounds of East Park House is a field which runs down to the southern part of East Park Wood and the Slaugham road junction (2 on Figure 3). The field was newly seeded, assumed to be with improved grasses, in the autumn of 1992. There is no conservation value in this habitat. A hawthorn hedge and embankment separates the field from the verge of the A23. The embankment is a rabbit warren. Further south beyond the minor road to Slaugham is a field of semi-improved grassland (6 on Figure 3) which runs down to the River Ouse. This field is rough grazing with hard rush and gorse. Overgrazing has made this field of moderate conservation value. Beyond is an arable field (3 on Figure 3) used for growing maize which borders the steep valley of the unnamed tributary of the River Ouse. Vegetation in this valley is composed of Hawthorn (*Crataegus monogyna*), Holly (*Ilex aquifolium*) and Bramble (*Rubus fruticosus*) with a particularly fine example of a mature Oak (*Quercus robur*). South of the tributary the land is improved grassland used for grazing horses (2 on Figure 3).

3.2.3 Road Verges and Central Reservation

3.2.3 (i) Road Verge - West Side A23

The edge of West Park Wood (including the open area and area of woodland mentioned in 3.1.1) provides the border from the Handcross interchange south to the junction with the minor road to Slaugham. Further south in the area surveyed the road verge is substantial with distance between road and field boundary often as much as 10m. A variety of native tree and shrub species form a dense linear strip of mature Oak (*Quercus robur*), Beech (*Fagus sylvaticus*), Birch (*Betula pendula*) with Hawthorn (*Crataegus monogyna*), Holly (*Ilex aquifolium*) and Hazel (*Corylus avellana*). At the most southerly point of the area surveyed the verge, under a canopy of trees, has several wet depressions supporting Pendulous Sedge (*Carex pendula*). There was also evidence of rabbits and badger. A badger latrine or dung pit was found under the canopy of trees. The narrowness of this road side strip of vegetation give it a limited conservation value.

3.2.3 (ii) Road Verge - East Side A23

South from the Handcross interchange the road verge consists of an embankment next to two fields (2 and 5 on Figure 3) belonging to the Nymans estate which then slopes into the edge of East Park Wood and down to the drive leading to East Park Farm. There are a mixture of trees and shrubs including Ash, Birch, Hawthorn, hybrid Willows, Oak and Elder with young Beech, Sycamore and Scots Pine.

South of East Park Farm drive there is a fringe of mature Oak and Ash with Hawthorn, Elder, Hazel, Holly and Bracken understorey with the plantation of Western Red Cedar behind. A similar mixture of trees and shrubs continues south to almost the Slaugham junction although there are many more younger specimens and in addition include Gorse (*Ulex europaeus*), Broom (*Sarothamnus scoparius*) and Heather (*Calluna vulgaris*).

South of the Slaugham junction the road verges are again substantial with oak, ash, hazel, birch, hawthorn and poplar.

Where the road verges are isolated from a woodland edge they have a limited conservation value. In close proximity to woodland the road verges have a greater conservation value forming an extension to the woodland and acting as a buffer between the woodland edge and the road.

3.2.4 Central Reservation

As the A23 descends from Handcross to the Slaugham junction there is a central reservation of mature oak, beech and ash together with young birch and well established ivy, hawthorn, holly, blackthorn, bramble and bracken. South of the Slaugham junction there is a line of mature oak, ash and lime in the central reservation.

Despite the maturity of some of the specimens their isolation gives them little conservation value.

3.3 Orange Gill and River Ouse

Samples of aquatic invertebrates were taken in both Orange Gill and the River Ouse to establish their water quality and the possible deterioration of that quality as a result of runoff from the improved road reaching these water courses. Details of the invertebrates are contained in **Appendix 4**. The invertebrates have been given a score based on the British Monitoring Working Party (BMWP) system used by the National Rivers Authority (NRA). The highest score is given to those families of invertebrates that are least tolerant to organic pollution, the most tolerant having the lowest score. Also included is a print out of the results of the sampling carried out by NRA (Southern Region) since 1989 at Standbridge Farm approximately 1 km downstream of the confluence of Orange Gill and the river Ouse.

It should be noted that scores for Orange Gill are poor and that scores increase further downstream, the samples for the river Ouse being the highest. The reasons for this change with distance may be related to organic pollution discharge from the Handcross sewage works at the head of Orange Gill, the organisms found all having a degree of tolerance to such pollution. Since there are no obvious signs of organic pollution in Orange Gill the low scores may in part be due to other stress factors such as the physical environment of the gill e.g. base poor nature of the water and the heavy shading from the dense woodland canopy.

The higher scores for the River Ouse downstream of the discharge from Orange Gill are probably the result of the more diverse habitat that exists in the river as opposed to the gill.

The print out from NRA (Southern Region) shows that at the Standbridge Farm sampling point the score had increased considerably indicating an overall improvement of water quality. NRA (Southern Region) give the river Ouse a 1B classification which is regarded as good quality and are unaware of any problems with the quality of discharge from Handcross sewage works (Mr Loy, NRA, pers comm).

4. SUMMARY

The part of the A23 road corridor under consideration is situated in an Area of Outstanding Natural Beauty. The nature conservation interest in the vicinity of the corridor lies in the ancient woodland situated either side of the road from Handcross to the Slaugham junction and also in protection of the River Ouse and its tributary.

Gill woodlands, such as West Park Wood, are an unusual feature in Sussex being more acid in nature than the majority of habitat in the county. The diversity of habitat in West Park Wood is greatly increased by the presence of flushes. The distinctive feature of West Park Wood, as opposed to East Park, is the community of species, particularly the floral community, that make up the woodland. Although none of the species individually has a rarity value, taken as a whole West Park Wood is an excellent representative of an ancient semi-natural woodland.

In ecological terms the surveyed area of West Park Wood was of more interest and more diverse with a greatly enhanced community structure than East Park. This difference in ecological interest has been recognised by the recent designation of Orange Gill Wood i.e. West Park Wood as one of West Sussex's Sites of Nature Conservation Importance.

The River Ouse is classed as a good quality river and thought should be given to protecting the river from direct runoff from the improved road. It will be necessary to extend the same protection to the unnamed tributary of the Ouse.

All other habitats along the road corridor are of local interest with little nature conservation value. The road verges on either side of the A23 and the central reservation in the area surveyed support many mature trees. In their relatively isolated setting they are of limited value to wildlife. They and their associated roadside habitat bear no comparison, in ecological terms, to West Park Wood.

5. BIBLIOGRAPHY

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6. APPENDICES

APPENDIX 1

Definitions of Categories of Ancient Woodland

**(from Nature Conservancy Report:
Surrey, Inventory of Ancient Woodland, 1988)**

ANCIENT WOODLAND

Definition:

Ancient woods are those which have had a continuous woodland cover since at least 1600 AD and have only been cleared for underwood or timber production. The importance of ancient woodland is four fold:

- i. the great majority are believed to be primary, that is they are surviving fragments of primaeval forests, the climax vegetation type of this country;
- ii. the characteristics of ancient but not primary woods (ancient secondary woods) are likely to resemble those of primary woods;
- iii. ancient woodlands have had a long time to acquire species and to form stable floral and faunal communities;
- iv. their soils have remained largely undisturbed.

Ancient woods may be described as either primary or ancient secondary. **Primary woodland** constitutes the relicts of the natural tree cover which developed after the retreat of the glaciation 10,000 years ago. Such woodland may have been managed by man but it has never been completely cleared of trees and converted to another land use. **Ancient secondary woods** are those which have developed on land which may have been open ground or farmland at some stage before the year 1600 AD. Many ancient woods in Sussex are likely to be of this type. For the purposes of the inventory these two types of woodland cannot be distinguished and are both referred to as ancient woodland.

Ancient woods may be **semi-natural** or, if replaced with planted stands of trees, may be regarded as **replanted**. These terms are discussed below.

Ancient Semi-natural Woodland

This term covers all stands of ancient woodland which do not obviously originate from tree planting. They can be classified into stand types which are ecologically distinct associations of trees, shrubs and herbs determined by edaphic, climatic and biotic influences.

The following variations have also been classified as semi-natural for the purposes of the inventory, largely due to a lack of detailed site information or due to their location within an otherwise undisturbed ancient wood.

1. Birch woodland which occurs on disturbed ground inside ancient woods.
2. Small, secondary, semi-natural stands within ancient sites which may have developed on former settlements, gravel pits, etc.
3. Woods where semi-natural stands have been slightly modified by planting e.g. mixed woods containing a scattering of ornamental conifers or Sweet Chestnut (*Castanea sativa*) in a mixed coppice.
4. Woods containing self-sown Sycamore (*Acer pseudoplatanus*).

Ancient Replanted Woodland

This includes obviously planted woodland of any age of a broadleaved, mixed or coniferous type, identifiable from field survey. Automatically included in this category are plantations of any coniferous species, Sweet Chestnut, Sycamore, Poplar, Red Oak, Southern Beech and native species planted so densely that the semi-natural underwood is suppressed. However special cases exist for Beech and Sweet Chestnut. Beech is native to Sussex and therefore many beech woods will be classed as semi-natural. However, it has also been extensively planted in woodland and where planted trees dominate a site it will be described as replanted. Sweet Chestnut is not native to this country. However, in some counties, particularly in the south-east, it is a very long established introduction. Some Sweet Chestnut coppices have therefore been included in the semi-natural category unless it can be shown that it is suppressing other components of the semi-natural underwood.

The identification of plantations of mature, native broadleaves is often difficult from aerial photographs. There are usually no obvious rows or other indications of planting. In some cases these may have been erroneously regarded as semi-natural.

APPENDIX 2

**List of Species West Park Wood (Orange Gill)
Sussex**

(recorded during site visits of 1991/2)

Appendix 2a Trees and Shrubs

(Note: frequencies given where noted in the field)

<u>Latin Name</u>	<u>Common Name</u>
<i>Acer pseudoplatanus</i>	Sycamore (rare)
<i>Aesculus hippocastanum</i>	Horse-chestnut
<i>Alnus glutinosa</i>	Alder (frequent - locally abundant)
<i>Betula pendula</i>	Silver Birch (occasional)
<i>Betula pubescens</i>	Downy Birch
<i>Corylus avellana</i>	Hazel (frequent)
<i>Crataegus monogyna</i>	Hawthorn
<i>Fagus sylvatica</i>	Beech (frequent)
<i>Fraxinus excelsior</i>	Ash (frequent, regenerating in storm damaged areas)
<i>Ilex aquifolium</i>	Holly
<i>Larix sp.</i>	Larch species
<i>Pinus sylvestris</i>	Scot's Pine (occasional)
<i>Prunus avium</i>	Wild Cherry
<i>Quercus cerris</i>	Turkey Oak
<i>Quercus robur</i>	Pedunculate Oak (frequent)
<i>Rhododendron ponticum</i>	Rhododendron
<i>Salix caprea</i>	Goat Willow
<i>Salix cinerea</i>	Grey Willow
<i>Sambucus nigra</i>	Elder
<i>Sorbus aucuparia</i>	Rowan
<i>Viburnum opulus</i>	Guelder Rose

Appendix 2b Herbs

<u>Latin Name</u>	<u>Common Name</u>
<i>Adoxa moschatellina</i>	Moschatel
<i>Aegopodium podagraria</i>	Ground-elder
<i>Alliaria petiolata</i>	Garlic Mustard
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Arum maculatum</i>	Lords-and-Ladies
<i>Callitriche sp.</i>	Water-starwort
<i>Cardamine flexuosa</i>	Wavy Bitter-cress
<i>Chrysosplenium oppositifolium</i>	Opposite-leaved Golden-saxifrage
<i>Circaea lutetiana</i>	Enchanter's-nightshade
<i>Cirsium palustre</i>	Marsh Thistle
<i>Dactylorhiza fuchsii</i>	Common Spotted-orchid
<i>Digitalis purpurea</i>	Foxglove
<i>Endymion non-scriptus</i>	Bluebell (occasional - locally frequent)
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Galium palustre</i>	Marsh Bedstraw
<i>Geranium robertianum</i>	Herb-Robert
<i>Geum urbanum</i>	Wood Avens
<i>Glechoma hederacea</i>	Ground Ivy
<i>Hedera helix</i>	Ivy
<i>Heracleum sphondylium</i>	Common Hogweed
<i>Hypericum pulchrum</i>	Slender St.John's-wort
<i>Lamium galeobdolon</i>	Yellow Archangel
<i>Lapsana communis</i>	Nipplewort
<i>Lemna minor</i>	Duckweed
<i>Lonicera periclymenum</i>	Honeysuckle (frequent)
<i>Lycopus europaeus</i>	Gipsywort
<i>Lysimachia nemorum</i>	Yellow Pimpernel (frequent - locally dominant)
<i>Lysimachia nummularia</i>	Creeping-Jenny
<i>Mentha aquatica</i>	Water Mint
<i>Mercurialis perennis</i>	Dog's Mercury
<i>Oxalis acetosella</i>	Wood Sorrel (frequent)
<i>Potentilla erecta</i>	Tormentil
<i>Potentilla sterilis</i>	Barren Strawberry

Herbs - continued

<u>Latin Name</u>	<u>Common Name</u>
<i>Primula vulgaris</i>	Primrose
<i>Ranunculus flammula</i>	Lesser Spearwort
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Ribes nigrum</i>	Black Currant
<i>Ribes rubrum</i>	Red Currant
<i>Rubus fruticosus</i> agg.	Bramble (abundant - locally dominant)
<i>Rumex sanguineus</i>	Wood Dock
<i>Sanicula europaea</i>	Sanicle
<i>Silene dioica</i>	Red Campion
<i>Scrophularia auriculata</i>	Water Figwort
<i>Scrophularia nodosa</i>	Common Figwort
<i>Scutellaria galericulata</i>	Skullcap (occasional - locally abundant)
<i>Senecio jacobea</i>	Common Ragwort
<i>Solanum dulcamara</i>	Bittersweet
<i>Sparganium erectum</i>	Branched Bur-reed
<i>Tamus communis</i>	Black Bryony
<i>Teucrium scorodonia</i>	Wood Sage
<i>Urtica dioica</i>	Common Nettle
<i>Viola riviniana</i>	Common Violet

Appendix 2c Grasses, Sedges, Ferns

<u>Latin Name</u>	<u>Common Name</u>
<i>Agrostis capillaris</i>	Common Bent-grass
<i>Athyrium filix-femina</i>	Lady-fern
<i>Blechnum spicant</i>	Hard Fern
<i>Brachypodium sylvaticum</i>	Slender False-brome
<i>Carex pendula</i>	Pendulous Sedge (occasional - locally abundant)
<i>Carex remota</i>	Remote Sedge
<i>Carex sylvatica</i>	Wood Sedge
<i>Dactylis glomerata</i>	Cock's-foot
<i>Dryopteris dilatata</i>	Broad Buckler-fern
<i>Dryopteris pseudomas</i>	Scaly Male-fern
<i>Dryopteris filix-mas</i>	Male-fern
<i>Equisetum fluviatile</i>	Water horsetail
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Juncus bulbosus</i>	Bulbous Rush
<i>Juncus effusus</i>	Soft Rush
<i>Luzula campestris</i>	Field Wood-rush
<i>Poa pratensis</i>	Smooth-stalked Meadow-grass
<i>Poa trivialis</i>	Rough-stalked Meadow-grass
<i>Preridium aquilinum</i>	Bracken (frequent - locally dominant)
<i>Thelypteris limbosperma</i>	Lemon-scented Fern
<i>Typha latifolia</i>	Common Reedmace

Appendix 2d Mosses, Liverworts, Fungi

Latin Name

Atrichum undulatum undulatum

Calypogeia fissa

Cantharellus cibarius

Clavulinopeis helvola

Isoetecium myosuroides myosuroides

Phallus impudicus

Pellia epiphylla

Russula sp.

Sphagnum papillosum

Appendix 2c Species of Fauna

<u>Latin Name</u>	<u>Common Name</u>
<i>Aegithalos caudatus</i>	Long-tailed Tit
<i>Certhia familiaris</i>	Treecreeper
<i>Columba palumbus</i>	Wood Pigeon
<i>Corvus corone corone</i>	Carriion Crow
<i>Corvus monedula</i>	Jackdaw
<i>Dendrocopos minor</i>	Lesser Spotted Woodpecker
<i>Erithacus rubecula</i>	Robin
<i>Fringilla coelebs</i>	Chaffinch
<i>Muscicapa striata</i>	Spotted Flycatcher
<i>Parus caeruleus</i>	Blue Tit
<i>Parus major</i>	Great Tit
<i>Parus palustris</i>	Marsh Tit
<i>Phylloscopus collybita</i>	Chiffchaff
<i>Picoides sp.</i>	Woodpecker species
<i>Sitta europaea</i>	Nuthatch
<i>Troglodytes troglodytes</i>	Wren
<i>Turdus merula</i>	Blackbird
<i>Meles meles</i>	Badger (possible)
Deer	
<i>Capreolus capreolus</i>	Roe
<i>Muntiacus muntjak</i>	Muntjac
<i>Neosciurus carlinensis</i>	Grey Squirrel
<i>Oryctolagus cuniculus</i>	Rabbit
<i>Viperus berus</i>	Adder
<i>Natrix helvetica</i>	Grass Snake
<i>Rana temporaria</i>	Common Frog
Red Damselfly (possibly <i>Pyrrosoma nymphula</i>)	

APPENDIX 3

**List of Species East Park (Nymans Estate)
Sussex (Appendix 3a - 3d)**

(Recorded during site visits of 1991/2)

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**Ecological Survey of Woodland in N. E. Sussex. Site reports
Vol 2: Horsham Area (Sussex Wildlife Trust, RSPB 1982)
(Appendix 3e)**

Appendix 3a Trees and Shrubs

<u>Latin Name</u>	<u>Common Name</u>
<i>Alnus glutinosa</i>	Alder
<i>Betula pendula</i>	Silver Birch
<i>Betula pubescens</i>	Downy Birch
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Fraxinus excelsior</i>	Ash
<i>Ilex aquifolium</i>	Holly
<i>Pinus sylvestris</i>	Scot's Pine
<i>Quercus robur</i>	Pedunculate Oak
<i>Rhododendron ponticum</i>	Rhododendron
<i>Rosa canina</i>	Dog Rose
<i>Salix caprea</i>	Goat Willow
<i>Sambucus nigra</i>	Elder
<i>Taxus baccata</i>	Yew
<i>Viburnum opulus</i>	Guelder Rose

Appendix 3b Herbs

<u>Latin Name</u>	<u>Common Name</u>
<i>Arum maculatum</i>	Lords-and-Ladies
<i>Cardamine flexuosa</i>	Wavy Bitter-cress
<i>Centaureum erythraea</i>	Common Centaury
<i>Circaea lutetiana</i>	Enchanter's-nightshade
<i>Cirsium arvense</i>	Creeping Thistle
<i>Digitalis purpurea</i>	Foxglove
<i>Epilobium montanum</i>	Broad-leaved Willowherb
<i>Glechoma hederacea</i>	Ground Ivy
<i>Hedera helix</i>	Ivy
<i>Lonicera periclymenum</i>	Honeysuckle
<i>Mentha aquatica</i>	Water Mint
<i>Oenanthe crocata</i>	Hemlock Water-dropwort
<i>Potentilla reptans</i>	Creeping Cinquefoil
<i>Primula vulgaris</i>	Primrose
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rubus fruticosus</i> agg.	Bramble
<i>Scrophularia nodosa</i>	Common Figwort
<i>Senecio jacobea</i>	Common Ragwort
<i>Silene dioica</i>	Red Campion
<i>Teucrium scorodonia</i>	Wood Sage
<i>Urtica dioica</i>	Common Nettle
<i>Viola riviniana</i>	Common Violet

Appendix 3c Grasses, Sedges, Ferns

<u>Latin Name</u>	<u>Common Name</u>
<i>Carex pendula</i>	Pendulous Sedge
<i>Dryopteris pseudomas</i>	Scaly Male-fern
<i>Dryopteris felix-mas</i>	Male-fern
<i>Juncus effusus</i>	Soft Rush
<i>Pteridium aquilinum</i>	Bracken

Appendix 3d Species of Fauna

<u>Latin Name</u>	<u>Common Name</u>
<i>Corvus corone corone</i>	Carrion Crow
<i>Corvus monedula</i>	Jackdaw
<i>Dendrocopos minor</i>	Lesser Spotted Woodpecker
<i>Erithacus rubecula</i>	Robin
<i>Troglodytes troglodytes</i>	Wren
<i>Turdus merula</i>	Blackbird
<i>Neosciurus carlinensis</i>	Grey Squirrel
<i>Oryctolagus cuniculus</i>	Rabbit

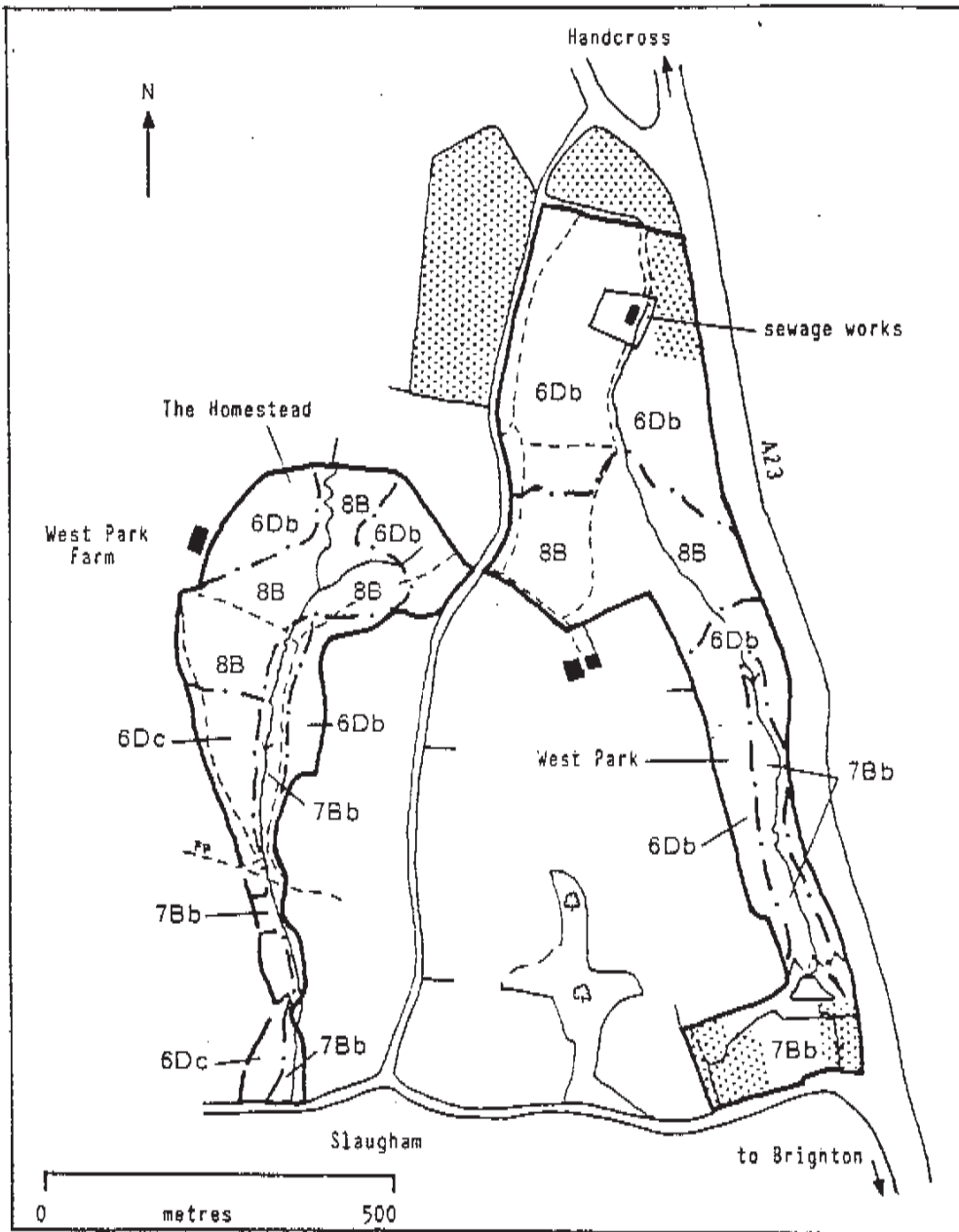
**Appendix 3e An Ecological Survey of Woodland
N.E. Sussex Site Reports - Horsham Area.**

WEST PARK AND HOMESTEAD WOOD

Grid ref: TQ 260290
and TQ 256288

Area surveyed: 40ha

Survey no: 67



Nature conservation status: None

Altitude: 70 - 140m

Stand Types

6Db: Lowland birch-pedunculate oak wood

6Dc: Lowland hazel-pedunculate oak wood

8B: Acid pedunculate oak-beech wood

7Bb: Wet valley alder wood (base-rich springline)

7Bc: Wet valley alder wood (base-poor springline)

SITUATION

Two wooded stream valleys on the hill slopes south of Handcross.

GEOLOGY AND SOILS

Sandstone, with bands of clay, of the Hastings Beds, with overlying acid sandy loam and sandy clay loam (pH4.4-4.8). Clay loam (pH5.8) in part of valley bottom.

WOODLAND COMPOSITION

The principle stand types are birch-oak and oak-beech. These have frequent mature standards, with saplings and young trees occurring throughout, but with a sparse shrub layer in most parts. Although the age of the standards varies, they tend to be in fairly even-aged stands within the wood. Parts of the lower slopes have a hazel-oak stand. There are wet valley alder stand types in the southern end of the valleys. Several open areas are present, mainly in West Park, with scattered Scots pine, birch and oak standards. Blocks of conifer are present at the north and south ends of West Park.

STAND TYPES - STRUCTURE AND FIELD LAYER

Lowland birch-pedunculate oak wood. Stand Type 6Db

The canopy varies in cover from dense to sparse. It consists of mature oak standards with birch and occasional beech and Scots pine. Occasional young birch, rowan and holly saplings form a sparse shrub layer below, with hawthorn, young beech and sycamore present in places. In the north part of Homestead Wood and a few parts of West Park, downy birch is frequent, forming a dense subcanopy, particularly in damp areas. In the open, heath-like areas, silver birch is the more frequent species. The cover of the field layer, and the relative proportions of species, varies according to the degree of shading. *Pteridium aquilinum* and grasses are abundant in the open areas, while *Rubus fruticosus* and *Lonicera periclymenum* are the most frequent species in more shaded areas. Leaf and fern litter is frequent.

Lowland hazel-pedunculate oak wood. Stand Type 6Dc

The hazel-oak stand occurs mainly in the valley of Homestead Wood and has a moderately dense canopy of oak standards. Hazel forms a tall shrub layer with locally frequent holly. Although ferns and mosses are more frequent, the field layer is similar to that in the birch-oak stand type. It is very sparse in parts.

Acid pedunculate oak-beech wood. Stand Type 8B

Large mature beech standards form a high dense canopy with scattered holly and beech saplings below. In the north of Homestead Wood however, there is a mixture of younger oak and beech standards. Thick leaf litter covers the ground and the field layer is very sparse. Near the streams, there are fairly steep slopes, where *Rubus fruticosus* and *Dryopteris dilatata* occur. There are also patches of *Hyacinthoides non-scripta* and *Narcissus pseudonarcissus*.

Wet valley alder wood (base-poor springline and base-rich springline) Stand Types 7Bc and 7Bb

Alder trees grown from coppice and occasional standards are present along the streams, drainage lines and in flushes. In small areas where the valley floor is level, springline alder stands occur. The canopy consists of alder with downy birch and willow species. A base-poor springline alder stand occurs in Homestead Wood, with *Chrysosplenium oppositifolium*, *Carex remota* and sphagnum frequent in the wet areas. In West Park, where there are areas with a higher base status, ash saplings, redcurrant and guelder rose occur in the shrub layer and there is a species-rich field layer. Frequent species include *Lamium galeobdolon*, *Galium palustre* and *Valeriana dioica*. The south end of West Park has poplars planted in the alder stand. This area is drier, with a lot of bare ground, but a scattered, species-rich field layer. However, in most areas where alder

occurs on drier ground the field layer is similar to that in the rest of the wood.

ASSESSMENT OF BIRD COMMUNITY

Much of the wood appears to have been largely undisturbed in recent years and at least 40 bird species breed. The extensive areas of tall, mature and over-mature oak, beech and alder contain frequent standing dead trees and provide an abundance of potential nest holes and crevices, as well as a good food source. The latter is increased by the fairly high sub-canopy. Small, insectivorous, hole-nesting species include good numbers of Blue Tit, Great Tit, Coal Tit, Treecreeper and Starling are fairly common. Larger hole-nesting species include Tawny Owl, Stock Dove, all three woodpecker species in small numbers, and frequent Jackdaw. Kestrel may also use the larger holes.

Mistle Thrush, Jay and Carrion Crow are frequent, and Chaffinch is common, in the canopy which is fairly high and frequently broken. Much light enters the wood which allows a fairly continuous shrub layer, of varying height and density, to develop. There is also a good field layer. Wren density is consequently high, averaging one pair every 1.5 hectares. Robin is also common. Both species take advantage of the hole and crevice nest sites close to the ground. Blackcap is common, particularly along the woodland edge and around clearings, where small numbers of Garden Warbler, Willow Warbler, Chiffchaff and Dunnock also occur. Blackbird is fairly common but Song Thrush is surprisingly scarce, perhaps due to the lack of thick shrub layer. Bullfinch and Long-tailed Tit are also sparsely distributed in this habitat. Wood Pigeon is more common in the younger woodland and Magpie prefers these areas. Ground nesting Woodcock and Pheasant breed in the field layer where it is not too damp. Tree Pipit nests in the large open cleared area just east of the road and Spotted Flycatcher on the edge.

OTHER FEATURES

- a. Several rides dominated by *Holcus lanatus* and other grasses with additional herbs.
- b. Open areas in north end of West Park with abundant *Pteridium aquilinum*.
- c. Sewage treatment plant with short grass sward and some early colonising species.
- d. Several flushes on slopes with variable base-status similar to the alder stands.
- e. Partly silted pond in West Park with grey willow and *Carex paniculata*, *Carex pendula*, *Sparganium erectum* etc. in field layer.
- f. Frequent fallen branches. Some felled beech trunks.

and grasses, with occasional *Carex paniculata* in the wetter parts. There are also a few patches of sphagnum.

OTHER FEATURES

- a. Several rides through northern block with a greater species diversity than adjacent wood. Mainly dominated by common grasses with herbs such as *Prunella vulgaris*, *Ajuga reptans*, *Ranunculus repens* and *Senecio jacobaea*.
- b. Some small streams in the northern area, with similar flora to adjacent wood. Abundant mosses on stream banks. Stream through southern block with alder stand alongside (see above description).
- c. A small flushed area is present with *Carex pendula*, some *Juncus effusus* and patches of *Glechoma hederacea* and *Circaea lutetiana*.
- d. Occasional fallen trees, mainly in the alder stand. Frequent dead wood in the regenerating area, but rare elsewhere.
- e. Butterflies seen include White Admiral and Silver-washed Fritillary.

Butterflies recorded in wood

Large White
White Admiral
Silver-washed Fritillary

Mosses and Liverworts recorded in wood

<i>Atrichum undulatum</i>	<i>Mnium punctatum</i>
<i>Brachythecium rutabulum</i>	<i>Mnium undulatum</i>
<i>Dicranella heteromalla</i>	<i>Polytrichum formosum</i>
<i>Dicranoweisia cirrata</i>	<i>Pseudoscleropodium purum</i>
<i>Dicranum scoparium</i>	<i>Rhytidiadelphus squarrosus</i>
<i>Eurhynchium praelongum</i>	<i>Sphagnum</i> sp.
<i>Eurhynchium striatum</i>	<i>Thuidium tamariscinum</i>
<i>Hypnum cupressiforme</i>	
<i>Mnium hornum</i>	<i>Pellia epiphylla</i>

SITE:	SURVEY NO:	RWDI HIT:	DATE:
HOMESTEAD WOOD AND WEST PARK	67	TC 258280	8.5.82 12.5.82

WOODLAND VASCULAR PLANTS (from NCC record card)

*Acer camp		Clem vital		Holc lanu	LF	Fetes hyb		Salix fra	
+Acer plat		+Conifer		*Holc moll		*Phyl scol		Samb nigz	
+Acer pneu		*Cynop maj	LF	Humul lup		*Pinus syl		*Samb eur	S
*Aloxa mos		*Conva maj		*Hyaci non	LF	*Plant chlo		*Scirp syl	
+Aegop pod		Corn sang		*Hyper and	S	*Poa annua		Soro euri	
+Aegac hipp		Coryd gla		Hyper hir		*Poa nemor		*Soro nodo	S
Agrps can		Coryyl ave		*Hyper hum		*Poa triya		*Sedum tel	S
Agrps cap	P	*Cret laev	LF	Hyper mac		*Polyg mul		*Silen dio	P
Agrps vto		Cret mono		Hyper per		*Polyp vul		Solan dul	
*Ajuga rep		Cvtis sed		*Hyper pul		*Polys acu		*Solid vir	
Allia pet		Dact fuch		Hyper tet		*Polys aet		*Sorb arie	
*All urain		Dact glom	P	*Ilex aqu	LF	+Pop canes		*Sorb aucu	
Alnus glv	LF	*Daph laur		Iris paeu	S	Pop nigra		*Sorb torm	
*Anem nem	LF	Desch cor		Junc acut		*Pop tremu		Stach off	
Anem syl	S	Desch fle		Junc comp	S	*Pot anser		Stach pal	
Anthox od		Digit nur	PS	Junc effu	S	*Pot erect	P	Stach vul	
Anthr syl	S	*Dryop rff		*Lamin uni		*Pot reptu		Stel alba	
Azct min		Dry carth		Lam albuu		*Pot steri		Stel gram	
Azrh elat		*Dryop dil	LF	Laps comm		Prim veri		Stel holc	
*Arum mac		Dry coman		Larix eu		*Prim vult		Stel meda	
*Athyr fuf	S	Epil hira		*Lath mont		*Prun vulu		Succ pint	
Bet pendu	LF	Epil mont		Liquo vul		*Prun avium		*Tanus com	
bet pubes	LF	Epil totu		List ovat		+Prun lauro		Taxac off	S
*Bleech sgl		*Epip hell		Lonic per	F	Prun spinu		*Taxus bog	
Bract syl		*Eupr purp		*Luz forsi		*Prer aqui	F	Taxus med	
*Brim cam		Equis ped		Luz mult		*Ferd eye		Tilia eur	
Bryon dio		*Equis syl		*Luz pilos		+Querc cor		Tilia vul	
Calluna v		Equis tel		*Luz sylva		*Querc pet	F	Toril jar	
Calth pai	S	Euron gude	LF	Lycn filio		Querc rob	F	Ulex euro	
Calyt nen		Lupal can		Lycos aur	S	Ulm ficat		*Ulmus glv	
Cerd flex	PS	*Euph amyg		*Lys hampe	LF	Ulm ficat		Ulmus pro	
Cerd prat	PS	Fagus syl		Lys vulga		Ulm ficat	S	Urtic dip	
Car acuti		*Festu dig	S	*Malus syl		Ulm ficat	S	*Vacc myrt	
Car baner		Fest ovih		*Malam pro		+Rosa pent		*Valer dio	
Car hirta		Fest rubr		*Melis uni		*Ribes nan	S	*Valer off	
*Car laevi		Filip ulm	S	Menth auc		*Ribes rug		Veron cha	
Car palie		Frag veng		Menth arv		Ribes ove		Veron hed	P
Car uniu	S	Frag nica	LF	*Mora mura		*Rosa arve		*Veron med	S
*Car pendu	S	*Frago air	S	*Mila efflu		Rosa can		Veron off	P
*Car remot		Galed tot		*Moehr tri		Rubi frut	LF	Vicia sep	
Car ripar	S	Gal npari		*Molin can	E	Rubi idar		*Vicia sep	
*Car aliaq		*Gal npari		Mycal mar		Rum acroa		Vicia sep	
Car sviv	S	Gal peluc		Myos arve		Rum nullu		Vicia hyl	
Cerpi bet		Gal saxat		Myo arve		Rum congl		Vicia hyl	
+Cerat sat		Geran rob	S	*Narc paku	LF	Rum obtus		Vicia nig	
Chen enc		*Geum urbe		*Nect nino		Rum panna	S	Vicia pal	
*Chrys obo		Glech hed		*Orch masc		*Rusc acul		*Vicia rei	
*Circ aute	LF	Hederp ne		*Oreor lin		Salix alb		Vicia ryl	
Circ palu	S	Hederp sph	LF	Unmun req		*Salix aur		Wahl head	
Cirs vulg	S	Hierac sp		*Uxol acct	F	Salix can			

ADDITIONAL SPECIES

Achil mil		Hypoc anl		*Plant lan		Epil sp	
Alism pla		Junc art		Polyg hyd		Mnth sp	S
Belli per		Junc buf		Polyg per		Ran ace	
Car dmi		Junc bul	P	Pulic dvs			
Car flacc		Junc infl		Scute gal			
Car pil		Junc squa		Scute min	S		
Cent nig		Leat serr		Senec jac	S		
Centa ery		Lathy pre		*Spar eres	S		
Ceres fon		Leont aut		Trifo rep			
Cirs arv		Lotus car		Tripl mari			
Erica tet		Lotus uli		Tussa fax			
Equis arv		Luzul cam		Typha lat	S		
Louis flu		Monti fan		Veron bec			
Gal cruc		Myos laxa		Veron ser			
Glycy dep	S	Myos scor		Vicia cro			
Gnaph uli		Genen cro					
Hydro vul		Pnala stu					

Key * = Species confined, or nearly confined, to heathen woods, including their glades, dunes and ancient lane banks.
 + = Species introduced to Great Britain
 P = Species restricted to paths, glades or open areas within wood
 S = Species restricted to streamside, ponds and fitches within wood

39

no. * species

118

West Park and Homestead Wood

Bird Species: Potential Numbers of Breeding Pairs Recorded in Wood

Great Crested Grebe		Tree Pipit	1	Coal Tit	8
Little Grebe		Grey Wagtail	1	Blue Tit	19
Grey Heron		Pied Wagtail		Great Tit	10
Mallard		Wren	26	Nuthatch	3
Mandarin		Duncock	2	Treecreeper	6
Tufted Duck		Robin	19	Jay	3
Canada Goose		Nightingale		Magpie	3
Sparrowhawk	1	Redstart		Jackdaw	4
Kestrel	1	Blackbird	8	Rook	2
Red-legged Partridge		Song Thrush	1	Carrion Crow	6
Pheasant	2	Mistle Thrush	2	Starling	5
Moorhen		Grasshopper Warbler		House Sparrow	
Coot		Lesser Whitethroat		Tree Sparrow	
Woodcock	1	Whitethroat		Chaffinch	22
Stock Dove	1	Garden Warbler	3	Greenfinch	
Wood Pigeon	11	Blackcap	10	Goldfinch	
Turtle Dove		Wood Warbler		Siskin	
Collared Dove		Chiffchaff	2	Linnet	
Cuckoo	1	Willow Warbler	3	Redpoll	
Little Owl		Goldcrest	6	Crossbill	
Tawny Owl	1	Firecrest		Bullfinch	2
Nightjar		Spotted Flycatcher	1	Hawfinch	
Green Woodpecker	1	Long-tailed Tit	1	Yellowhammer	
Great Spotted Woodpecker	2	Marsh Tit	3	Reed Bunting	
Lesser Spotted Woodpecker	1	Willow Tit			

() - Possibly breeding

Mosses and Liverworts in wood

Atrichum undulatum
 Dicranella heteromalla
 Dicranoweisia cirrata
 Dicranum scoparium
 Eurhynchium praelongum
 Hypnum cupressiforme
 Isopterygium elegans
 Mnium affine
 Mnium hornum
 Mnium undulatum
 Polytrichum formosum

Pseudoscleropodium parum
 Sphagnum palustre
 Thuidium tamariscinum

Calypogeia sp.
 Cephalozia sp.
 Lepidozia reptans
 Lophocolea bidentata
 Pellia epiphylla
 Porella platyphylla

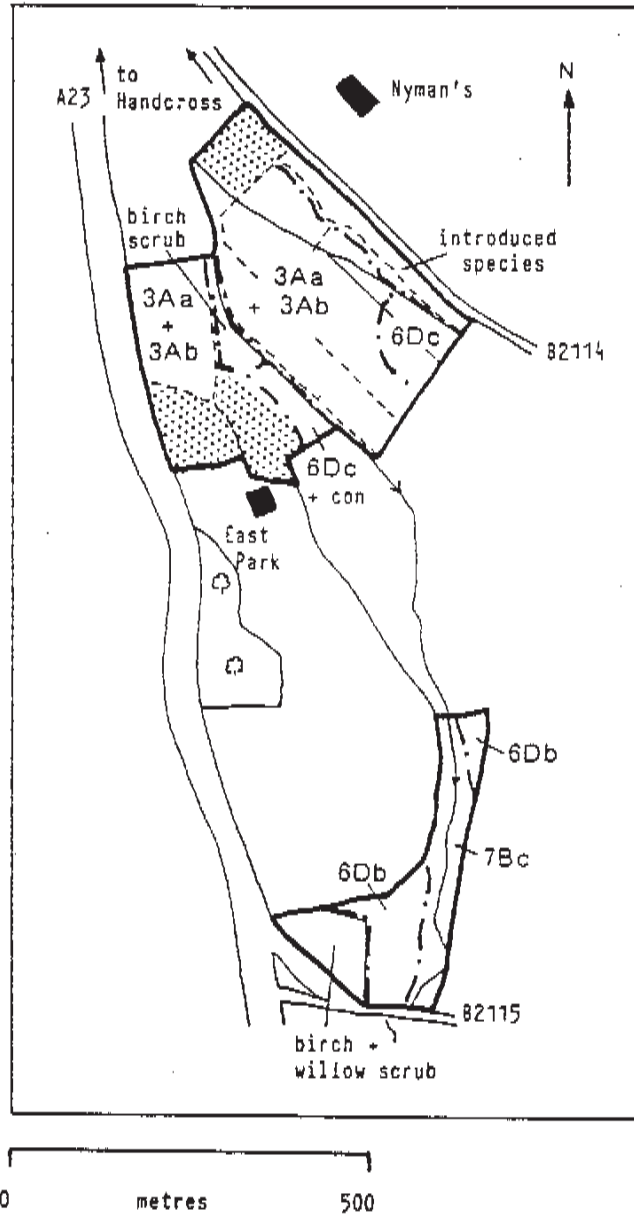
EAST PARK

Grid ref: TQ 266282 & TQ 265290 Area surveyed: 19ha

Survey no: 68A & 68B

Nature conservation status: Owned by National Trust
(Part of Nymans)

Altitude: 65-130m



Stand Types

- 3Aa: Pedunculate oak-hazel-ash wood (heavy soil form)
- 3Ab: Pedunculate oak-hazel-ash wood (light soil form)
- 6Db: Lowland birch-pedunculate oak wood
- 7Bc: Wet valley alder wood (base-poor springline)

WOODLAND COMPOSITION

East Park consists of two separate areas of woodland. The northern one is predominantly an oak-hazel-ash stand type, which tends to vary between the heavy and light soil forms. There are many introduced tree and shrub species and several of these are frequent as self-sown saplings and young trees. There is an arboretum adjacent. In the southern end there are two small areas of a hazel-oak stand type. There is a large block of planted poplar in the middle of the wood, a small plantation of Scots pine and an area of oak underplanted with conifer. A few small, cleared areas are present where standards have been removed. The southern area of woodland is mainly a birch-oak stand type, part of which has been cleared and has now regenerated. There is a wet valley alder wood (base-poor springline) along the bottom of the stream valley. Throughout, both areas of woodland, there is a mixed age structure and frequent regeneration.

STAND TYPES - STRUCTURE AND FIELD LAYER

Pedunculate oak-hazel-ash wood, heavy soil form, Stand Type 3Aa and light soil form, Stand Type 3Ab

The canopy and shrub layers are both very variable in height, density and composition. The canopy consists mostly of oak, ash, birch and some beech, cherry and sycamore. All these are present as standards. Planted Turkey oak, Chilean birch, Scots pine and poplar are also present. Some are scattered throughout while others are locally frequent. There is a sub-canopy of young trees in parts. The shrub layer contains hazel, hawthorn, elder, rowan, willow, frequent young trees and saplings. Dense patches of rhododendron alongside the arboretum. The field layer has a variable cover and is mostly species-poor. It consists of varying proportions of *Rubus fruticosus*, *Pteridium aquilinum*, *Dryopteris filix-mas* and *Dryopteris dilatata*. Carpets of mosses occur in parts.

The patches of hazel-oak stand type in the south-eastern end are similar to the adjacent oak-hazel-ash stand, but without ash.

Lowland birch-pedunculate oak wood, Stand Type 6Db

The canopy is mostly fairly open and composed predominantly of oak and birch, with several large, spreading oak present. There is a patchy shrub layer of frequent young trees and saplings and occasional rowan and elder. The field layer is dominated by *Pteridium aquilinum*, with *Rubus fruticosus* and occasional *Hyacinthoides non-scripta*. The regenerated area consists of dense birch and willow coppice with a few oak standards. The field layer is more species-rich than the rest of the stand type and has a variable cover, depending on the density of the coppice. *Rubus fruticosus* is frequent, with *Ajuga reptans*, *Lotus uliginosus* and patches of *Circaea lutetiana*, *Ranunculus repens*, grasses and ferns. There are carpets of mosses throughout.

Wet valley alder wood (base-poor springline), Stand Type 7Bc

This has a dense canopy of large alder, occasional birch, both as standards and trees grown from coppice, and oak along the edge of the wood. The shrub layer is scattered, but where the canopy is less dense there are thickets of blackthorn, hawthorn, elder and frequent grey willow. The field layer is varied in composition, but is mostly dense. There are areas of abundant *Oenanthe crocata*, with *Mentha aquatica*, *Ranunculus repens* and *Galium palustre*. In the southern end there is frequent *Rubus fruticosus*.

SITE:	SURVEY NO:	GRID REF:	DATE:
EAST PARK	68A&B	TQ 266282 TQ 265290	19.7.82

WOODLAND VASCULAR PLANTS (from NCC record card)

*Acer camp		Clem vit		Molt lena		Petas hyn		Salix fra	
+Acer plat		+Conifer	LF	+Hole moll	LF	*Phyl scol	LF	Samb nigr	
*Acer psou	LF	*Conop maj		Himul sup		Pinus syl		*Smit rub	
*Adoxa mos		*Conve maj		*Hyaci non		*Plet chlo	P	*Scirp syl	
+Aegop pod		Corn sang		*Hyper and		Poa annua	LF	*Sera aur	
+Aesc hipp		Coryd cla		Hyper hir		*Poa nemor		*Sera nod	
Agros cen		Coryl ave		*Hyper hum		Poa trivi		*Sedum tel	
Agros cap		*Crat laev	LF	Hyper mac		*Polyg mul		*Silen dio	
Agros sto		Crat mono		Hyper per		*Polyp vul		Solen dul	
*Ajuga rep		Lytis sco		*Hyper bul		*Polys acu		*Solan vir	
Allia pet		Dact fuch		Hyper tet		*Polya set		*Sorb aria	
*All ursin		Dact glom		*Ilex aqu		+Pop canes	LF	*Sorb aucu	
Allus glu		*Daph laur		Iris psou		Pop nigra		*Sorb torm	
*Anem nem		Desch sab		Junc acut		*Pop tremu		Stach off	
Anagl syl		Desch fle		Junc cong		Pop anser		Stach pal	
Anthur ul		Higil int		Junc pflu		Pat stich		Stach syl	
Anthr syl		*Dryop aff		*Lama gal		Pat rept		Stel als	
Arct min		Dry carth		Lam albom		Pat stera		Stel gram	
Arrh clat		*Dryop dil		Lap comm		Prim veri		Stel hain	
*Arum mac		Dry f-mag		Larix sp		*Prim vulv		Stel medi	
*Athyz f-f	LF	Epil hirs		*Lath mont		Prim vulg		Succ prat	
Bet pendu	LF	Epil mont		Licou vul		*Pru avium		*Tamus com	
Bet pubes	LF	Epil tetz		List oval		+Pru lauro		Tarax off	
*Blechn spi		*Epip hell		Lonic per	LF	Pru spino		*Taxus bac	
Brach syl		*Epip puro		Luz forst		Pter aqu	F	Tenu acer	
*Bron rom		Equis pal		Luz multi		*Pyrus pyr		*Tilia cor	
Bryon dio		*Equis syl		*Luz pilos		+Querc cer		Tilia vul	
Calluna v		Equis tel		*Luz sylv		*Querc pet	F	Toril int	
Callth gal		Eum euro		Lych figg		Querc rob		Ulex europ	
Calyt nep		Eupat can		Lycop eur		Kan fibro		*Ulmus gl	
Card flex		*Euph amyg		*Lys nemor		Ran flamm		Ulmus pro	
Card prat		Fagus syl		Lys vulg		Ran repen	LF	Urtic dio	
Car acuta		*Festc nig		*Malus syl		*Rhos mont		Vacc myrt	
Car biber		Fest ovin		*Meim nra		*Ribes nig		*Valer nra	
Car hirta		Fest rupe		*Melic uni		*Ribes rub		Valer off	
*Car laevi		Filip ulm		Menth acu		Ribes uva		Veron can	
*Car palli		Fran ver		Menth arv		*Rosa arva		Veron her	
Car pum		Fran exor	LF	*Mert petr		Rosa can		*Veron mont	
*Car pendu	LF	*Fragu alo		*Mil ciliu		Rubi frut	F	Veron nra	
*Car remot		Galeo tet		*Moerz tri		Rubu idae		*Vib opul	
Car ripar		Gal appar		Molin cer		Rum acosa		*Vicia sep	
*Car striq		*Gal odora		Myos cur		Rum acilla		*Vicia min	
*Car sylv		Gal peltis		Munc arva		Rum cragii		Vicia tin	
Cerast int		Gal saxat		Myo aquat		Rum obtus		*Viola can	
+Cerast sati		Geran rob		*Narc ossu		*Rum ranou		Viola pal	
Cnam ang		*Geum ural		*Neot rano		Rusc acul		*Viola rea	
*Corys gon	LF	Glech hec		*Orch masc		Salix alb		Vicia riv	
*Cirs lute		HEPATEC		*Oreop lan		*Salix eur		Wahl nede	
Cirs pelu		HORAC sp		Dsmun rep		Salix cap			
Cirs vulg		Hierac sp		*Oxal acut		Salix can	LF		

ADDITIONAL SPECIES

Achil mil		Hypn		*Plant lan		epil sp	
Alism ula		Junc art		Polyg hyd	P	Erica cin	P
Belli per		Junc buf		Polyg cer		Gaultheria	
Car demi		Junc bul		Fulic oys		Graph sp	
Car flacc		Junc infl		Scute uni		Malva sp	
Car pil		Junc aqua		Scute min		Plant maj	P
Cent nig		Lact serr		Senge jag		Picea sp	LF
Centa ery		Lath pra		Serb eroc		Polyg mul	
Ceras fon		Leont aut		Trifo rep	P	Vib lan	
Cirs arv		Lotus con		Trip mari			
Erige tet		Lotus vil		Tussi fat			
Equis arv		Luzul cam		Typha lat			
Equis flu		Manti fan		Veron bec			
Gal cruc		Myos laxa		Veron ser			
Glyce nec		Myos ncht		Viola can			
Ineph uli		Denar cro	S				
Hydro vul		Phala atu					

Key * = Species confined, or nearly confined, to woodland woods, including their glades, rides and adjacent sward banks.
 + = Species introduced to Great Britain
 P = Species restricted to paths, glades or open areas within wood
 S = Species restricted to streamside, ponds and flushes within wood

35
 No. of species
 136

APPENDIX 4

**List of Aquatic Invertebrates taken from Orange Gill
and River Ouse 26.7.92, 28.8.92, 4.10.92.
&
Printout of Aquatic Invertebrates at Standbridge Farm,
1989 - 1992 from NRA (Southern Region)**

A23 Handcross to Warninglid - Aquatic Invertebrates and their BMWP Score

R Ouse below outfall of Orange Gill 26.7.92	B M W P
Limnephilidae	7
Gammaridae	6
Dytiscidae	5
Gyrinidae	5
Notonectidae	5
Tipulidae	5
Sialidae	4
Glossiphonidae	3
Asellidae	3
Sphaeridae	3
Lymnaeidae	3
Chironomidae	2
Total Score	51
Orange Gill below 'pond' in Orange Gill Wood 28.8.92	B M W P
Nemouridae	7
Limnephilidae	7
Dytiscidae	5
Gyrinidae	5
Gerridae	5
Sphaeridae	3
Total Score	32
Orange Gill below water treatment works 4.10.92	B M W P
Tipulidae	5
Simuliidae	5
Chironomidae	2
Total Score	12

A23 Handcross to Warninglid - Aquatic Invertebrates and their BMWP Score -
continued

Orange Gill 50m below above sampling point 4.10.92	B M W P
Limnephilidae	7
Simuliidae	5
Erpobdellidae	3
Total Score	15
Orange Gill 50m south of 'pond' in Orange Gill Wood 4.10.92	B M W P
Nemouridae	7
Dytiscidae	5
Asellidae	3
Sphaeridae	3
Chironomidae	2
Total Score	20
Orange Gill 50m before R Ouse 4.10.92	B M W P
Nemouridae	7
Limnephilidae	7
Dytiscidae	5
Corixidae	5
Tipulidae	5
Erpobdellidae	3
Sphaeridae	3
Chironomidae	2
Ceratopogonidae	0
Total Score	37
R Ouse upstream of outfall of Orange Gill 4.10.92	B M W P
Gammaridae	6
Dytiscidae	5
Glossiphonidae	3
Asellidae	3
Sphaeridae	3
Chironomidae	2
Total Score	22

A23 Handcross to Warninglid - Aquatic Invertebrates and their BMWP Score -
continued

R Ouse downstream of outfall of Orange Gill 4.10.92	B M W P
Nemouridae	7
Limnephilidae	7
Gammaridae	6
Dytiscidae	5
Glossiphonidae	3
Erpobdellidae	3
Asellidae	3
Sphaeridae	3
Lymnaeidae	3
Total Score	40

RIVER OUSE - STANDERIDGE FARM TO 2725 2750

LIST OF INVERTEBRATE TAXA

DATE		061169	250390	050790	011190	110391	010891	131191	140792
TAXA									
Planariidae*	FLATWORMS	2	2	3	3	3	3	1	2
Dendrocoelidae*	FLATWORMS								1
Hydrobiidae*	Snails	4	4	5	5	4	3	3	2
Lymnaeidae*	Snails	4	2	4	3	3	2	2	
Planorbidae*	Snails inc. Ramshorn	2		2	3	2	1	2	2
Zonitidae	Snails					1			
Sphaeriidae*	Pea mussels	2	3	1	3	3	3	3	2
OLIGOCHEATA*	TRUE WORMS	4	4	3	4	4	3	3	3
Glossiphoniidae*	Leeches	2		2	3	3	1	2	2
Erpobdellidae*	Leeches	2			2	1		2	
HYDRACARINA	Water Mites			2		1		1	
OSTRACODA	Crustacea					1		1	
Aseellidae*	Water Hoglouse	2			4	3	2	2	2
Gammaridae*	Freshwater shrimps	4	4	4	4	3	4	4	2
Ecdiidae*	Mayflies inc. Olives	2	2	3	3		3	2	2
Leptophlebiidae*	Mayflies			1					
Ephemerellidae*	Mayflies inc. Red Spinner			1			2		2
Taeniopterygidae*	Stoneflies					1			
Nemouridae*	Stoneflies		2						
Laubertidae*	Stoneflies					3			1
Coenagrionidae*	Damselflies							1	
Agrionidae*	Damselflies					1			
Velidae	Water Crickets	1				1			
Corixidae*	Lesser Water Boatman	2		2	2				
Halipidae*	Beetles	1			3		2		1
Dytiscidae*	Beetles			2				1	
Gyrinidae*	Whirligig Beetles						1		
Hydrophilidae*	Beetles	2		2	1		1		
Elmidae*	Riffle Beetles	4	3	3	3	3	4	4	3
Sialidae*	Alder Fly	3							
Hydropsychidae*	Caddis (caseless)		2					2	2
Limnephilidae*	Caddis (with cases)	1	2			3	2	2	2
Leptoceridae*	Caddis (with cases)	2	1					2	1
Goeridae*	Caddis (with cases)						1		
Lepidostomatidae*	Caddis (with cases)	2			2				
Sarcostomatidae*	Caddis (with cases)								
Tipulidae*	Crane flies	2	1	2	3	1	2	2	1
Ceratopogonidae	Biting Midges			2	1	1	2		
Chironomidae*	Non-Biting Midges	4	4	4	4	4	4		3
Simuliidae*	Black Flies (Biting)		2	2		3	4		2
Epididae	True Flies						2		
Rhagionidae	True Flies								3
Muscidae	True Flies					2			
No of SCORING TAXA		21	15	18	18	19	20	19	20
BWP SCORE		95	71	83	74	85	93	90	105
ASPT SCORE		4.52	4.73	4.61	4.11	4.72	4.65	4.74	5.25

(* BWP Scoring Taxa)

APPENDIX 5

**Orange Gill SSCI
(West Sussex County Council, 1992)**

WEST SUSSEX SITES OF NATURE CONSERVATION IMPORTANCE

Site: Orange Gill and Homestead Wood, Handcross

Grid Ref: TQ 261 291 E
TQ 256 288

Owner: Private

Area: 36.5 hectares

Habitat: Semi-natural woodland

Date: Identified May 1992

Site Ref: M 11

District: Mid Sussex

Parish: Slaugham

Author: Louise Clark

Summary

Within this site, there are areas of Oak/Birch woodland, and others where Beech is dominant. Oak and Hazel occurs on the lower slopes of the stream valleys and Alder woodland is found on the valley bottoms. Several open areas are also present, with scattered Scots Pine, Birch and Oak standards. The storm of October 1987 caused severe damage.

Site description

Most of this woodland consists of mature Oak standards with Birch and occasional Pine. Occasional young Birch, Rowan and Holly saplings form a sparse shrub layer below. In damp areas Downy Birch is frequent, forming a dense sub-canopy, with Bramble (*Rubus fruticosus*) and Honeysuckle (*Lonicera periclymenum*) dominating the ground flora whilst in more open, heath-like areas, Silver Birch predominates with Bracken (*Pteridium aquilinum*) and grasses below.

In other large areas, mature Beech standards form a high canopy with scattered Holly and Beech saplings below. Thick leaf litter covers the ground and the ground flora is very sparse. Near the streams, there are fairly steep slopes where Bramble and Broad Buckler Fern (*Dryopteris dilatata*) occurs with patches of Bluebell (*Hyacinthoides non-scripta*) and Wild Daffodil (*Narcissus pseudonarcissus*). Alder is present along the streams and drainage lines, together with Downy Birch and Willow species. In these areas the ground flora is more species-rich and variable in character.

At least forty bird species have been recorded breeding in this woodland, including all three Woodpecker species, Woodcock and Spotted Flycatcher.

There is also a partially silted pond with Grey Willow and species such as Greater Tussock Sedge (*Carex paniculata*), Pendulous Sedge (*Carex pendula*) and Branched Bur-reed (*Sparganium erectum*).

Management recommendations

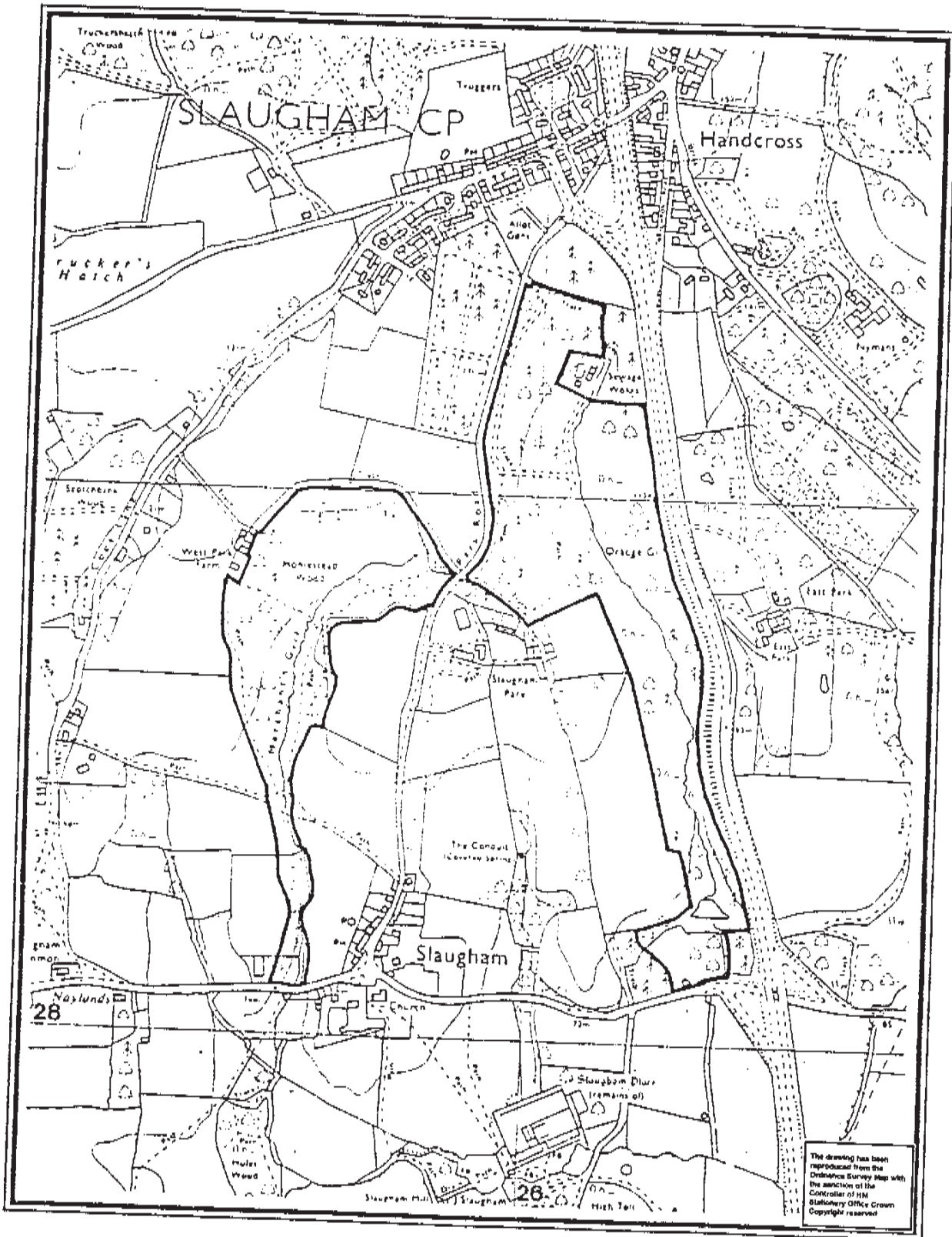
This wood should perhaps be managed as high forest. Only small areas require coppicing. The rides should be maintained to keep them open and the pond renovated.

WEST SUSSEX SITES OF NATURE CONSERVATION IMPORTANCE

Site: Orange Gill and Homestead Wood, Handcross

Grid Ref: TQ 261 291 TQ 256 288

Site Ref: M 11



SCALE 1:10,000
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APPENDIX 6

Lead Levels In The Soil

APPENDIX 6 Lead Levels In The Soil

On 6 August 1991 two transects were taken from the A23 road side and into the woodland of West Park Wood to assess the concentration of lead in the soils adjacent to the A23 :

Transect 1 was located at the layby on the west side of A23 approximately 0.5 km south of the Handcross interchange. This transect was 30m in length and consists of three sample points. Sample point 1a was taken at a distance of 12m from the road side, 1b at 20m and 1c at 30m from the road side.

Transect 2 was taken 50m to the south of transect 1. It was 6m in length and consisted of two sampling points. Sampling point 2a was taken at the road side and sampling point 2b at the end of the transect line, at a distance of 6m from the roadside.

At each sampling point on transect 1 and 2, soil samples were taken from the surface, at 10cm depth and at 60cm depth.

The lead concentrations found at different depths in the soils adjacent to the A23 are presented in Table 1. The threshold trigger concentrations for lead laid down in the Guidance Note 59/83 (Interdepartmental Committee on the Redevelopment of Contaminated Land, 1987)(ICRCL) and the old and new Dutch standards for lead contamination (Heitink & Hoffman, 1985 and Berg, van den & Roels, 1991) are presented in Table 2. The highest level of lead contamination (5.9 mg/kg) in the soils adjacent to the A23 was found at point 2a taken at the surface. This value is well below the ICRCL recommendations and the Dutch A-value (50 mg/kg), indicating no demonstrable pollution.

Table 1. Lead concentrations (mg/kg) at different depths in the soils adjacent to the A23.

Sampling point	distance from road (m)	Surface	10cm depth	60cm depth
1a	12	0.4	0.6	0.5
1b	20	1.0	0.5	0.2
1c	30	0.8	0.3	0.4
2a	roadside	5.9	2.6	0.6
2b	6	0.7	0.7	0.7

N.B. The analysis of the soil samples was carried out by the Department of Chemistry, Loughborough University of Technology, using an Atom Absorption Spectrophotometer.

Table 2. ICRL Trigger Concentrations and Dutch Standards for Lead (Pb) Contamination in Soil (mg/kg dry matter).

		Pb (mg/kg)
ICRL Threshold	domestic gardens, allotments	500
	parks, playing fields, open space	2000
A-value	reference value for demonstrating pollution	50
B-value	assessment value for further research	150
C-value	assessment value for remedial treatment	600
New C-values	human toxic	162
	eco toxic	200
	proposed integration	290

● **Appendix 5/B - Winter Bird Survey**

A23 HANDCROSS - WARNINGLID

**WINTER BIRD SURVEY OF LAND ADJACENT TO THE
A23 HANDCROSS TO WARNINGLID, WEST SUSSEX**

MARCH 1994

E J Darby
International Centre of Landscape Ecology
Geography Department
Loughborough University of Technology
Loughborough LE11 3TU

1 INTRODUCTION

1.1 At the request of Derek Lovejoy Partnership, Edinburgh the International Centre of Landscape Ecology (ICOLE) carried out a survey of birds adjacent to the A23 between Handcross and Warninglid, West Sussex during the winter of 1993/4 (Figure 1).

1.2 The A23 between Handcross and Warninglid is the subject of a proposed road improvement.

2 METHOD

2.1 The area adjacent to the road was surveyed on 10 December, 1993, 21 January and 16 February, 1994. In particular the survey was divided into four main areas of interest, East Park Wood north and south, Orange Gill Wood and the road verges.

2.2 Observations were made within the first 100m nearest the road in the woodland areas and within 50m of the road for the verges. Note was made only of birds that were resting, singing or feeding in the four main areas. Any birds seen flying overhead were not included.

2.3 Observation of the birds was made easier by the clear weather on all visits and absence of leaves from the trees .

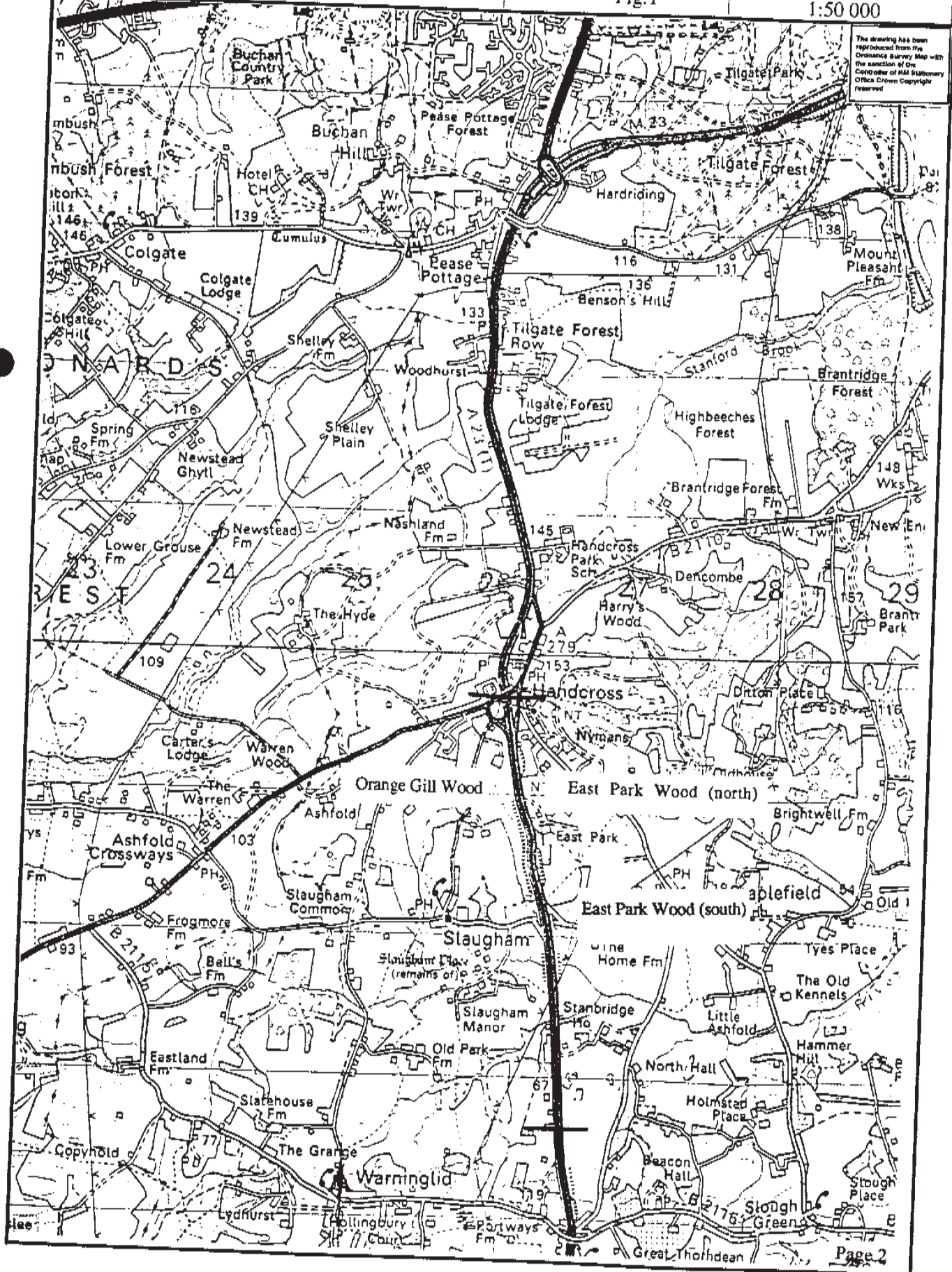
3 RESULTS

3.1 All of the birds seen are common to woodland or agricultural land (Table 1). The results of the survey clearly show that Orange Gill Wood held the greatest number of species, a reflection of the diversity of habitat. The presence of numbers of alder in the area of the 'pond' in Orange Gill Wood was attractive to flocks of siskins. Both East Park Wood north and south held few species. More species were observed on the verges but this was probably related more to the variety of the adjoining habitat than the nature conservation value of the verges. There was no particular part of the road verges which held a majority of the birds seen in this habitat or appeared to be more attractive to birds than any other part.

A23: Handcross-Warninglid, Extent of Road Improvement - Winter Bird Survey.

Date	March 1994	Drawn by	EJD	Ref. no.	Fig.1	Scale	1:50 000
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4 DISCUSSION

4.1 No rare or unusual birds were seen during the survey. The distribution and variety of species of birds seen was almost certainly linked to areas of greatest habitat diversity. The greatest number and variety of birds were seen in Orange Gill Wood. Road verges held less birds with no area standing out as being particularly attractive. The least number and variety of bird life was found in the more monotonous and less diverse habitat of East Park Wood, north and south.

4.2 The habitat preferences of the species seen are readily available in the area adjoining the A23. There is no reason to believe that winter bird populations in the vicinity of the A23 will be disadvantaged by the proposed road improvement.

Table 1 A23 Bird Survey December 1993 - February 1994

Bird Species	East Park Wood		South		East Park Wood		North		Orange		Gill		Wood		Verges	
	10.12.93	21.1.94	10.12.93	16.2.94	10.12.93	21.1.94	10.12.93	16.2.94	10.12.93	21.1.94	10.12.93	21.1.94	10.12.93	16.2.94	10.12.93	21.1.94
Lesser Spotted Woodpecker	√															
Great Spotted Woodpecker									√							
Robin	√	√		√		√		√	√					√		√
Blackbird	√	√		√					√					√		√
Goldcrest	(5)								√					√		
Blue Tit	√	√		√		√		√	√					√		√
Tree Creeper	√								√							
Wren	√					√			√					√		√
Great Tit						√			√					√		√
Long Tailed Tit						√			(8)					√		
Willow Tit														√		
Goldfinch									√							√
Siskins									(40)							
Woodpigeon									√					√		
Duncock														√		
Mistle Thrush																
Nuthatch														√		
Maggie																
Carrion Crow																√
Chaffinch									√							√
Moorhen																√

Presence = √
 () = numbers seen

Appendix 5/C - Bryophyte Survey

**BRYOPHYTE SURVEY
A23 AT HANDCROSS, WEST SUSSEX**

REPORT 367/DI/BRYSURV/R1

JANUARY 1994

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1.0	INTRODUCTION	1
2.0	METHODS	1
3.0	SURVEY RESULTS	2
4.0	EVALUATION	8
5.0	SUMMARY	9
6.0	REFERENCES	9

FIGURES:

- 1. LOCATION OF THE SITE**
- 2. SURVEY AREAS AND TARGET NOTES**

APPENDICES:

- 1. COMPLETED BIOLOGICAL SURVEY RECORDING CARDS**
- 2. EXCERPTS FROM ROSE *ET AL* (1991) Atlas of Sussex Mosses, Liverworts and Lichens**

1.0 INTRODUCTION

1.1 Chris Blandford Associates were commissioned by the International Centre of Landscape Ecology (ICOLE) at Loughborough University, to undertake a survey of bryophytes (lower plants) on land adjacent to the A23 at Handcross, West Sussex (Figure 1). The survey was undertaken by CBA's Howard Matcham, Vice County (East and West Sussex) Recorder for bryophytes and General Referee for bryophytes for The British Bryological Society.

1.2 The objective of this report is to present the results of the survey of lower plants (mosses and liverworts) and to assess the ecological value of the species recorded and the sites visited.

2.0 METHODS

2.1 The sites for which access permission was obtained were visited on the 7 December 1993 and are shown in Figure 2. The survey concentrated on the areas immediately adjacent to the A23. On the eastern side the survey was mostly limited to within 50 m of the road, although, notable features occurring beyond this were recorded. Ditches, ponds and the ground were searched, and trees were checked for epiphytes. Some specimens were taken for verification under the microscope.

2.2 Records were made using the standard Bryological Records Centre recording cards. Copies of these are presented in Appendix 1.

2.3 In this report the nomenclature of bryophytes follows Corley and Hill (1980). Comments on the distribution of bryophytes in Sussex refer to Rose *et al* (1991). The distribution of bryophytes includes both 'Watsonian' vice counties 13 and 14 (West and East Sussex), and no attempt has been made to discriminate between the two.

2.4 The identification of species of mosses and liverworts was made with reference to the standard British floras (Smith, 1978; Smith, 1990).

3.0 SURVEY RESULTS

Copies of the completed recording cards for this survey are presented in Appendix 1.

3.1 Site 1, East Park Wood - North

3.1.1 This site is comprised of a broad leaved woodland in the north and a conifer plantation in the south, separated by a gravel/tarmac drive leading to East Park Farm. Wet areas and a small pond are found in the broad leaved section approximately 70 m from the present road boundary. One uncommon liverwort was seen and one nationally rare moss. The species recorded and their distribution in Sussex are set out below.

3.1.2 Mosses

SPECIES	DISTRIBUTION IN EAST AND WEST SUSSEX
<i>Atrichum undulatum</i>	Very common on sands and clays
<i>Brachythecium rutabulum</i>	Very common everywhere
<i>Campylopus introflexus</i>	Common and increasing
<i>Dicranella heteromalla</i>	Very common
<i>Dicranoweissia cirrata</i>	Common
<i>Ephemerum recurvifolium</i> ¹	Nationally rare and very rare in Sussex. Third record for West Sussex, not found in East Sussex
<i>Eurhynchium praelongum</i>	Very common
<i>Eurhynchium striatum</i>	Common
<i>Fissidens bryoides</i>	Common on heavier soils
<i>Fissidens taxifolius</i>	Very common
<i>Hypnum cupressiforme</i>	
var. <i>cupressiforme</i>	Very common
var. <i>resupinatum</i>	Common
<i>Mnium hornum</i>	Common
<i>Polytrichum formosum</i>	Very common in woodland
<i>Pseudoscleropodium purum</i>	Common
<i>Rhynchostegium confertum</i>	Very common
<i>Thuidium tamariscinum</i> ²	Very common
<i>Ulota crispa</i>	
var. <i>crispa</i>	Common epiphyte

¹ Denotes first record for 10 km square TQ 22.

² Found with capsules (i.e. fruiting) which is very rare for this species in Sussex.

3.1.3 *Liverworts*

SPECIES	DISTRIBUTION IN EAST AND WEST SUSSEX
<i>Calypogeia arguta</i>	Common
<i>Calypogeia fissa</i>	Common
<i>Cephalozia bicuspidata</i> ssp. <i>bicuspidata</i>	Common
<i>Fossombronia pusilla</i> ¹	Frequent
<i>Lejeunea ulicina</i>	Common epiphyte
<i>Lophocolea bidentata</i> var. <i>bidentata</i>	Common
var. <i>rivulare</i>	Common
<i>Lophocolea heterophylla</i>	Very common
<i>Pellia epiphylla</i>	Common
<i>Riccia fluitans</i> ¹	Occasional, locally common
<i>Scapania nemorosa</i>	Frequent on heavier soils

¹ Denotes first record for 10 km square TQ 22.

3.1.4 *Evaluation*

This site is generally of low interest for lower plants with two exceptions:

- (a) the small pond (approximately 70 m from the present road boundary) with *Riccia fluitans*, and
- (b) patches of bare clay with the nationally rare *Ephemerum recurvifolium*, within 50 m of the present road boundary.

3.2 **Site 2. East Park Wood - South**

3.2.1 This site is a small copse comprised mainly of shrubs with the occasional standard tree. There is frequent wind blow, presumably from the storm of October 1987. No bryophytes of nature conservation interest were recorded. The species recorded and their distribution in Sussex are set out below.

3.2.2 *Mosses*

SPECIES	DISTRIBUTION IN EAST AND WEST SUSSEX
<i>Atrichum undulatum</i>	Very common on sands and clays
<i>Brachythecium rutabulum</i>	Very common everywhere
<i>Dicranella heteromalla</i>	Very common

<i>Eurhynchium praelongum</i>	Very common
<i>Eurhynchium striatum</i>	Common
<i>Fissidens bryoides</i>	Common on heavier soils
<i>Fissidens taxifolius</i>	Very common
<i>Hypnum cupressiforme</i>	
var. <i>cupressiforme</i>	Very common
<i>Isoetecium myosuroides</i>	Very common
<i>Mnium hornum</i>	Common
<i>Orthotrichum affine</i>	Common epiphyte
<i>Pseudephemerum nitidum</i>	Frequent on heavier soils
<i>Rhynchostegium confertum</i>	Very common

3.2.3 Liverworts

SPECIES

Frullania dilatata
Lejeunea ulicina
Lophocolea bidentata
var. *bidentata*
Lophocolea heterophylla

DISTRIBUTION IN EAST AND WEST SUSSEX

Common epiphyte
Common epiphyte

Common
Very common

3.2.4 Evaluation

This site is of low interest for lower plants.

3.3 Site 3. East Park Garden

3.3.1 This site is comprised of a linear band of shrubbery with rhododendron and azalea species and occasional birch. A tarmac road leads to the house. No bryophytes of note were recorded. The species recorded and their distribution in Sussex are set out below.

3.3.2 Mosses

SPECIES

Atrichum undulatum
Barbula cylindrica
Brachythecium rutabulum
Bryum capillare
Calliergon cuspidatum

DISTRIBUTION IN EAST AND WEST SUSSEX

Very common on sands and clays
Frequent
Very common everywhere
Very common
Very common

<i>Ceratodon purpureus</i>	Very common
<i>Dicranella heteromalla</i>	Very common
<i>Dicranoweissia cirrata</i>	Common
<i>Dicranum scoparium</i>	Very common
<i>Eurhynchium praelongum</i>	Very common
<i>Fissidens bryoides</i>	Common on heavier soils
<i>Fissidens taxifolius</i>	Very common
<i>Hypnum cupressiforme</i>	
var. <i>cupressiforme</i>	Very common
var. <i>resupinatum</i>	Very common
<i>Isoetecium myosuroides</i>	Very common
<i>Mnium hornum</i>	Common
<i>Plagiomnium undulatum</i>	Common
<i>Polytrichum formosum</i>	Very common
<i>Polytrichum juniperinum</i>	Common
<i>Pseudoscleropodium purum</i>	Common
<i>Rhizomnium punctatum</i>	Common
<i>Rhynchostegium confertum</i>	Very common
<i>Rhytidiadelphus squarrosus</i>	Common
<i>Thuidium tamariscinum</i>	Very common

3.3.3 *Liverworts*

SPECIES

DISTRIBUTION IN EAST AND WEST SUSSEX

Lophocolea bidentata

var. *rivulare*

Common

Pellia epiphylla

Common

3.3.4 *Evaluation*

This site is of low interest for lower plants.

3.4 **Site 4. Orange Gill**

- 3.4.1 This site is a broad leaved wood. The northern part of the wood is comprised of oak and ash standards with the occasional conifer, eventually giving way to alder carr further south and finally to a planted poplar plantation. Steep east and west facing slopes drop down as a gill to the stream below. The south eastern edge, parallel with the A23, is mainly bracken. There is considerable evidence of windblow, presumably from the storm of October 1987.

One notable moss (*Dicranum montanum*) was found. The species recorded and their distribution in Sussex are set out below:

3.4.2 Mosses

SPECIES	DISTRIBUTION IN EAST AND WEST SUSSEX
<i>Amblystegium riparium</i>	Common
<i>Amblystegium serpens</i>	Very common
<i>Atrichum undulatum</i>	Very common
<i>Brachythecium rivulare</i>	Frequent
<i>Brachythecium rutabulum</i>	Very common everywhere
<i>Bryum capillare</i>	Very common
<i>Campylopus introflexus</i>	Common and increasing
<i>Campylopus paradoxus</i>	Common
<i>Campylopus pyriformis</i>	Common
<i>Dicranella heteromalla</i>	Very common
<i>Dicranoweissia cirrata</i>	Common
<i>Dicranum montanum</i>	Local
<i>Dicranum scoparium</i>	Very common
<i>Eurhynchium praelongum</i>	Very common
<i>Eurhynchium pumilum</i>	Common
<i>Eurhynchium striatum</i>	Common
<i>Eurhynchium swartzii</i>	Common
<i>Fissidens bryoides</i>	Common on heavier soils
<i>Fissidens taxifolius</i>	Very common
<i>Grimmia pulvinata</i>	Very common
<i>Hookeria lucens</i>	Frequent on Hastings Beds
<i>Hypnum cupressiforme</i>	
var. <i>cupressiforme</i>	Very common
var. <i>resupinatum</i>	Common
<i>Hypnum mammillatum</i>	Very common
<i>Isopterygium elegans</i>	Common
<i>Isothecium myosuroides</i>	Very common
<i>Mnium hornum</i>	Common
<i>Orthotrichum affine</i>	Common epiphyte
<i>Orthotrichum diaphanum</i>	Common
<i>Plagiomnium undulatum</i>	Common
<i>Plagiothecium nemorale</i>	Common
<i>Polytrichum formosum</i>	Very common
<i>Pseudoscleropodium purum</i>	Common

<i>Rhynchostegium confertum</i>	Very common
<i>Rhynchostegium riparioides</i>	Common
<i>Sphagnum auriculatum</i>	Frequent
<i>Tetraphis pellucida</i>	Locally common
<i>Thuidium tamariscinum</i>	Very common
<i>Ulota crispa</i>	
var. <i>crispa</i>	Common

3.4.3 Liverworts

SPECIES	DISTRIBUTION IN EAST AND WEST SUSSEX
<i>Calypogeia arguta</i>	Common
<i>Calypogeia fissa</i>	Common
<i>Cephalozia bicuspidata</i>	
ssp. <i>bicuspidata</i>	Common
<i>Frullania dilatata</i>	Common epiphyte
<i>Lejeunea ulicina</i>	Common epiphyte
<i>Lepidozia reptans</i>	Common on acid soils
<i>Lophocolea bidentata</i>	
var. <i>rivulare</i>	Common
<i>Lophocolea heterophylla</i>	Very common
<i>Metzgeria furcata</i>	Common epiphyte
<i>Pellia epiphylla</i>	Common

3.4.4 Evaluation

This site is of moderate lower plant interest. *Dicranum montanum* has a limited (local) distribution, and is probably increasing its range. *Tetraphis pellucida* is locally common. *Hookeria lucens* is found on stream banks and swampy ground in woodlands, occurring frequently on the Hastings Beds and occasionally on the Lower Greensand .

4.0 EVALUATION

4.1 Summary of Interest

4.1.1 Table 4.1 shows the number of bryophytes recorded at each site. Site 1 (East Park Wood - North) had for its size a good number (11) of liverwort species. Site 2 (East Park Wood - South) due to its small size and absence of large trees is unsuitable for a rich assemblage of bryophytes, reflected in the total of 17 species. Site 3 (East Park Garden) was also relatively unsuitable, having 26 species. At Site 4 (Orange Gill) 49 species were recorded.

SITE	MOSSES	LIVERWORTS
1. East Park Wood - North	18	11
2. East Park Wood - South	13	4
3. East Park Garden	24	2
4. Orange Gill	39	10

4.1.2 The four sites visited were generally species poor. This may be due to proximity to the road where air quality may not be suitable for epiphytic lower plants which are sensitive to air pollution. The stream and banks of Orange Gill are not especially rich in lower plants. Previous experience in similar habitat in the Weald suggests that a total of 70 species would have been expected. Overall the best site is Site 1 (East Park Wood - North), which has the moss *Ephemerum recurvifolium*, which is nationally rare and very rare in Sussex. This ephemeral species grows on bare soil and at 1-2 mm in height is almost certainly overlooked and under recorded in Sussex and nationally. The same site also has the local liverwort *Riccia fluitans* covering the surface of a small pond (which occurs approximately 70 m from the road edge). The known distribution of these species in Sussex is shown in Appendix 2.

5.0 SUMMARY

5.1 A lower plant survey of mosses and liverworts was carried out on four sites adjacent to the A23 at Handcross, West Sussex. All species seen were listed with their distribution in Sussex annotated. In general the four sites were species poor. The survey has shown that one site (East Park Wood - North), had one interesting liverwort with a local distribution in Sussex and (approximately 70 m from the present road boundary) one very rare moss that had only two previous records from Sussex, suggesting that this site is of moderate interest for lower plants. The other three sites were of low interest for lower plants.

5.2 The main potential impacts on lower plants from improvements to the A23 at these sites would probably be from habitat loss. All species recorded would probably quickly colonise any similar habitat remaining alongside the road. For some epiphytes this would depend on the presence of reasonably mature trees on which to grow.

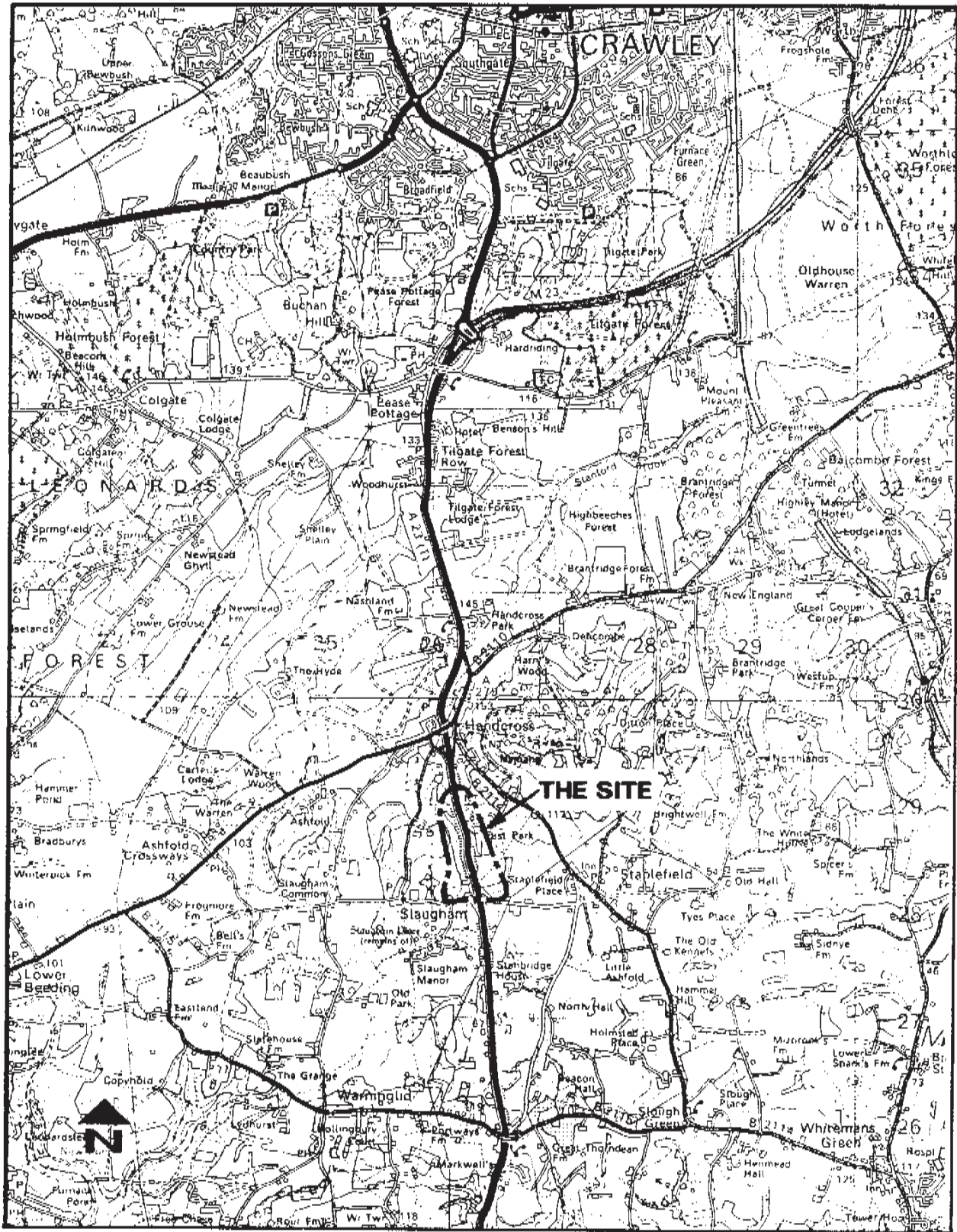
6.0 REFERENCES

Corley, M. F. V. and Hill, M. O. (1981). *Distribution of Bryophytes in the British Isles*. British Bryological Society, Cardiff, UK.

Rose, F., Stern, R. C., Matcham, H. W. and Coppins, B. J. (1991). *Atlas of Sussex Mosses, Liverworts and Lichens*. Booth Museum of Natural History, Brighton, UK.

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Smith, A. J. E. (1990). *The Liverwort Flora of Britain and Ireland*. Cambridge University Press, Cambridge, UK.



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Landranger Sheet No: 187
Series: M726

Project title / Client	367 A23 Bryophytes	Drawing Title	LOCATION OF THE SITE
Scale	1:50000	Date	Dec 93
Drawing No	FIGURE 1	Drawn	ED
Revision	0	Approved	
Chris Blandford Associates		Landscape Architecture Environmental Planning	
Pittsborough Court, Workington, Cumbria, Cumbria, Cumbria		Fax: 0433 24254	
Telephone: (0433) 806488		Fax: (0433) 86281	

SURVEY AREAS:

1. East Park Wood - North
2. East Park Wood - South
3. East Park Garden
4. Orange Gill

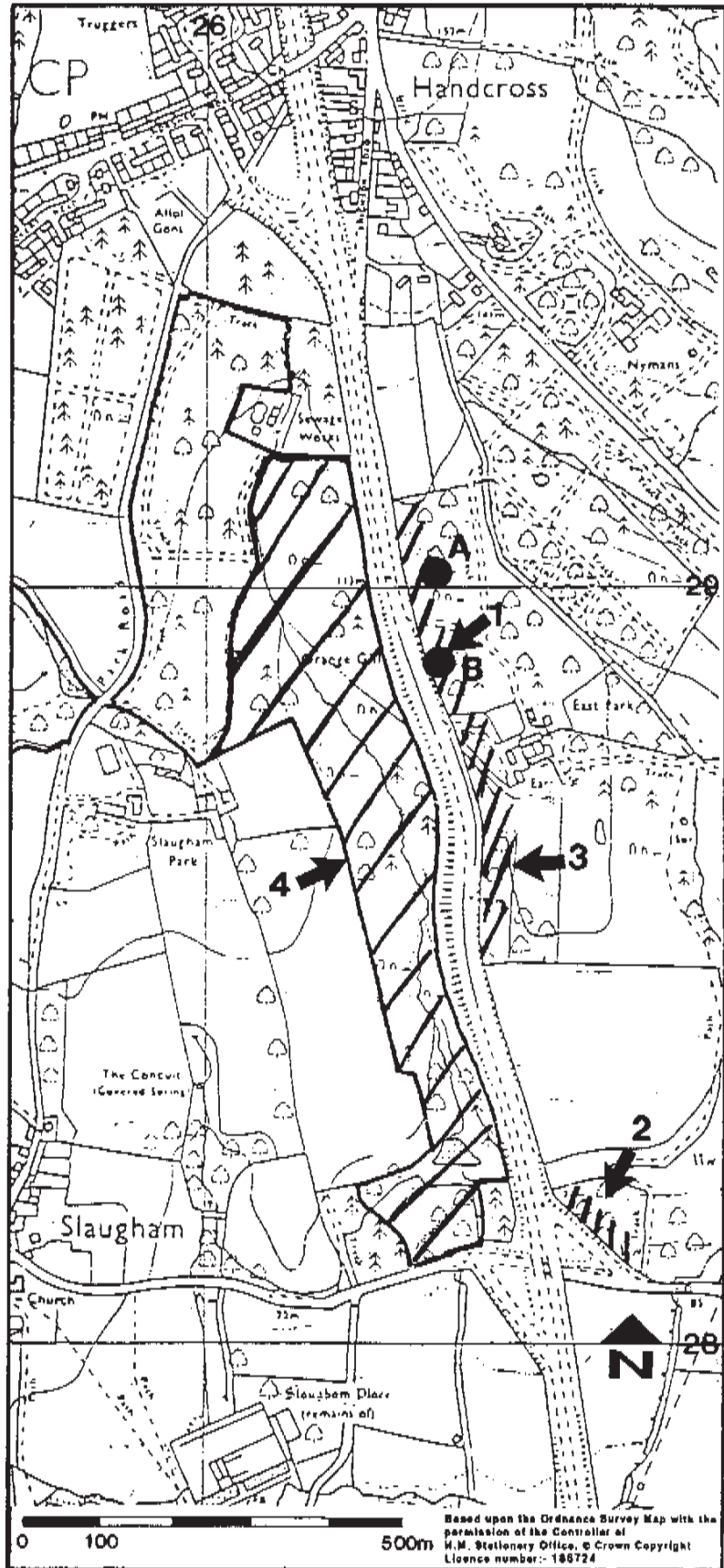
KEY

 Area surveyed

(For areas 1, 2 & 3 - within 50m of the A23 only)

RARE/NOTABLE SPECIES:

- A. *Riccia fluitans*
- B. *Ephemerum recurvifolium*



Project title / Client		367 A23 Bryophytes		Drawing Title		SURVEY AREAS AND TARGET NOTES	
Scale	See bar scale	Date	Dec 93	Drawn	ED	CHRIS BLANDFORD ASSOCIATES Landscape Architects Environmental Planning	
Drawing No	FIGURE 2	Revision	0	Approved		Peepingworth Craft Workshops, Betchors, Litchfield, East Sussex TN27 5JH Telephone (0435) 885488 Fax (0435) 884381	

APPENDIX 1

COMPLETED BRYOLOGICAL SURVEY RECORDING CARDS

GRID REFERENCE						TETRAD	VICE COUNTY	DATE						RECORDER(S)					
T	Q	2	6	3	2	8	8	13	W. Sax.	0	7	1	2	1	9	9	3	CODE NO.	
LOCALITY								HABITAT						NAME(S):					
East Park Wood (North) Handcross West Sussex								Broad leaved woodland Small pond and shallow winter wet depressions Ditch, ditch banks						Howard Matcham					
ALTITUDE																			
						feet													
c 100						metres													

RARE, NOTABLE, CRITICAL AND OTHER TAXA NOT INCLUDED OVERLEAF					
SPECIES	6-FIG. GRID REFERENCE	DATE	HABITAT	LOCALITY	OTHER DETAILS (DETERMINER, ETC)
<i>Ephemerum recurvifolium</i>	263290	07.12.93	Ground flora broad leaved wood.	Handcross West Sussex	H.W. MATCHAM

Nomenclature is based on Smith's Floras. An * denotes an aggregate; s.s. means *sensu stricto*; subspecies and varieties are in italics. Mark fruiting species by an 'f' after the name.

BRYOPHYTES(SE) JANUARY 1992

RP 23

MOSSES	659	born	163	fili	257	Fiss adia	375	Leuc sci
1	Acau muti	91	caes	164	Cryp hete	260	bryo	382
1077	Alol alol	94	capi	166	Oten moll	261	cras	401
9	<u>alo</u>	661	flac	180	Dich flav	262	cris	402
10	<u>amb</u>	662	gemmif	180	*pell	265	exil	404
366	Ambl ripa	99	incl	180	pell	266	incl	411
19	serp	664	clin	181	Dicr cerv	1038	limb	414
337	tena	665	micr	184	hete	267	pusi	415
20	vari	110	pallens	185	rufe	267.1	pus	416
33	Anom viti	113	pseu	186	schr	267.2	ten	417
35	Arch alte	113.1	<u>bim</u>	674	vari	274	taxi	418
40	Attr undu	113.2	<u>pse</u>	189	Dier eirr	276	Font anti	421
41	Aula andr	107	radi	193	Dicr bonj	283	Funa fasc	428
42	palu	115	rube	197	284	286	hygr	429
45	Barb conv	667	rude	203	maju	286	obtu	430
45.1	<u>com</u>	672	viol	204	mont	312	Grim pulv	627
45.2	<u>con</u>	3	Call cord	206	scop	1079	trichop	433
47	<u>cyli</u>	4	cusp	208	sour	325	Gyro tenu	434
48	fallax	5	giga	210	saur	331	Hete hete	435
51	horn	7	stra	215	Ditr cyli	331.1	<u>fla</u>	439
54	recu	135	calc	216	flex	331.2	<u>het</u>	442
56	revo	129	chry	217	hete	333	Homa tric	443
57	rigidula	133	poly	222	Drep adun	126	Homa lute	446
60	toph	1078	stel	223	exan	128	ser:	379
61	trif	134	pro	224	flui	335	Hook luce	381
62	ungu	136	<u>ste</u>	226	revo	340	Hygr luri	392
63	vine	138	Camp brav	233	Enca stre	346	Hylo sple	383
66	Bart pom	140	frag	234	vulg	351	Hypn cupr	395
72	Brac albi	141	lat	235	Ento conc	351.1	<u>cup</u>	448
75	glar	139	para	236	Ephe serr	351.4	<u>lac</u>	449
78	popu	142	pyri	239	<u>min</u>	351.6	<u>res</u>	451
80	rivu	151	Cera purp	239.1	<u>ser</u>	351.2	jutl	456
81	<u>tuta</u>	153	Cinc font	242	epic toze	354	lind	458
82	sale	154	aucr	243	Euc! vert	351.5	mamm	459
84	velu	158	Cirr cras	249	curt p se	357	isop eleg	460
89	Bryu algo	157	dila	249	pumi	362	Isot myos	461
90	*arge	159	Clim dend	254	spec	363	Lept myur	462
1054	*bico	161.1	Crat comm	255	str	365	Lept pyri	463
	bico	161.2	<u>com</u>	256	swar	373	Leuk poly	479
			<u>fal</u>	258		374	Leuc glau	488

486	Pohl anno	532	Rhyt lore	513	marg	714	Ceph bicu	824.3	sil
470	earn	533	squa	614	mura	714.1	<u>bie</u>	824.4	<u>ven</u>
475	lute	534	trid	614.1	aes	714.2	lan	825	Lunz cruc
477	nuta	291	Schi abcc	614.2	<u>mur</u>	718	conn	827.1	Marc arce
485	pro	538	Scie case	616	papt	721	Lunu	827	*poly
488	wahl	539	tour	618	cur pualit	722	Ceph diva	827.2	coly
489	Poly comm	541	scor scor	619	cur pualit	727	nano	1043	Wetz frut
183	for	540	Scor circ	620	subu	731	rube	845	furc
185	juni	544	Seli calo	646	Tric umbr	988	Ch:1 poly	869	temp
484	long	546	pauc	624	Tric brac	737	<u>pal</u>	852	Myli ano
488	pill	578	Spha aurt	625	Tric cris	738	<u>pal</u>	858	Nard scal
491	Pott bryd	578.1	<u>aur</u>	652	Ulot cris	739	<u>pal</u>	859	Nowe curv
496	heim	578.3	<u>ind</u>	632	<u>sta</u>	740	Clad frut	860	Odon denu
497	inte	564	capi	631	<u>por</u>	742	Colo minu	863	Pell spha
498	lanc	554	comp	637	phyl	745	Cono can	868	Pell endi
499	rect	556	cusp	639	Weis cont	747	Dipl aibr	867	spip
500	star	557	fimb	640	long	762	oss pusi	869	nees
500.1	<u>con</u>	562	mege	640.1	<u>ang</u>	763	wono	872.2	Plag aspl
500.5	<u>min</u>	566	palu	640.2	<u>lon</u>	764	Fruil dila	872.1	pore
500.2	<u>sta</u>	567	papi	642	micr	758	Gymn infl	883	Pore arbo
501	trun	571	recu	642.1	<u>bra</u>	772	Jung grac	888	Ptil cili
503	Pseu niti	571.1	<u>amb</u>	642.2	<u>mic</u>	943	nyal	889	Radu comp
507	Pseu puru	571.2	<u>muc</u>	653.3	Zygo baum	876	pumi	892	Rebo hemi
521	Raco cane	571.3	<u>ten</u>	650	cono	944	Kurz pauc	896	Ricc cham
1049	cane	575	squa	653	viri	808	Leio bade	902	lari
1051	eric	668	subn	653.1	<u>sti</u>	790	turb	898	mult
524	*hete	378	5 subs	653.2	<u>vir</u>	796	Leje cavi	899	Ricc cave
1072	hete	579	tene			797	<u>tama</u>	971	flut
525	lanu	356	Taxi wiss			801	Lepi rept	910	glau
1076	sude	589	Ter cell			904	Loph bide	915	soro
389	Rhiz punc	592	Tham alop	901	Aneq ping	807	<u>lita</u>	909	Ricc nata
527	Rhod rosa	597	Thui phi	690	Anth agre	1056	<u>bid</u>	917	Scap aspe
528	Rhyn curv	599	tama	693	Barb atte	812	<u>lita</u>	920	comp
531	tane	602	Tort flav	703	Blas pusi	811	<u>lita</u>	922	irri
245	Rhyn conf	605	inf	705	Caly large	814	<u>lita</u>	929	asmo
246	mega	607	Tort	706	liss	816	Loob bide	930	undu
248	mura	610	Tort	708.1	inte	818	exci	939	Tric tome
248	pur	611	Tort	707	duel	819	vent	956	T expect:
251	tip	612	Tort	709	tona	924		958	

GRID REFERENCE						TETRAD	VICE COUNTY	DATE						RECORDER(S)				
T	Q	2	6	5	2	92		13 W. Sx.	0	7	1	2	1	9	4	3	CODE NO.	
LOCALITY						HABITAT						NAME(S):						
East Park Wood (South). Handerson West Sussex						Small copse, mainly shrubs occasional standard trees. Ditch, ditch banks. Wooden fence railings.						Howard Matcham						
ALTITUDE																		
												feet						
												metres						
												c 90						

RARE, NOTABLE, CRITICAL AND OTHER TAXA NOT INCLUDED OVERLEAF					
SPECIES	6-FIG. GRID REFERENCE	DATE	HABITAT	LOCALITY	OTHER DETAILS (DETERMINER, ETC)

Nomenclature is based on Smith's Floras. An * denotes an aggregate; s.s. means *sensu stricto*; subspecies and varieties are in italics. Mark fruiting species by an 'f' after the name.

GRID REFERENCE						TETRAD	VICE COUNTY	DATE				RECORDER(S)					
T	Q	2	6	4	2	8	7	13 W. Sx	0	7	1	2	1	9	9	3	CODE NO.
LOCALITY								HABITAT					NAME(S):				
East Park House Handerson West Sussex								Linear garden with planted Rhododendron and azaleas. Wet areas.					Howard Matcham				
ALTITUDE						feet											
						2100		metres									

RARE, NOTABLE, CRITICAL AND OTHER TAXA NOT INCLUDED OVERLEAF					
SPECIES	6-FIG. GRID REFERENCE	DATE	HABITAT	LOCALITY	OTHER DETAILS (DETERMINER, ETC)

Nomenclature is based on Smith's Floras. An * denotes an aggregate; s.s. means *sensu stricto*; subspecies and varieties are in italics. Mark fruiting species by an 'f' after the name.

MOSSES	659	born	163	fili	257	Fiss adia	375	Leuc sciu
1	Acau muti	91	caes	164	Cryp hete	260	bryo	homo
1077	Aloi aloi	661	cap	166	Cten moll	261	cras	Neck comp
9	alg	662	flac	180.2	Dich flav	262	cris	cris
10	amb	69	gemmif	180	*pell	265	exil	404
366	Amb1 ripa	664	incl	180.3	pell	266	incu	411
19	serp	665	klin	181	Dicr cerv	1036	limb	414
337	tena	110	micr	184	hete	267	pusi	415
20	vari	113	pallens	185	rufe	267.1	pus	416
33	Anom vitti	113.1	pseu	186	schr	267.2	ten	417
35	Arch alte	113.2	bim	674	stap	274	tax	418
40	Atti undu	107	pse	189	vari	276	Font anti	421
41	Aula andr	115	radi	193	Dicr cl	283	Funa fasc	428
42	palu	667	rube	197	Dicr bonj	284	hygr	429
45	Barb conv	672	rude	203	maju	286	obtu	430
45.1	com	3	viol	204	mont	312	Grim pulv	627
45.2	con	4	cord	206	seep	1079	trichop	433
47	eyll	5	eusp	208	sour	325	Gyro tenu	434
48	fallax	7	giga	210	taur	331	Hete hete	435
51	horn	135	stra	215	Ditr cyli	331.1	fla	439
54	recu	129	calc	216	flex	331.2	hei	442
56	revo	133	chry	217	hete	333	Homa tric	443
57	rigidula	1078	poly	222	Drep adun	126	Homa lute	446
60	toph	134	stel	223	exan	128	seri	379
61	trif	136	pro	224	flui	335	Hook luce	381
62	ungu	138	ste	226	revo	340	Hygr luri	392
63	vina	140	Camp brev	233	Enca stre	346	Hylo sple	383
66	Bart pomi	141	frag	234	vulg	351	Hypn cupr	395
72	Brac albi	139	intr	235	Enco conc	351.1	eye	448
75	gar	142	para	235	Ephe serr	351.4	lac	449
78	popu	151	pyri	239.1	min	351.6	fas	451
80	riyu	153	Gera purp	239.2	ser	351.2	juti	456
81	ruta	154	Cinc font	242	Epip toze	354	lind	458
82	sale	156	mucr	243	Euc1 vert	351.5	mamm	459
84	velu	157	Carr cras	249	Eura pras	357	Isop eleg	460
112	Bryu algo	158	pili	529	pumi	362	Isot myos	461
89	arge	167	Cilm dend	254	spec	363	myur	462
90	*bico	161.1	Crat comm	255	stri	365	Lept pyr	463
1054	bico	161.2	com	256	swar	373	Lesk poly	473
			fal			374	Leuc glau	486

466	Pohl anno	532	Rhyt lore	613	marg	714	Ceph bicu	824.3	sil
470	sera	533	squa	614	mura	714.1	bic	824.4	ven
1015	lute	534	trig	614.1	aes	714.2	lam	826	Lunu cruc
475	nuta	291	Schi apoc	614.2	mur	716	conn	827.1	Marc alpe
477	pro	438	Sole cesp	616	papi	721	Lunu	827	*poly
465	want	539	tour	618	fur ruralif	732	Ceph diva	827.3	poly
482	Poly comm	541	scor scor	619	fur ruralis	727	hamp	1043	Metz frut
483	com	540	Scor circ	620	subu	721	rube	845	furc
485	com	544	Schi calc	1046	Tric umbr	986	Chit poly	869	temp
484	long	546	pauc	624	Tric grac	737	pal	852	Myli anom
488	pili	578	Spha auri	625	cris	738	poi	858	Nard scai
491	Pott bryo	578.1	aur	1052	Ulot cris	739	Clad flui	859	Nowe curv
496	heim	578.3	inu	632	cri	740	fran	860	Odon denu
497	inte	564	cap	631	hor	742	Colo minu	863	spha
498	lanc	554	comp	637	phyt	745	Cono con	868	Pell endi
499	rect	556	culp	639	Wets cont	747	Dipl aibi	867	epic
500	star	557	fimb	640	long	762	Foss pust	869	nees
500.1	con	562	maga	640.1	ang	763	wond	872.2	Plag aspl
500.5	min	566	palu	640.2	lon	764	Fruil dila	872.1	pore
500.2	sta	567	papi	642	micr	768	tama	883	Pore arbo
501	trun	571	recu	642.1	bra	772	Gymn infl	885	Ptil plat
503	Psau niti	571.1	amb	642.2	mic	943	Jung grac	888	Ptil cili
507	Psau puta	571.2	muc	553.3	Zygo baum	876	hya	889	pulc
521	Raco cane	571.3	ten	650	cono	944	pumi	892	Radu comp
1049	cane	575	squa	653	viri	808	Kurz pauc	896	Rebo hemi
1051	eric	568	subn	653.1	sti	790	Leio bade	902	Ricc cham
524	hete	579	suba s.s.	653.2	vir	796	turb	898	lati
1072	hete	578	tene			797	Leje cavi	899	mult
525	lanu	356	Taxi wiss		LIVERWORTS	801	lama	971	Ricc cave
1076	sude	589	Tetr pell		Aneu ping	804	ulic	909	flui
389	Antz pone	592	Tham alop	901	Anth agre	1056	Lepi rept	910	glau
527	Rhod rose	597	Thui phil	650	Barb atte	812	Loph bide	915	soro
529	Rhyn curv	599	tama	693	Blas pusi	811	bid	917	Ricc nata
531	tene	602	Tort flav	703	Caly argu	814	hete	920	Scap aspe
245	Rhyn con	605	infl	705	fiss	816	bier	922	comp
246	mega	607	tort	706	inte	318	exc1	929	irri
248	mula	610	Tort late	708.1	muel	819	inc1	939	undu
251	ripa	611	isev	707	onna	924	vent	956	Tric tome
		612	lati	709				958	T exact:

GRID REFERENCE						TETRAD	VICE COUNTY	DATE					RECORDER(S)					
T	Q	2	6	0	2	90		13 W Sx	0	7	1	2	1	9	9	5	CODE NO.	
LOCALITY						HABITAT						NAME(S):						
Orange G.M.						Broad leaved woodland. Alder carr. Poplar plantation. Bare areas with bracken. Stream, stream banks, stones in stream.						Howard Matcham						
ALTITUDE						feet												
		291-107				metres												

RARE, NOTABLE, CRITICAL AND OTHER TAXA NOT INCLUDED OVERLEAF					
SPECIES	6-FIG. GRID REFERENCE	DATE	HABITAT	LOCALITY	OTHER DETAILS (DETERMINER, ETC)

Nomenclature is based on Smith's Floras. An * denotes an aggregate; s.s. means *sensu stricto*; subspecies and varieties are in italics. Mark fruiting species by an 'f' after the name.

APPENDIX 2

EXCERPTS FROM ROSE *ET AL* (1991) Atlas of Sussex Mosses, Liverworts and
Lichens

RICCIACEAE

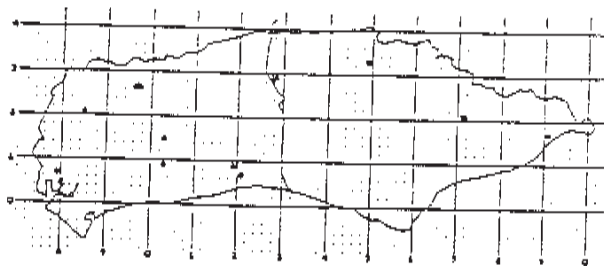
Ricciocarpos Corda

- H11.1 *R. natans* (L.) Corda 13,14
Edges of and floating on ponds, very rare. Only known from Knepp Castle 51/12 and near Cuckfield 51/22.

Riccia L.

- H12.1 *R. cavernosa* Hoffm. 14
Edge of pond, very rare. Only known from Cophthome 51/33.

- H12.3 *R. huebenerana* Lindenb. 13,14
Edges of ponds on mud exposed in drought, very rare. Recorded from Hawkins Pond 51/22, St Leonard's Forest 23, Horsted Keynes 32 and Pound Hill 33. Formerly also recorded in 43.



- H12.4 *R. fluitans* L. 13,14
Floating in ponds and ditches and pond edges, occasional but locally common.

EPHEMERACEAE

Micromitrium Aust.

- M74.1 *M. tenerum* (Bruch) Crosby 13,14
Peaty margins of ponds and lakes when drying out at the end of summer. Very local and rare; uncertain in its appearance. Only recorded recently from St Leonard's Forest and Hawkins Pond 51/22, 23 and previously by Nicholson in 51/32 and 42. Always c.fr.

Ephemerum Hampe

- M75.1 *E. recurvifolium* (Dicks.) Boul. 13,(14)
Bare ground on paths and tracks in woodland, very rare. Only recorded recently from Rewell Wood 41/90. Always c.fr. Recorded by Nicholson in 51/21, 32, 40 and 41.

GRID REFERENCE						TETRAD	VICE COUNTY	DATE						RECORDER(S)				
T	Q	2	6	3	2	8	8	13 W. Sx.	0	7	1	2	1	9	9	3	CODE NO.	
LOCALITY								HABITAT						NAME(S):				
East Park Wood (North) Hundercross West Sussex.								Broad leaved woodland Small pond and shallow winter wet depressions Ditch, ditch banks						Heward Matcham				
ALTITUDE												feet						
						c 100						metres						

RARE, NOTABLE, CRITICAL AND OTHER TAXA NOT INCLUDED OVERLEAF					
SPECIES	6-FIG. GRID REFERENCE	DATE	HABITAT	LOCALITY	OTHER DETAILS (DETERMINER, ETC)
<i>Ephemerum recurvifolium</i>	26327C	07.12.93	Ground flora broad leaved wood.	Hundercross West Sussex	H.W. MATCHAM

Nomenclature is based on Smith's Floras. An * denotes an aggregate; s.s. means *sensu stricto*; subspecies and varieties are in italics. Mark fruiting species by an 'f' after the name.

GRID REFERENCE						TETRAD	VICE COUNTY	DATE				RECORDER(S)						
T	Q	2	6	5	2	8	2	13 W. Sx.	0	7	1	2	1	9	9	3	CODE NO.	
LOCALITY								HABITAT						NAME(S):				
East Park Wood (South). Handcross West Sussex								Small copse, mainly shrubs occasional standard tree. Ditch, ditch banks. Wooden fence railings						Howard Matcham				
ALTITUDE																		
						feet												
						metres												
c 90																		

RARE, NOTABLE, CRITICAL AND OTHER TAXA NOT INCLUDED OVERLEAF					
SPECIES	6-FIG. GRID REFERENCE	DATE	HABITAT	LOCALITY	OTHER DETAILS (DETERMINER, ETC)

Nomenclature is based on Smith's Floras. An * denotes an aggregate; s.s. means *sensu stricto*; subspecies and varieties are in italics. Mark fruiting species by an 'f' after the name.

GRID REFERENCE							TETRAD	VICE COUNTY	DATE					RECORDER(S)				
TQ	2	6	4	2	8	7		13 W. Sx	0	7	1	2	1	9	9	3	CODE NO.	
LOCALITY							HABITAT					NAME(S):						
East Park House Haverens West Sussex							Linear garden with planted Rhododendron and azaleas. Wet areas.					Howard Matcham						
ALTITUDE												feet						
												2100		metres				

RARE, NOTABLE, CRITICAL AND OTHER TAXA NOT INCLUDED OVERLEAF					
SPECIES	6-FIG. GRID REFERENCE	DATE	HABITAT	LOCALITY	OTHER DETAILS (DETERMINER, ETC)

Nomenclature is based on Smith's Floras. An * denotes an aggregate; s.s. means *sensu stricto*; subspecies and varieties are in italics. Mark fruiting species by an 'f' after the name.

GRID REFERENCE						TETRAD	VICE COUNTY	DATE					RECORDER(S)	
TQ	2	6	0	2	80		13 W SX	07	12	19	95	CODE NO.		
LOCALITY						HABITAT						NAME(S):		
Orange G.M.						Broad leaved woodland. Alder carr. Poplar plantation. Bare areas with bracken. Stream, stream banks, stones in stream.						Howard Matchum		
ALTITUDE					feet									
					291-107 metres									

RARE, NOTABLE, CRITICAL AND OTHER TAXA NOT INCLUDED OVERLEAF					
SPECIES	6-FIG. GRID REFERENCE	DATE	HABITAT	LOCALITY	OTHER DETAILS (DETERMINER, ETC)

Nomenclature is based on Smith's Floras. An * denotes an aggregate; s.s. means *sensu stricto*; subspecies and varieties are in italics. Mark fruiting species by an 'f' after the name.

BRYOPHYTES(SE) JANUARY 1992 **RP 23**

Appendix 5/D - Water Quality Assessment

A23 HANDCROSS - WARNINGLID

**CHEMICAL AND BIOLOGICAL ASSESSMENT OF THE
WATER QUALITY OF WATER COURSES ADJACENT TO THE
A23 HANDCROSS TO WARNINGLID, WEST SUSSEX.**

MARCH 1994

E J Darby
International Centre of Landscape Ecology
Geography Department
Loughborough University of Technology
Loughborough LE11 3TU

1. Introduction

1.1 At the request of Derek Lovejoy Partnership the International Centre for Landscape Ecology carried out a chemical and biological assessment on 17 November 1993 of water courses adjacent to the A23 between Handcross and Warninglid, West Sussex (Appendix 1). The A23 at this point is the subject of a proposed road improvement. The assessment was undertaken to provide background information on the water quality of water courses that might be impacted by the proposed road scheme.

1.2 It is standard practice to measure water quality by analysing chemical parameters and biological indicators. One provides a useful 'point in time' indication of quality the other a more reliable long term picture of water quality.

2. Method

2.1 The water courses sampled are listed below and shown in Appendix 1. For the sake of convenience each sample site was allocated a number. The results were then tabulated under those numbers and appear in Tables 1 and 2.

Sites sampled:

Garden Centre Stream

Downstream of A23 (site no. 1)

Stanbridges stream

Downstream of A23 (site no. 2)

Annes Wood Stream

Upstream of A23 (site no. 3)

Downstream of A23 (site no. 4)

River Ouse

Upstream of Orange Gill outfall (site no. 8)

Downstream of Orange Gill outfall (site no. 7)

Downstream of A23 (site no. 5)

East Park Stream

Upstream of Slaugham Road (site no.11)

Downstream of Slaugham Road (site no.10)

Outfall to River Ouse (site no. 6)

Orange Gill

Sewage works outfall (site no. 17)

3 tributary streams on east bank (site no. 14, 15, 16)

Table 1. Results of Chemical Analyses - A23 17.11.1993

Parameter	1	2	3	4	5	6	7	8	9	10	11	12	13	15	16	17
pH	7.1	8.12	7.50	7.39	6.82	7.30	7.15	7.15	7.20	7.00	6.88	7.14	7.07	7.05	7.40	7.20
Conductivity (μ s)	510	540	330	350	380	300	310	270	520	350	350	530	570	700	620	750
S.S. (mg/l)	231.0	96.0	20.0	19.0	3.5	10.5	10.5	10.5	7.0	5.0	10.0	2.5	2.5	2.5	3.5	8.0
B.O.D. (O ₂)	2.7	2.6	2.4	2.8	2.7	2.1	2.0	2.6	1.9	1.7	1.6	2.0	2.3	1.9	1.5	11.2
D.O. (O ₂ @ α C)	3.4	10.7	11.5	11.4	12.3	11.0	12.2	12.0	11.5	10.6	11.1	12.00	11.1	10.5	11.6	11.0
	@ 7.6	@ 9.5	@ 5.0	@ 4.9	@ 3.9	@ 5.2	@ 4.2	@ 4.2	@ 5.5	@ 6.4	@ 6.5	@ 5.6	@ 6.6	@ 8.6	@ 6.5	@ 8.0
Chloride (Cl mg/l)	61.0	52.0	35.0	35.0	61.0	37.0	40.0	29.0	85.0	43.0	40.0	93.0	90.0	96.0	110.0	87.0
Ammonia (N mg/l)	0.6	0.6	0.6	0.5	1.1	0.6	0.4	0.6	0.4	0.8	1.0	0.6	0.5	0.6	0.6	5.0
Nitrate (N mg/l)	2.7	1.1	1.9	2.0	6.2	2.2	2.4	2.3	4.9	8.9	9.0	5.5	7.3	2.1	4.3	18.5
Phosphate (P mg/l)	0.38	0.06	1.14	0.23	0.20	0.26	0.24	0.10	1.14	0.02	0.03	1.35	2.08	0.08	0.02	6.44
Copper (Cu mg/l)	0	0	0	<0.05	0	0	0	<0.05	<0.05	<0.05	<0.05	0.0452	<0.05	<0.05	<0.05	0.765
Zinc (Zn mg/l)	0.063	<0.05	<0.05	0	<0.05	<0.05	<0.05	<0.05	<0.05	0.0771	0.0698	0.2257	<0.05	<0.05	<0.05	0.0691
Cadmium (Cd mg/l)	<0.05	0	0	0	0	0	<0.05	0	<0.05	0	0	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium (Cr mg/l)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lead (Pb mg/l)	<0.05	0.5184	<0.05	<0.05	<0.05	0	<0.05	<0.05	<0.05	<0.05	<0.05	0	<0.05	0	<0.05	<0.05
Nickel (Ni mg/l)	0	0	0	0	0	0	0	0	<0.05	0	0	<0.05	<0.05	0	0	0.0957
Iron (Fe mg/l)	1.412	0.4746	1.865	1.562	0.3587	1.436	1.276	1.680	0.1812	1.280	1.470	0.1945	0.2566	0.5162	0.0958	0.6657
Faecal coliforms (per 100 ml)												72	400			87x103

Table 2 Aquatic Invertebrates Present - A23 17.11.1993

	Samples	1	2	3	4	5	6	7	8	9	10	11	12	13	15	16	17
Scoring taxa	Scores																
Hydrobiidae	3	√		√	√	√		√		√				√			
Lymnaeidae	3					√								√			
Planorbidae	3					√										√	
Sphaeriidae	3	√				√		√						√			
Physidae	3	√															
Glossiphoniidae	3	√			√	√											
Erpobdellidae	3				√									√	√		
Asellidae	3	√		√	√			√	√								
Gammaridae	6	√		√	√	√	√	√	√		√	√					
Baetidae	4					√		√				√					
Nemouridae	7						√	√			√	√	√	√			√
Corixidae	5								√								
Dytiscidae	5		√		√									√			√
Sialidae	4							√				√					
Hydropsychidae	5			√	√	√				√			√		√	√	
Limnephilidae	7	√								√	√	√	√		√	√	
Leptoceridae	10			√	√		√							√			
Phryganeidae	10												√				
Tipulidae	5		√									√		√			
Chironomidae	2	√	√	√	√	√	√	√		√			√	√	√	√	√
Simuliidae	5		√			√			√	√		√	√	√			
Oligochaeta	1	√								√							
BMWP Score																	
Total		31	17	29	40	37	25	32	19	23	20	38	36	46	17	22	9
ASPT		3.4	4.3	4.8	4.4	3.7	6.3	4.0	4.8	3.8	6.6	5.4	6.0	4.6	4.2	4.4	4.5

Non scoring taxa	1	2	3	4	5	6	7	8	9	10	11	12	13	15	16	17
Tabanidae			√										√	√		
Haplotaenidae														√		
Stratiomyidae										√						√
Ceratopogonidae						√								√		

√ indicates presence

- Upstream of pond (site no. 13)
- Downstream of pond (site no. 12)
- Outfall to River Ouse (site no. 9)

2.1 The chemical assessment involved the analysis of water for a range of parameters:

- pH
- Conductivity
- Biological Oxygen Demand (BOD)
- Dissolved Oxygen
- Suspended Solids
- Chloride
- Nitrate
- Phosphate
- Ammonia
- Copper
- Lead
- Zinc
- Cadmium
- Iron
- Nickel
- Chromium

2.3 Tests for E coli concentrations were also made from samples taken at the outfall from the Sewage Works (site 17) to Orange Gill and upstream (site 13) and downstream (site 12) of the pond on Orange Gill. A comparison was made between the results obtained from chemical analysis and the EC Fisheries Directives 1978/659 on Salmonid and Cyprinid Standards. A copy of the Standards is at Appendix 2.

2.4 In addition, a biological assessment of water quality was made by sampling for aquatic invertebrates in the water courses and surveying aquatic flora. The aquatic invertebrates were also given a score based on the British Monitoring Working Party (BMWP) system used by the National Rivers Authority. This system allocates a score of 1 to 10 for aquatic invertebrates, the highest score to those families of invertebrates least tolerant of organic pollution and the lowest score to those most tolerant. An Average Score Per Taxon (ASPT) was also calculated by dividing the BMWP score by the number of scoring taxa. ASPT is less subject to variation than BMWP and is a more reliable record of invertebrate presence.

2.5 Water samples were collected and analysed by the Civil Engineering Dept. at Loughborough University. Analysis for pH and Dissolved Oxygen were undertaken on the day using hand held meters. Aquatic invertebrate samples were collected with a pond net using a standard two minute 'kick sample', preserved in alcohol and returned to Loughborough University for identification.

3. Results

3.1 The results of the analysis of sampling are contained in Tables 1 and 2. One of the tributaries (site 14) of Orange Gill was dry on the sampling day and no results were obtained.

Chemical Analysis

3.2 The analysis of water samples showed that overall the water courses have good water quality. All sites were slightly alkaline with Stanbridges Stream (site 2) being the highest at 8.12. A notable feature of all results were the very low concentrations of heavy metals present. As might be expected BOD, Nitrate and Phosphate values were highest at the sewage outfall (site 17) but reduced significantly downstream. Similarly, faecal coliforms counts from the sewage outfall were acceptable and reduced dramatically above and below the pond in Orange Gill Wood. The results for all water courses were considered reasonable and gave no cause for concern (Mr Holmes, NRA Thames, Pevensey Office pers. comm.).

3.3 With some exceptions the results also compared favourably with the EC Directive 1978 on Salmonid and Cyprinid Standards (Appendix 2). A comparison showed Suspended Solids were significantly higher in the Garden Centre Stream (site 1) and Stanbridges Stream (site 2) but this may well have been accounted for by the physical conditions on the day of sampling. BOD and Ammonia results at the sewage outfall were higher than the EC Fisheries Standards but as with other results there was an improvement downstream. It should also be remembered that the results produced in this report are for one sample date whereas the EC Fisheries Standards are based on regular weekly or monthly sampling frequencies.

Biological Analysis

3.4 Conditions on the day made surveying at some sites difficult. The River Ouse and Annes Wood Stream were both turbid due to the presence of silt. Deep water (1.75m) prevented thorough sampling being undertaken on the the River Ouse on the west side of the A23 (site 7) and on Annes Wood Stream east of the A23 (site 4). The deep water was caused by barriers of woody debris and leaves 'ponding back' the flow. The Garden Centre Stream was low (<6cm) and choked with leaves while Stanbridges Stream had a steady but very low

flow (< 2cm).

3.5 The BMWP scores were lower than might have been expected and were not obviously compatible with the chemical analysis. The presence of stoneflies (*Nemouridae*) and cased caddis (*Limnephilidae*, *Leptoceridae*, and *Phryganidae*) however, indicate general good water quality. The River Ouse downstream of the A23 (site 5) and Orange Gill above the pond (site 13) had the most families of invertebrates, site 13 having the highest BMWP score. Not surprisingly the outfall from the sewage works had the lowest score but contained a stonefly (*Nemouridae*).

3.6 Bullhead fish (*Cottus gobio*) were netted during the invertebrate sampling at the sites on the River Ouse and Annes Wood Stream.

3.7 The only macrophytes visible were Branched Bur-Reed (*Sparganium erectum*) and Water Forget-me-Not (*Myosotis scorpioides*) in the River Ouse upstream of the A23. Heavy shading by trees at Orange Gill, Annes Wood Stream, the River Ouse downstream of the A23 and the Garden Centre Stream has severely restricted or eliminated macrophyte growth. Stanbridges Stream is concrete lined and will probably never support macrophytes. Many macrophytes would not normally be visible during the winter months.

4. Discussion

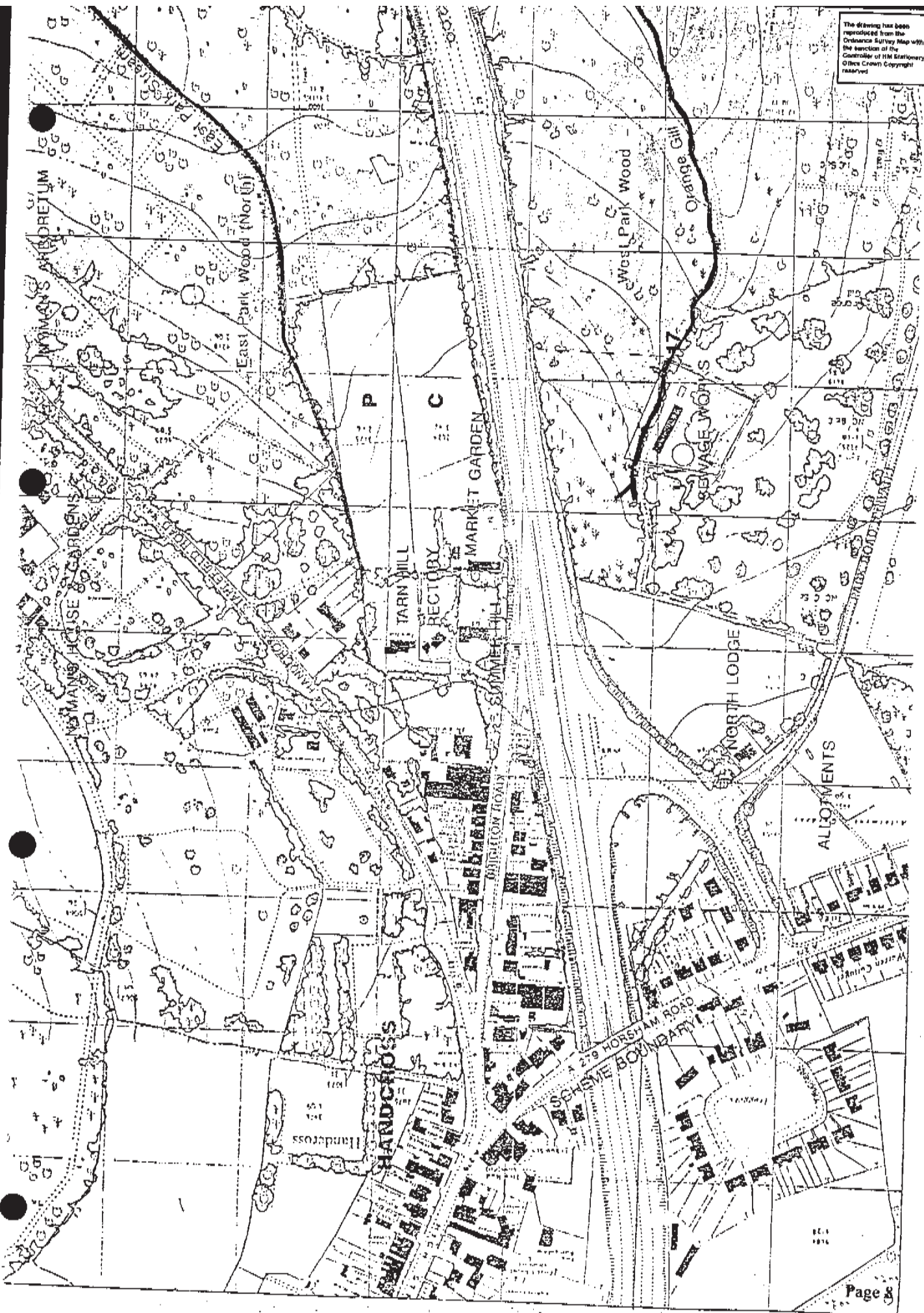
4.1 The analysis of water samples showed that water quality was good. This also applies somewhat surprisingly to Stanbridges Stream which is supplied mainly from road run off. Although BMWP scores for aquatic invertebrates were low the presence of high scoring species tends to confirm the chemical analysis. This is also reinforced by the favourable comparison with the EC Fisheries Directive. It was not possible to use the presence of macrophytes to draw conclusions about the general quality of the water courses.

4.2 Chemical analysis of water is a 'point in time' indication of water quality. This may be subject to change at any time due to a variety of natural and anthropogenic environmental stresses. A regular sampling regime would give a more accurate summary of chemical water quality. Aquatic invertebrates enable a more reliable picture of water quality to be built up but again more regular sampling inevitably confirms overall quality over time.

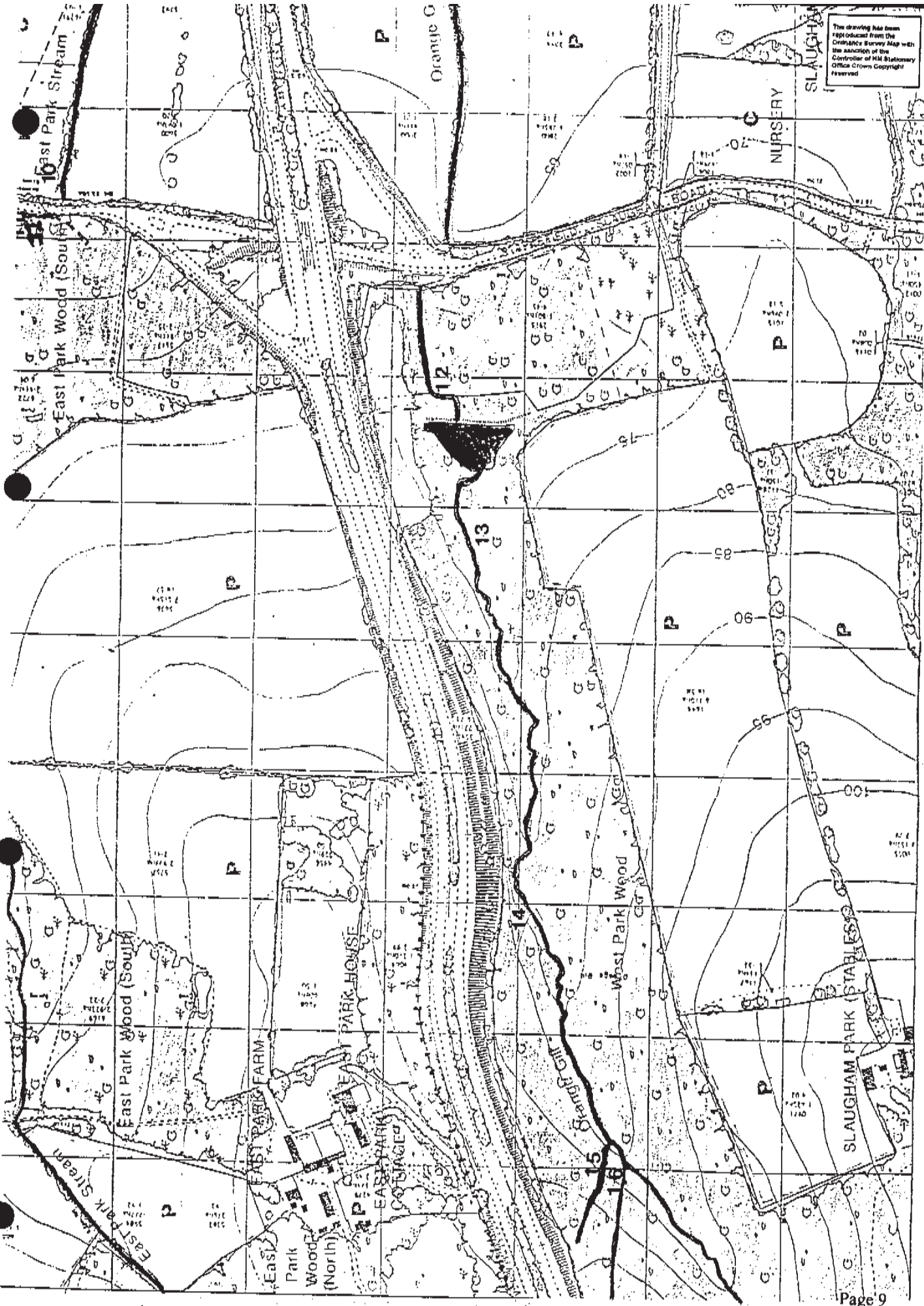
APPENDIX 1

A23 SAMPLING SITES 17.11.93

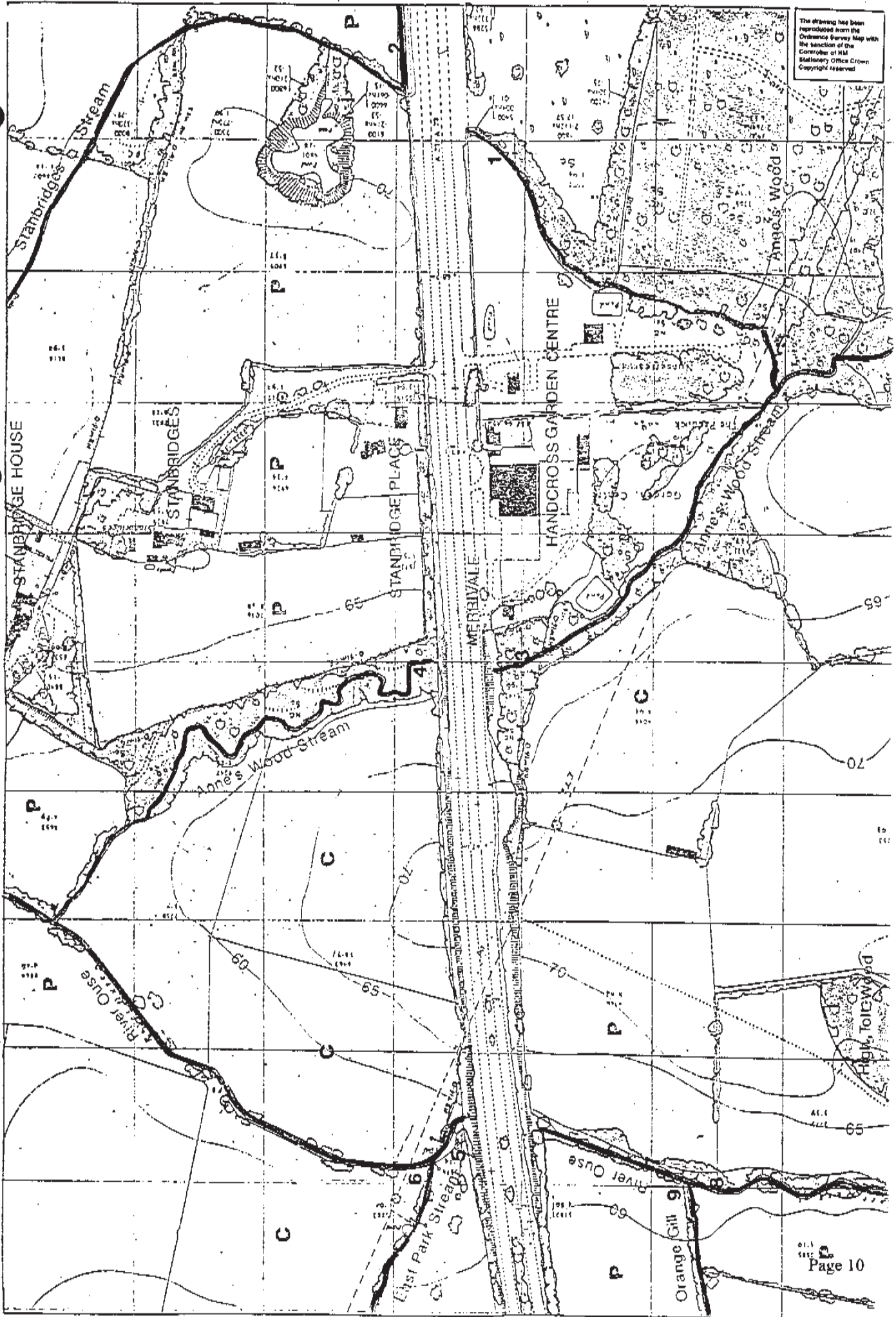
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APPENDIX 2

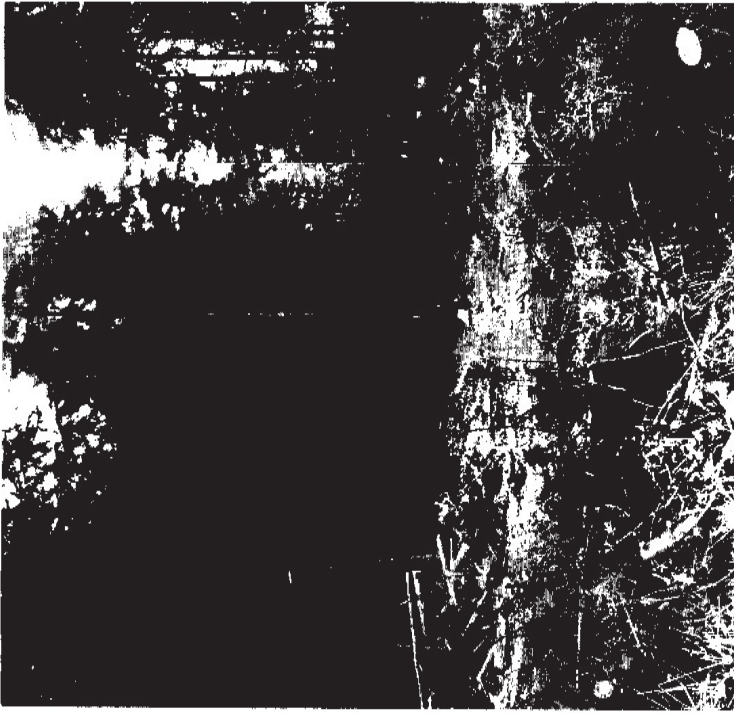
EC FISHERIES DIRECTIVE No. 78/659/EEC

4.7 Standards required by the EC Fisheries Directive No 78/659/EEC.

G = Guide, I = Mandatory (95% values except where stated)

Parameter	Salmonid		Cyprinid		Sampling Frequency	Comments															
	G	I	G	I																	
Temperature (°C)		1.5		3	Weekly (Upstream and downstream).	Downstream of a point of thermal discharge. The temperature must not exceed the unaffected temperature by more than these values.															
Temperature (°C)		21.5		28	Weekly	Downstream of a point of thermal discharge. Limits may be exceeded for 2% of the time. A 10% limit applies to breeding periods of species needing cold water for reproduction.															
Dissolved Oxygen (mg/l)	50%≥9 100%≥7	50%≥9	50%≥8 100%≥5	50%≥7	Monthly																
pH		6-9		6-9	Monthly	Average concentrations.															
Suspended Solids (mg/l)	≤25		≤25																		
BOD (ATU) (mg/l)	≤5		≤8			UK values. (Directive requires 3 mg/l and 6 mg/l respectively).															
Total Phosphorous (mg/l)		0.2		0.4																	
Nitrates - (as N) (mg/l)	0.15		0.46			UK values (0.5mg/l and 1.5 mg/l as NO ₂ respectively). (Directive requires 0.01 mg/l and 0.03 mg/l).															
Phenolic Compounds (mg/l C ₆ H ₅ O ₂ H)						Concentration must not affect fish flavour.															
Petroleum Hydrocarbons					Monthly	Must not form visible film. Must not give fish taste.															
Non-Ironised Ammonia (as NH ₃) (mg/l)	≤0.005	≤0.025	≤0.005	≤0.025	Monthly	(0.004 mg/l and 0.02 mg/l as N respectively).															
Total Ammonia (as N) (mg/l)		≤1.55		≤1.55	Monthly	UK values. (Directive requires 0.78 mg/l as N).															
Total Residual Chlorine (mg/l HOCl)		≤0.005		≤0.005	Monthly	Higher concentration acceptable if pH is greater than 6.															
Total Zinc (mg/l)		≤0.3		≤1.0	Monthly	Depends on water hardness: <table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>10</td> <td>50</td> <td>100</td> <td>500</td> </tr> <tr> <td>S</td> <td>0.03</td> <td>0.2</td> <td>0.3</td> <td>0.5</td> </tr> <tr> <td>C</td> <td>0.3</td> <td>0.7</td> <td>1.0</td> <td>2.0</td> </tr> </table>		10	50	100	500	S	0.03	0.2	0.3	0.5	C	0.3	0.7	1.0	2.0
	10	50	100	500																	
S	0.03	0.2	0.3	0.5																	
C	0.3	0.7	1.0	2.0																	
Dissolved Copper (mg/l)	≤0.04		≤0.04		Monthly	Depends on water hardness: <table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>10</td> <td>50</td> <td>100</td> <td>500</td> </tr> <tr> <td></td> <td>0.005</td> <td>0.022</td> <td>0.04</td> <td>0.112</td> </tr> </table>		10	50	100	500		0.005	0.022	0.04	0.112					
	10	50	100	500																	
	0.005	0.022	0.04	0.112																	

Appendix 5/E - East Park Woodland Photographs



East Park Wood (North)
Recent clearing in Douglas Fir Plantation on line of new Private Means of Access



East Park Wood (North)
Existing track through area of Semi Natural Ancient Woodland on line of new Private Means of Access



East Park Wood (Garden of East Park House)
Area of woodland to be cleared for construction of new cutting

Appendix 5/F - West Park Woodland Photographs

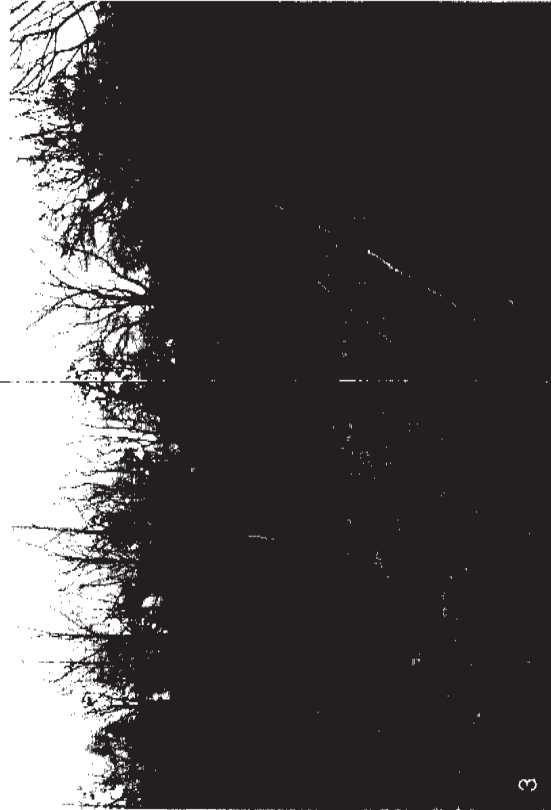


West Park Wood
Orange Gill Ancient Woodland. Coppiced Alder near abandoned pond.



2

West Park Wood
Orange Gill Ancient Woodland



3

West Park Wood
Clearing created after 1987 storm (looking towards Slaugham Park House).
Ash/Willow regeneration.



West Park Wood
Ancient Woodland Ash regeneration in area opened up by storm damage.



West Park Wood
Ancient Woodland Typical view of Birch/Oak area with introduced Scots Pine.
Ash regeneration visible in background.



West Park Wood
Ancient Woodland
Typical view of Oak/Beech section.

Appendix 5/G - Central Reserve Trees Photographs



Mature trees in central reserve in vicinity of entrance to East Park Farm

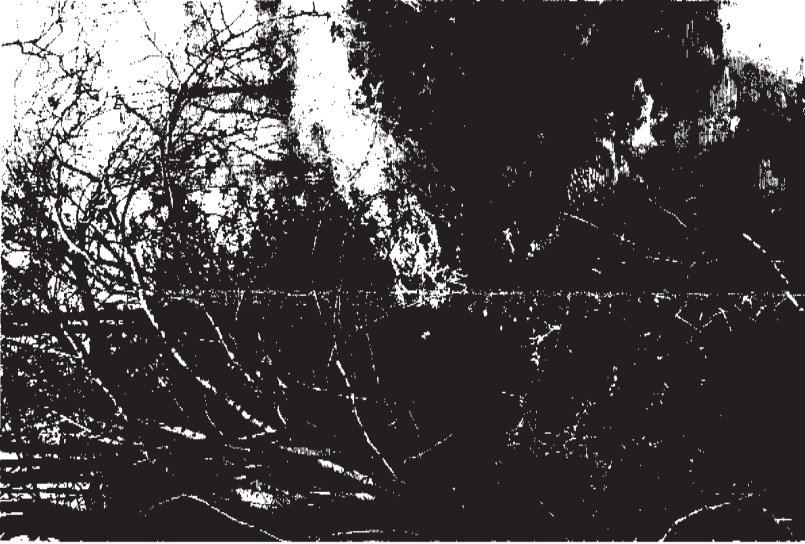


Mature trees in central reserve between Mill Hill and Slaughtam Junction



Detail of pit surround typical of mature trees in central reserve and on west embankment between Mill Hill and Slaughtam Junction

**Appendix 5/H - River Ouse and Anne's Wood Stream
Photographs**



River Ouse, east (downstream) of A23



Anne's Wood Stream, west (upstream) of A23

6.0 LANDSCAPE EFFECTS.

6.1 INTRODUCTION

6.1.1 This section of the statement describes the effect that the scheme would have on the landscape of the area generally, as well as the visual impact it would have on local people.

6.1.2 When considering the effect that the scheme would have on the landscape generally, 'landscape' has been considered not only as a visual matter, but also as an overall experience in which all the senses play a part. In the context of the study area, consideration has been given to historical and cultural associations with the landscape and to the natural beauty and native conservation value of the areas of ancient woodland.

6.1.3 The visual impact assessment has been carried out by comparing the existing impact of the A23 with that of the improved road, at the year of opening and fifteen years later when the proposed planting would have matured. The effect of lighting has been assessed during day time and night time.

6.2 GENERAL DESCRIPTION OF STUDY AREA

6.2.1 Regional Context

6.2.1.1 The Handcross to Warninglid section of the A23 is within the St Leonard's Forest district of the High Weald Area of Outstanding Natural Beauty (AONB). (See Regional Context Map, Figure 6.1) Designated in 1966, the AONB covers an area of 560 square miles of undulating sandstone hills of the Weald which lie between the North and South Downs.

6.2.1.2 The typical features of this area of the Weald are its deep wooded valleys, known as gills, hammer ponds constructed to drive forge hammers of the iron founding industry of old, extensive woodlands, many of which are remnants of ancient woodland dating back before 1600 AD, mansions with parklands, gardens and arboreta, ridge top villages, hedgerowed narrow lanes, and vantage points with extensive views across the main valleys. All of these features are evident in the study area.

6.2.2 Visual Envelope

6.2.2.1 Because of the presumption in favour of an on-line improvement, the study area has been defined as the area within which the existing A23 corridor may be visible. This was established by computer based intervisibility studies which were generated from a digital terrain model of the 1/10,000 Ordnance Survey Map (see Figure 6.3, Visual Envelope Map of Existing Road). It should be borne in mind that these computer studies show potential visibility which may in practice be obstructed by intervening

woodland, hedgerows and buildings. The views from the more important individual locations have therefore been verified by site inspection.

6.2.2.2 The ridges of hills that contain the River Ouse, (see Valley Figure 6.2, Landform Map), form a clear topographical boundary to the north and south of the study area. Despite the numbers of vantage points provided by this landform, the extent of mature woodland is such that visibility is generally obstructed. Views of the road are therefore mostly restricted to where it can be seen crossing the valley floor or climbing to cross the opposite ridgeline.

6.2.2.3 To the west and east, the landform is less well defined and therefore the potential visibility is more extensive. The valley floor, however, comprises a complex topography of undulating landforms, sunken roads, hedgerows and woodlands which obstruct intervisibility, and beyond a band of approximately one kilometre the A23 can only be seen as it crosses the high ground at each end of the scheme. The Landscape Assessment of the existing road corridor is shown on Figure 6.4, and should be compared with the Landscape Assessment for the proposed scheme which is shown on Figure 6.7.

6.3 LANDSCAPE CHARACTER AND QUALITY

6.3.1 Methodology

6.3.1.1 Reference has been made to *The Landscape Appraisal of West Sussex* undertaken by West Sussex County Council in 1970/71. (see Figure 6.5, Landscape Character/Quality Map and Appendix 6/A). This study defined and mapped various categories of landscape character found within the county and assessed the landscape quality of each kilometre square according to a numerical method - a WSCC adaption of 'The Tandy Method'. This appraisal has been repeated to assess the present character/quality of the study area.

6.3.2 Landscape Character

6.3.2.1 Existing Conditions

West Sussex County Council's findings with regard to landscape character are accepted. A general description of the landscape of the area north of Slaugham Junction matches the "steep, narrow valleys ... largely wooded" of the Central Weald Plateau (South) zone, as does a description of the area to the south of Slaugham Junction having a "complex undulating topography ... some flat land in valley floor ... much woodland on slopes" of the Weald - Intermediate zone.

6.3.2.2 *Effect of the Scheme*

Generally, because the proposed improvements would be on-line with the existing road and necessitate only limited disturbance beyond the present highway boundary, the impact of the scheme on the landscape character of the area would be very slight. The extension of the lighting along the length of the route would however add an element, particularly at night when it would be visible from a wide area, into an otherwise rural setting.

6.3.3 **Landscape Quality**

6.3.3.1 *Existing Conditions*

The results of the assessment of landscape quality which has been repeated for the squares adjacent to the scheme generally give a higher score compared with WSCC's appraisal (see Landscape Quality Assessment Sheets: Appendix 6/A). It has not been possible to examine WSCC's survey sheets, and subjective differences could be a factor, but it is thought that the main reason for the difference is that the dualling of the A23 had relatively recently been completed and the associated planting would have been immature when WSCC's appraisal was carried out. At that time, the A23 would therefore have had a substantial adverse impact on the landscape, whereas it is now largely screened from view. This would explain the low value for square 26/27 which was given a score of only 2; a rating that is clearly at odds with the attractive settings of Slaugham Place and the Stanbridge area today.

6.3.3.2 *Effect of the Scheme*

An assessment has been made in accordance with WSCC's appraisal methodology of the effect the proposals would have on the landscape quality values through which the road passes, the results of which are given in Table 6.1.

6.3.3.3 *Year 1 (Winter)*

Disturbance of the existing mature verge planting would result in the improved road being more visible than at present, and it would score an 'intolerable' negative impact over 'some' of the square. None of the other factors would be significantly affected.

6.3.3.4 *Year 15 (Summer)*

The proposed planting would have matured significantly, reducing the road's negative impact.

TABLE 6.1 LANDSCAPE QUALITY ASSESSMENT

LANDSCAPE QUALITY ASSESSMENT				
Grid Square	WSSC Score	1994 Score	Year 1 Score	Year 15 Score
26/26	4	4*	4	4
26/27	2	4	3	4
26/28	6	7	6	7
26/29	8	8	7	8

* The 1994 score for square 26/26 takes account of recent disturbance from the Warninglid to Sayers Common scheme.

6.3.3.5 Although the proposals would initially have some adverse visual impact on some viewpoints in squares beyond those listed in the above table, the degree and extent would not be such that their scores would be affected.

6.4 VISUAL IMPACT

6.4.1 General

- 6.4.1.1 A detailed assessment of the visual impact from properties and other viewpoints considered to be important has been carried out in accordance with the methods described in the Department of Transport's Design Manual for Roads and Bridges, Volume 11, Section 3, Part 5, Chapter 4. The computer intervisibility studies were repeated for the proposed scheme to examine the potential visibility of the road and traffic (see Figure 6.6) and lighting at night (see Figure 6.9).
- 6.4.1.2 The existing impact of the A23 is compared with the impact of the proposed improvements. Two assessments have been made. The first was made at the stage of completion of the works (Year 1) during winter when the screening effect of intervening woodland and hedgerows would be least. It therefore represents the 'worst case'. The second is made 15 years later (Year 15) when the landscaping associated with the scheme, as described in Appendix 6/C and shown on Figures 6.10 and 6.11, would have reached semi-maturity and during summer when the screening effect of vegetation would be greatest. The effect of lighting has been described separately.
- 6.4.1.3 The findings of the study are summarised in the Visual Impact Assessment Schedule enclosed as Appendix 6/B

6.4.1.4 The Visual Impact of the proposed scheme during daytime is shown in Figure 6.8. Three photomontages have been prepared which illustrate the scheme (see Figure 6.12).

6.4.2 Handcross Village

6.4.2.1 *Existing Conditions (refer to photographs in Appendix 6/D.1)*

The existing A23 passes through the village in a deep cutting through the crest of Handcross Hill. Although the village is thus severed, views of the road are fairly effectively screened by the mature vegetation that has developed on the cutting slopes and on the property boundaries, with the result that its visual impact is at worst moderate, but generally slight.

6.4.2.2 *Effect of the Scheme*

The widening of the carriageways and alteration of the road's vertical alignment would require further excavation of the cutting slopes. Most of the existing verge planting would be lost (some has recently been disturbed by work relating to the Pease Pottage Scheme), but there would be no disturbance beyond the present highway boundary. A significant amount of vegetation would therefore remain on the boundary to screen the road. This would be reinforced by the close boarded fence to be erected along the boundary, which would screen views from ground level. The adverse impact on any of the properties adjacent to the cutting would be slight and after the new planting on the cutting slopes had matured, the situation would be similar to the present.

6.4.2.3 *Southbound Slip Road*

The realignment of the southbound slip road from Handcross would cause disturbance to the existing verge planting, but the construction of a retaining wall would contain this to within the existing highway boundary. The mature trees beyond the boundary would generally be unaffected although there is a risk that a few individual trees might be affected by the works.

6.4.2.4 The loss of verge planting, particularly along the first 100 metres of the Handcross Market Garden frontage could increase visibility of the road from a few properties to the east. Sufficient vegetation would remain for the above views to be filtered however, therefore the adverse impact would be slight. After the new planting had matured, the effect of the road would be similar to the present.

6.4.2.5 *Northbound Slip Road*

The northbound slip road to Handcross would be realigned significantly and would result in the loss of the existing verge planting and boundary

hedge between the north entrance of Slaugham Park and the north edge of West Park woodland. This would increase the visibility of the road from the rear of the houses on the south side of Horsham Road, Covert Mead and West Park Road. However, sufficient intervening planting would remain to filter views so that the adverse impact would be only slight. The impact on North Lodge, which is closer to the A23 and would have a wider field of vision, would be more significant and is assessed as moderate. The proposed planting would be more substantial than the existing vegetation and when mature would provide an effective screen to views from the north-west.

6.4.2.6 *Lighting*

The A23 between Horsham Road Bridge and chainage 600, is presently lit with low pressure sodium lamps. The proposed change to high pressure sodium would improve colour quality and the fitting of cut-off lanterns would reduce the visibility of the lampheads and light spillage onto adjacent land, resulting in a slight benefit for several properties.

6.4.3 **Handcross to Slaugham Junction**

6.4.3.1 *Existing Conditions (refer to photographs in Appendix 6/D.2)*

South of Handcross the road makes a fairly steep descent across the east bank of Orange Gill to the broad undulating valley of the River Ouse. Both sides are enclosed by mature woodland except between chainage 1200 - 1500 east where the semi-mature verge highway planting fronts a large field, and between chainage 1380 - 1570 west, where there is a large gap in West Park Wood resulting from storm damage. Between chainage 780 - 1300 the broad central reserve contains several mature trees that are a distinctive feature of the road. The extensive surrounding woodland, and the ridges on both sides of the valley, result in this section of the road generally being well concealed. There are views from vantage points across the valley floor and from rising ground to the south but, because of the close canopy and long range, the road has little appreciable impact. Only two properties have significant views of this section of the road at present.

6.4.3.2 *East Park (refer to photographs in Appendix 6/D.3 and 4)*

East Park comprises a group of three residential properties and a farmyard. Although owned by the National Trust, this part of Nymans Estate is not open to the public and is not considered by the Trust to be of heritage interest. The farmhouse is situated on the north-east side of the farmyard on the far side of the ridge and has no view of the A23. The main property on the site is East Park House which is situated on the crest of the ridge and looks out in a south-easterly direction across a large well managed garden to the Ouse Valley. The orientation of the house and its gardens are

such that the mature woodland on the property's western boundary screens views of the A23 with the effect that, apart from the garden walks that have been developed in the woodland and from the access drive, the impact of the road is slight despite its close proximity. The third property (East Park Cottage) lies immediately north of East Park House and faces west-south-west towards the A23. Mature cypress trees strategically placed in the garden and a laurel hedge on the boundary between the garden and the drive to East Park House provide an effective screen, and the only view of the A23 is an oblique glimpse down the access drive. A group of mature scots pine trees at the entrance to East Park form a prominent feature of the woodland canopy.

6.4.3.3 *Slaugham Park (refer to photographs in Appendix 6/D.5)*

Situated on high ground against a backdrop of mature woodland, Slaugham Park has extensive views southwards across parkland to the Ouse Valley. The mansion is situated at the west end of the group of buildings and its orientation, surrounding landform, intervening woods and lines of trees prevent views of the A23 from both the house and its garden, although from first floor level traffic is visible through trees between Slaugham Junction and the ridge of Mill Hill, and more extensively south of the Stanbridge area. At night the lighting at Warninglid Junction is conspicuous. From some other parts of the Estate, the A23 corridor is more visible although the road is generally well screened by mature woodland. In winter when the woods are bare of leaves traffic can be glimpsed through the trees but its impact remains slight except from close range in West Park Wood. Access to this area is however limited by thick undergrowth to a ride along the west bank of Orange Gill.

6.4.3.4 *Effect of the Scheme*

Chainage 450-900

Between chainage 450 - 900 the improvements would follow the alignment of the existing road. On the eastern side the extent of disturbance would be limited mainly to the wide grass verge with little disturbance to the semi-mature highway planting which would continue to screen views from properties to the east.

6.4.3.5 On the western side there would be an encroachment, beyond the present highway boundary, into West Park Wood. The loss of the edge of the canopy would result in a scarred appearance in the short term, however none of the mature scots pines that are a prominent feature of the canopy of West Park Wood would be affected and after the proposed new planting has been established, the woodland edge would be restored to a condition similar to the present.

6.4.3.6 *Chainage 700 - 1500*

To eliminate the double bends in the vicinity of East Park the new carriageways would be realigned, between chainage 900 - 1040, slightly to the west, and between chainage 1040 - 1500, to the east of the existing road. Despite the care taken to achieve an optimum alignment and the adoption of a reinforced earthworks embankment to reduce landtake, the scheme would result in significant disturbance on both sides, as well as the loss of all the central reserve trees.

6.4.3.7 *Central Reserve*

The most noticeable impact of the loss of mature trees in the central reserve, would be on the view from the road, with the straighter, open highway being quite different in character to the current enclosed, twisting route.

6.4.3.8 Viewed from outside the road corridor, the loss of canopy would result in the route being more discernable as a break in the woodland when viewed from the south, and would also increase the visibility of traffic along this section. These views are at a range, however, that the impact would only be slight.

6.4.3.9 *East Park (refer to photomontages, Figures 6.12 Sheets 6-8)*

In order to reduce the impact of the scheme on the properties at East Park, avoidance of disturbance to the laurel hedge between the garden of East Park Cottage and the drive to East Park House was considered critical, and the alignment was designed to maintain the existing highway boundary along the front of these properties north of chainage 1080. The semi-mature verge vegetation which forms the woodland edge would be lost along this section. Sufficient woodland would remain, however, to screen this part of the road from the properties at East Park and from that part of East Park Wood which is open to the public. After the proposed new planting was established, the woodland edge would be restored to a condition similar to its present appearance. The retention of the three mature scots pine trees within the highway boundary adjacent to the entrance to East Park would be attempted, but much would depend on the distribution of their root systems and success cannot therefore be guaranteed. The remaining mature pines that are beyond the highway boundary should not be disturbed by the works.

6.4.3.10 To the south of chainage 1080 the horizontal realignment of the road would result in an encroachment of up to 30 metres beyond the existing east boundary and would require the construction of a cutting into the flank of the ridge that would extend for 370 metres and reach a height of 7 metres above the road. At a 45 degree slope the cutting would initially be very intrusive viewed from the road, but it would not be seen from any

property except at a long range (eg Stanbridge area) from where it would not be conspicuous. The cutting would be planted to recreate the woodland edge and a hedge planted to replace the existing field boundary. After establishment the appearance would therefore be similar to at present. Viewed from East Park House the face of the cutting would be hidden but the loss of mature trees, in addition to being a significant reduction of garden area, would lessen the effectiveness of the wood as a screen to the A23 from the garden paths. To mitigate the impact on the amenity of the garden it is proposed that a screen fence would be erected which, because it would be sited along the top of the slope, would be more effective than the present fence which is below the normal sight lines. There would be ample space within the remaining woodland to restructure the walks and planting to restore the amenity of the area.

6.4.3.11 The impact on East Park from the introduction of lighting would not be significant by day. By night, because the viewpoint is above the road, the full cut-off lampheads would prevent light spillage and glare. However, the illuminated road corridor would be clearly visible through the garden trees.

6.4.3.12 *Slaugham Park*

The adoption of a reinforced earthworks construction for the embankment to achieve a 60 degree side slope would reduce the extent of disturbance required to the west of the road. Generally only semi-mature highway planting would be lost, however, except between chainages 910 - 1020 and 1400 - 1500 where there would also be limited encroachment into West Park Wood. The embankment would reach a maximum height of 7 metres but, because it would be below the line of sight when viewed from the road and would be screened from external view by the extensive mature woodlands, its visual impact would not be significant. Viewed at from inside West Park Wood, although the embankment would be visible, because it would be grassed it would not be intrusive and after the planting had established it would merge unobtrusively into the woodland. Viewed from the road, the main visual effect would be the scarring caused by the loss of the woodland edge. After the planting was established however the appearance would be restored to be similar to at present.

6.4.3.13 Between chainage 1100 - 1350 the realignment of the road eastwards would result in an area of the existing carriageway being left on the west side. This would be ripped up, the ground graded to merge with adjacent levels and the area planted to extend the woodland edge.

6.4.3.14 Viewed from Slaugham Park, the proposed alterations generally would have only a slight impact. There may be filtered views of the disturbance caused by the cutting on the east side of the road in winter when the canopy is thin, but the embankment on the west side would be well concealed and even from the ride in the woods it would not be obtrusive. The disturbance of the woodland edge and the loss of the central reserve

trees would reduce the screening effect of the woods and may result in traffic being more visible, but after the proposed planting had matured the situation would be similar to the present, and it would only be during winter that traffic would be seen. Between chainage 1380 - 1560, because the adjacent area of West Park Wood was cleared following damage in the 1987 storm, the loss of the verge planting would result in traffic being visible even during summer. At a range of 700 metres from the house the impact would be slight and after the woodland was re-established this gap would be closed.

- 6.4.3.15 The introduction of highway lighting would have a significant impact on the view from Slaugham Park. During the day the columns would not be conspicuous because, except in the vicinity of Slaugham Junction which is at a range that they would barely be discernable, the lampheads would be below the canopy of the surrounding woods. By night however, especially in winter, although the lampheads would be obscured by having cut-off lanterns, the illuminated road corridor would be visible between East Park Entrance and south of the Stanbridge area.

6.4.4 Slaugham Junction

- 6.4.4.1 *Existing Conditions (refer to photographs in Appendix 6/D.6)*

The A23 crosses Staplefield Road, which is a country lane, on two matching stone faced bridges which are sited alongside each other approximately 6 metres apart. Two way slip roads to the north-east and south-west of the bridges form a half-diamond junction between the A23 and Staplefield Road. At present the bridges and junction slip roads are screened from nearby properties by the mature vegetation beside the A23 and Staplefield Road. The island formed by the southbound slip road is densely vegetated. However, part of the island formed by the northbound slip road comprises an area of wasteland which suffers from tipping.

- 6.4.4.2 *Effect of the Scheme*

To accommodate the additional lanes, the gap between the two existing bridges would be bridged over, and the eastern section would be enlarged to accommodate the realigned southbound on-slip road. The parapets would be built up to match the raised road level. The new east elevation and altered parapets would be faced in stone conserved from the dountakings and detailed to maintain the existing character of the structure. Both the slip roads would be realigned to provide improved junction tapers, and it would also be necessary to clear some vegetation beyond the verge to provide adequate forward visibility.

- 6.4.4.3 On the east side this would necessitate an encroachment into the part of East Park Wood (South) which would result in a scarred edge to the canopy. The affected area however, comprises of semi-mature naturally

regenerated alder and birch that would soon recover, and the loss of the small area of wood would not have a significant effect on the view from any property. Any disturbance to the existing semi-mature planting on the island formed by the northbound slip road would be restored by replanting.

6.4.4.4 Although no greater in magnitude, the disturbance on the west side would be more significant because it would breach the hedgerow that is part of the screen formed by vegetation between the A23 and Slaugham Place and other viewpoints to the west. Whereas at present traffic can only be seen on the A23 in winter when the trees are bare of leaves, it is likely that traffic passing this gap would also be visible in summer. With the presence of other intervening hedgerows to filter the view, and at a range in excess of 350 metres, the impact would only be slight.

6.4.4.5 The introduction of lighting would have a significant impact. Since the same comments would pertain to consideration of the next section of road, to avoid repetition, the impact of lighting has been described below in 6.4.5.

6.4.5 Slaugham Junction to Warninglid Tie-In

6.4.5.1 *Existing Situation*

Generally (refer to photographs in Appendix 6/D.8)

This section of the route crosses the broad valley bottom of the River Ouse before rising again towards Warninglid. Although apparently flat when viewed from higher ground, the landform in fact undulates and when viewed from a low level the ridge of Mill Hill divides the valley into two sections. The landscape character is different on either side of the road.

6.4.5.2 *East of A23*

The land adjoining the east side of the A23 is mostly gently undulating farmland, with fields enclosed by hedgerows containing several mature trees. The views to and from the A23 are more open in this direction, although they are restricted when viewed from normal eye level by the undulating landform, hedgerows and groups of trees. The existing planting along the eastern boundary of the A23 plays an important part in filtering views, especially between Slaugham Junction and the Stanbridge area, where the hedgerows contain several mature trees in addition to the hedge and semi-mature trees planted approximately 25 years ago. South of the Stanbridge area to the tie-in near Stanbridge View, the road boundary is a cut hedge and the views are more open than on adjacent sections. The topography however prevents or filters views to the A23 from properties east of the Staplefield to Warninglid Junction road and it is only from high ground (eg East Park Cottages adjacent to the B2114 near Nymans) that the road can be seen at a range where its impact is only slight. There are

however a few properties between the A23 and the Staplefield-Warninglid Junction road that have views of the A23.

6.4.5.3 *Home Farm (refer to photographs in Appendix 6/D.7)*

Situated 300 metres east of the A23 this property comprises a farmstead that includes a terrace of six cottages which have views of the road corridor between Slaugham Junction and Mill Hill. These views are filtered by intervening mature trees and hedgerows to the extent that only occasional glimpses of traffic can be seen and the visual impact is only slight.

6.4.5.4 *Stanbridge Area (refer to photographs in Appendix 6/D.9)*

A small group of properties known collectively as Stanbridges lies to the east of the A23 at chainage 2500, three of which have views of the road at present.

6.4.5.5 Stanbridge Place and Stanbridge Place (Flat), the gardens of which border the A23, are less than 60 and 20 metres respectively from the carriageway. A wall and a narrow, but dense, strip of coniferous woodland on the west boundary and a cypress hedge adjacent to the access drive, however, block direct views and the road is only visible obliquely in a southerly direction beyond a range of 250 metres.

6.4.5.6 Stanbridge Farm and Stanbridge House which are 200 and 300 metres respectively from the carriageway are set well enough back and have their view of the road sufficiently screened or filtered by garden planting and intervening hedgerows and woodland that its impact is slight, the only clear view being of the section approaching Warninglid which is beyond the scheme boundary.

6.4.5.7 *West of A23*

Between Slaugham Junction and Mill Hill the A23 is on an embankment as it crosses the Ouse Valley. The verge is wide and contains several mature trees which were retained when the road was dualled, and at present traffic can only be seen in winter when the trees are bare of leaves, when viewed from Slaugham Place or from the eastern edge of Slaugham Village.

6.4.5.8 As it crosses the east ridge of Mill Hill the A23 is in a densely planted cutting which provides an effective barrier between the road and the fields beyond as the ground rises to the west.

6.4.5.9 South of the cutting the A23 crosses Anne's Wood Stream. From this point until it climbs towards Warninglid, the carriageway is level with or slightly above the adjoining ground. Most of the land to the west of the A23 is

afforested. Anne's Wood, much of which is designated ancient woodland, is set back, but between it and the A23 there is an extensive area of naturally regenerated scrub woodland which contains a few mature trees. There are several properties adjacent to the road along this section of the A23.

6.4.5.10 *Merrivale (refer to photographs in Appendix 6/D.10)*

This small cottage is situated close to Anne's Wood Stream at the edge of mature woodland. Despite its close proximity to the A23 the cottage is remarkably secluded as a result of its relatively low level, high garden wall and the mature woodland adjacent to it.

6.4.5.11 *Country Gardens Garden Centre (refer to photographs in Appendix 6/D.10)*

The site has recently been redeveloped. The northern part contains the garden centre and two dwelling houses, with extensive car parking behind. They have a generally open frontage to the A23 and are screened only by groups of semi-mature trees and shrubs on the wide verge. The southern part, which until recently was covered by large glasshouses, has been restructured to create a parkland setting and is separated from the A23 by only a clipped hedge which contains a few semi-mature trees.

6.4.5.12 *Happy Eater (refer to photomontages Figure 6.12 Sheets 3-5)*

The site is undergoing redevelopment. A new restaurant and car park have been built and planning permission granted for a Service Station and Travel Lodge. Although backed by scrub woodland the front of the site is open to the A23 which dominates views eastwards from the restaurant.

6.4.5.13 *Stanbridge View/Stanbridge Nurseries (refer to photomontages Figure 6.12 Sheets 3-5)*

The property is situated on higher ground as the land rises towards Warninglid. The A23 is cut into the cross slope at this point and this factor together with the mature hedgerow on its boundary reduces the impact of the road slightly. The A23 to the north is clearly visible until Mill Hill and again at a long range as it climbs Handcross Hill.

6.4.5.14 *Effect of the Scheme*

Generally

The improvements would be centred on the existing road and most of the land required to widen the carriageways would be taken from the existing wide central reserve. Between chainages 2300 - 3200 the width of the road corridor would be increased to provide a new service road to the

properties to the west, and further land would be required to the west to form a cycleway between Warninglid and Slaugham junctions.

6.4.5.15 *Chainage 1800 - 2050*

The existing embankment would be raised to improve the vertical alignment of the road. This would necessitate the loss of all the mature trees in the central reserve and most of the semi-mature planting along both verges (including the mature trees previously retained along the west verge), but would not damage the hedgerow along the highway boundary.

6.4.5.16 From the east, the loss of the semi-mature verge planting would increase the visibility of traffic on the A23 from the terrace of cottages at Home Farm as well as oblique views from the Stanbridge area. In summer, when the intervening hedgerows are in leaf, the increase in impact would only be slight. In winter, however, traffic on the A23 would be visible from these properties extensively between Slaugham Junction and Mill Hill, and might also be seen from some properties at Staplefield Village. To mitigate this impact, a strip up to 10 metres wide would be included between the new private means of access to the Stanbridge area and the A23 which would be planted with a woodland mix. This would fairly quickly form an effective screen to traffic, but it would be several years before the tops of the lighting columns would be concealed. The introduction of lighting would thus have a substantial impact on Home Farm and the Stanbridge area and would be visible along this section from Staplefield Village and other properties over a wide area to the east.

6.4.5.17 From the west, the loss of semi-mature verge planting would increase the visibility of traffic on the A23. In summer when the intervening hedgerows are in leaf it is unlikely that any change would be discernable west of the road to Slaugham Manor. In winter, however, traffic on the A23 would be visible between Slaugham Junction and Mill Hill when viewed from the ruins of Slaugham Place, and is likely also to be visible from properties along the eastern edge of Slaugham Village. To mitigate this impact a 10 metre wide strip has been allowed which would be planted with a woodland mix. This would fairly quickly form an effective screen to traffic, but it would be many years before the tops of the lighting columns would be concealed. The introduction of lighting would thus have a substantial impact on Slaugham Place, and would also be visible along this section from Slaugham Village and other properties to the west.

6.4.5.18 *Chainage 2050 - 2300*

The level of the road would be reduced to improve its vertical alignment across the crest of the east ridge of Mill Hill. Together with the widening of the carriageways this would necessitate the sides of the existing cutting to be re-cut, but by adopting a 45 degree gradient, the disturbance would be limited to the semi-mature planting inside the highway boundary.

- 6.4.5.19 From the east, the loss of some of the semi-mature verge planting would increase the visibility of traffic on the A23 from Home Farm and the Stanbridge area and, like the previous section, the effect would be most apparent during winter. When established, the proposed 10 metre woodland strip would form an effective screen to traffic, but the tops of the lighting columns would remain visible for several years.
- 6.4.5.20 From the west, despite the loss of some mature trees that were previously retained in the west verge in addition to the semi-mature vegetation that would be disturbed, the effect would be slight. The reduction of the road level would increase the barrier effect of the landform and sufficient planting would remain on the boundary to screen not only traffic, but the lampheads as well.
- 6.4.5.21 *South of Chainage 2300*
- East of the Road*
- East of the road the extent of disturbance would be limited and except for a section of clipped hedge between chainage 2900 - 3200 which is not important for screening, the works would be contained within the highway boundary. The adjoining hedgerows that contain many mature trees which are critical for screening views of the A23 from the east would thus be unaffected.
- 6.4.5.22 By day the effect of the improvements on the impact of the A23 on the collection of properties in the Stanbridge area would only be slight. At night however, particularly in winter when the tree canopy is thin, the lampheads and illuminated road corridor would not only be seen from the Stanbridge area but from many more distant properties to the east. To mitigate this impact on the properties in the Stanbridge area it is proposed to plant a 10 metre wide woodland strip adjacent to the A23 between the existing access drive and chainage 2800. This would fairly quickly form an effective screen to traffic, but it would be several years before the tops of the lighting columns would be concealed.
- 6.4.5.23 The disturbed section of hedge between chainage 2900 - 3200 would be replanted to restore the appearance of the boundary. Since the section is not overlooked at close range. However, and because the elevation of the carriageway allows an attractive view out from the road across the Ouse Valley, tree planting would not be included.
- 6.4.5.24 *West of the Road*
- West of the A23 the extent of the disturbance would be greater. Although there would be no major change of level, the construction of a service road parallel to the A23 would necessitate the loss of all the boundary hedgerows between Merrivale and Stanbridge View as well as an extension

of the embankment at the crossing of Anne's Wood Stream. Although Anne's Wood would continue to screen this section of the A23 from more distant viewpoints to the west, the proposals would have a substantial impact on a few properties close to the road.

6.4.5.25 *Merrivale*

The construction of the widened embankment to accommodate the service road would result in the loss of the edge of the mature woodland that extends along the line of Anne's Wood Stream, as well as the screen wall on the highway boundary. Initially this would result in the property having an open frontage to the A23, but oblique views would continue to be screened, and after the screen wall was rebuilt along the new highway boundary, the impact of the road and traffic would be similar to that at present. The introduction of lighting, however, would have a substantial impact as even with cut-off heads the property would be affected by light spillage.

6.4.5.26 *Country Gardens*

Although the two houses are in the same ownership as the garden centre they are dealt with separately because different considerations apply to residential compared with commercial property.

6.4.5.27 The main effect on the garden centre would be the loss of parking in front of the buildings and display area. However, the ornamental shrub planting could be restructured by agreement with the proprietor to merge with the verge of the service road and the business would continue to present an attractive open frontage to the A23.

6.4.5.28 The loss of the hedgerow along the boundary of the southern parkland area would make this part of the centre very open to the A23. To mitigate this impact, and to limit views of the road in a southerly direction from the residential property, it is proposed to plant a 10 metre wide woodland strip along the new highway boundary. This would fairly quickly screen traffic, but the lampheads would remain visible for several years and the introduction of lighting would thus have a substantial effect.

6.4.5.29 *Little Stanbridge*

The mature tree to the north-east and most of the ornamental shrub planting in front of the house would be lost with only a narrow strip remaining between the house and the edge of the cycleway. Some ornamental planting could be provided along the frontage to soften the appearance of the property, but this would do little to mitigate the impact of the road. Since the property is at present open to the A23 the main change in impact that would be experienced would be because of the increased scale of the road rather than the introduction of a new element

in the view. The introduction of lighting would have a substantial effect, not only because of the changed outlook, but also because of the light spillage that would be experienced.

6.4.5.30 *Country Gardens House*

The proposals would necessitate the loss of a group of semi-mature trees in the verge and the planting along the frontage of the garden which would open up a direct view of the road. However, sufficient space would remain for the garden to be restructured to restore its amenity. A screen fence would be erected along the new highway boundary to restore privacy to the garden. The loss of the hedgerow to the south would also open up views of the A23 in a southerly direction. The proposed woodland strip along the highway boundary to the south would fairly quickly screen traffic in a southerly direction, but the lampheads and illuminated road corridor would remain visible for several years and the property would also be affected by light spillage.

6.4.5.31 *Happy Eater*

As at present the Happy Eater would have an open frontage to the A23, and the road would continue to dominate views in an easterly direction. Although the reduction of the width of the verge would intensify this impact slightly, the main impact of the improvement would be from the increased scale and changed character of the road.

6.4.5.32 *Stanbridge View/Stanbridge Nurseries*

The proposed scheme would necessitate the loss of the existing boundary hedgerow which would open up a direct view of the A23. A screen fence would be erected along the new boundary to restore privacy, and new planting provided to create a more substantial screen when established. The increased scale and changed character of the road would be very apparent, and at night the lighting would be clearly visible over most of the length of the scheme in a northern direction. Although, because of its elevation, the property would not be affected by light spillage, the impact of the introduction of lighting would thus be substantial.

6.5 LIGHTING

6.5.1 Existing Situation

6.5.1.1 At present the A23 is only lit at either end of the scheme.

6.5.1.2 At the northern end, lighting extends from Handcross Village to chainage 630. During day-time the columns are generally inconspicuous against the background of mature woodland. At night the surrounding woodland screens the lighting from most views and its impact is limited to a few

properties close to the road. The lighting is also seen from a distance to the south, but as it is seen as part of the village which is also lit, the impact is slight. The contrast in intrusiveness between the low pressure sodium lamps on the A23 and the high pressure sodium with cut-off lanterns used in the western half of Handcross village is a good demonstration of the benefit of the latter design. Public lighting in the conservation area of Handcross is by mercury discharge lamps which give a white light.

- 6.5.1.3 At the southern end of the Scheme lighting has been installed on the recently completed Warninglid to Sayers Common section of the A23 and on the B2115 at Warninglid Junction. Because of the elevated position and absence of screening, this section of the A23 is visible from an extensive area, and the lighting which is high pressure sodium without cut-off on the A23 and low pressure sodium on the B2115, is intrusive at night.
- 6.5.1.4 Apart from the lighting at either end of the A23, with the exception of the police residence at Slaugham Manor which has low pressure sodium lighting, the dark countryside of the study area is only interrupted by points of white light of the scattered properties and villages. In winter the headlights from traffic on the A23 are visible but in summer, when the trees are in leaf, these are generally concealed by the intervening woods and hedgerows.

6.5.2 Effect of the Scheme

- 6.5.2.1 Because of the improved safety afforded, in keeping with other sections of the A23 which have been improved, lighting would be introduced along the whole length of the scheme. The lighting provision would be by twin-headed columns in the central reserve with additional single headed columns along the west verge between Slaugham Junction and Handcross to light the climbing lane and on the service road and junction slip roads. The column height would be restricted to 10 metres to be as well below the canopy of adjacent woodland as possible, and high pressure sodium lamps fitted with full cut-off heads would be specified. Compared with 12 metre high columns fitted with standard lamps this would necessitate a tightening of the column spacing from 50 - 30 metres. This would increase the impact of the lighting viewed from within the road corridor, but greater consideration was given to the desirability of minimising the impact on the surrounding landscape of the Area of Outstanding Natural Beauty.
- 6.5.2.2 The effect of the lighting on those properties that would be affected by the improvements during the day-time has already been described.
- 6.5.2.3 At night, particularly during winter when the mainly deciduous woodlands and hedgerows are bare of leaves, at least some sections of the lighting may be seen from any viewpoint within the area shown on the Visual Envelope of Proposed Scheme (Lighting) Map (Figure 6.9).

- 6.5.2.4 From viewpoints to the north of the line of Staplefield Road the ridged landform and mass of mature woodlands would generally screen the lighting between Handcross and Slaugham Junction. South of Slaugham Junction, however, particularly from elevated viewpoints, the lighting would be visible extensively to Warninglid Junction.
- 6.5.2.5 South of Staplefield Road, the extent to which lighting would be seen between Handcross and Slaugham Junction would vary generally depending on the closeness of the viewpoint to the centre line of the road corridor, with those closest to the road experiencing the greatest visibility. The visibility of the lighting between Slaugham Junction and Warninglid Junction would vary relative to the elevation of the viewpoint above the level of the valley floor. From elevated positions, the effectiveness of the intervening woodlands and hedgerows as a screen would be least and the lighting would be likely to be visible extensively and from some viewpoints on the southern side of the Ouse Valley the lighting would be seen along the complete length of the A23 between Handcross and Warninglid Junction.
- 6.5.2.6 The band of sodium lighting would be conspicuous in the otherwise dark countryside of the study area and would be perceived as the introduction of an urban element into a rural scene. The effect of lightspill would be restricted by the cut-off heads to a few properties immediately adjacent to the road. However, the glare of reflected light would illuminate a band extending to 250 metres from the road and within this band, depending on the extent of screening vegetation, the effect of the introduction of lighting has been assessed as 'substantial'.
- 6.5.2.7 Beyond 250 metres, the impact of the lighting would diminish with range, and again the extent of intervening screening. Although under certain atmospheric conditions the glow from the road lighting would be reflected off low cloud, under normal conditions the maximum range at which the effect would be considered to be 'moderate' would be about 1.0 kilometres. This approximately coincides with the range of the properties on the far side of the B2114 to the east and the road between Warninglid and Slaugham to the west.
- 6.5.2.8 Beyond this range the impact of the lighting is assessed as 'slight'.

6.6 LANDSCAPE EFFECTS OF ACCESS WORKS

6.6.1 New Private Means of Access to East Park/Handcross Market Garden

- 6.6.1.1 The route of the new private means of access would follow a combination of clearings and an existing partly overgrown track through East Park Wood.

- 6.6.1.2 The new access would generally follow existing ground levels with only minor regrading necessary except at the crossing of East Park Stream where a small embankment would be necessary.
- 6.6.1.3 The position of the junction with the B2114 and its alignment through the woods was selected to avoid the necessity to fell any mature trees. Some limb pruning and clearance of naturally regenerated semi-mature trees, saplings and scrub would however be required through the semi-natural woodland area to provide adequate clearance for vehicles.
- 6.6.1.4 The effect of the disturbance caused by the construction of the access would be of temporary scarring that would heal rapidly by natural regrowth of the woodland edge, and the new access would provide an attractive route to the properties. No properties other than those for which the new access was constructed would be affected.

6.6.2 New Private Means of Access/Public Footpath to the Stanbridge Area.

- 6.6.2.1 The route of the new private means of access would be along the edge of the fields just beyond the eastern boundary of the A23.
- 6.6.2.2 Generally the new access would follow existing ground levels with only minor regrading necessary. However, a cutting would be required to achieve an acceptable gradient at its junction with Staplefield Road, and embankments formed at the river crossing. The sides of earthworks would be graded at gentle slopes to marry with the contour of the fields.
- 6.6.2.3 The position of the junction was selected to avoid the need to fell any mature trees in the hedgerow along the southern verge of the Slaugham-Staplefield road. A few trees would have to be felled at the crossings of the Ouse and Anne's Wood Stream, but this would not significantly affect the outlook from any property.
- 6.6.2.4 Traffic on the new access would be seen from the cottages at Home Farm, but because its visibility would be filtered by intervening hedgerows, and because it would be viewed against the background of the woodland strip along the boundary of the A23 its impact would be slight. Otherwise no properties apart from those for which the track was constructed would be affected.
- 6.6.2.5 The alignment of the track to the Stanbridge area has been selected after discussion with the affected owners to limit the loss of privacy to any of the properties.

6.6.3 New Private Means of Access to Merrivale

6.6.3.1 The proposed new private means of access would leave the service road south of Country Garden House, then make use of existing tracks through the rear of the garden centre to join with the existing rear access of the property.

6.6.3.2 There would be no significant landscape effect.

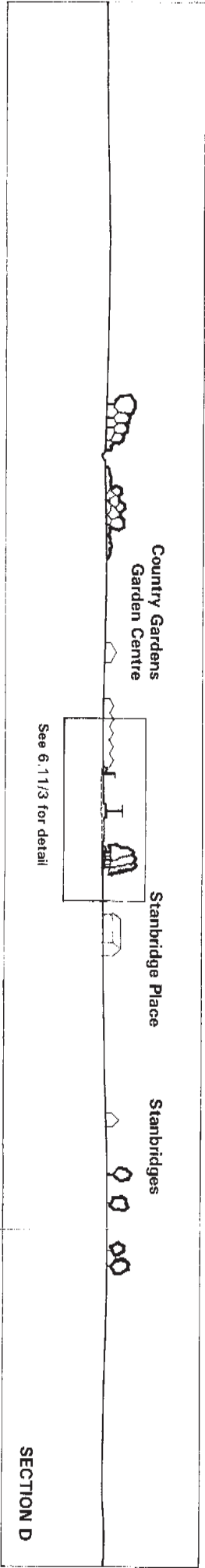
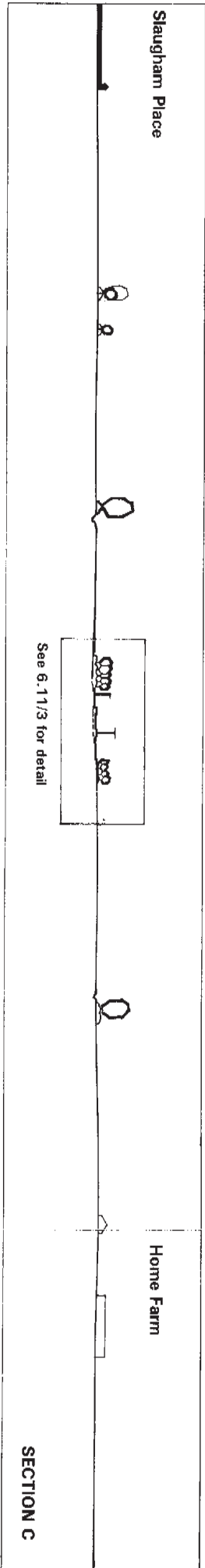
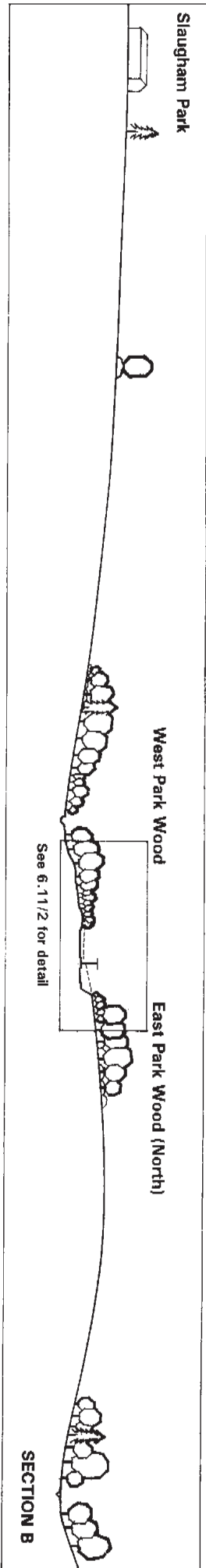
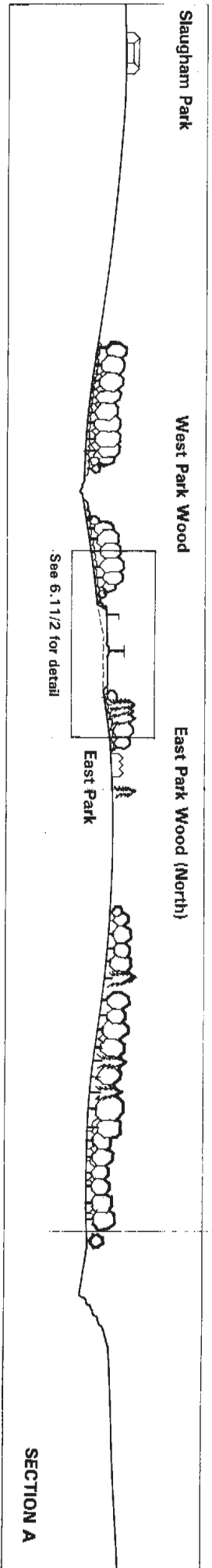
6.7 SUMMARY OF LANDSCAPE EFFECTS

6.7.1 The Handcross to Warninglid section of the A23 is presently a major dual carriageway road which passes through an attractive rural landscape.

6.7.2 The present road is generally well screened by a combination of landform, adjacent areas of mature woodland and by the planting that was undertaken approximately 30 years ago when the second carriageway was built. Apart from some long range views across the valley, only a few properties close to the road are impacted by it.

6.7.3 Viewed from within the road corridor, the effect of the increased scale of the widened carriageways would be considerable and the straightening of the bends, the narrowing of the central reserve from a broad grass area containing stands of mature trees to a narrow hard strip with a continuous safety fence, and the introduction of lighting columns, would significantly alter its character. However, the scarring caused to the margins would recover quickly after reinstatement and the overall effect would remain that of a major road passing through attractive countryside.

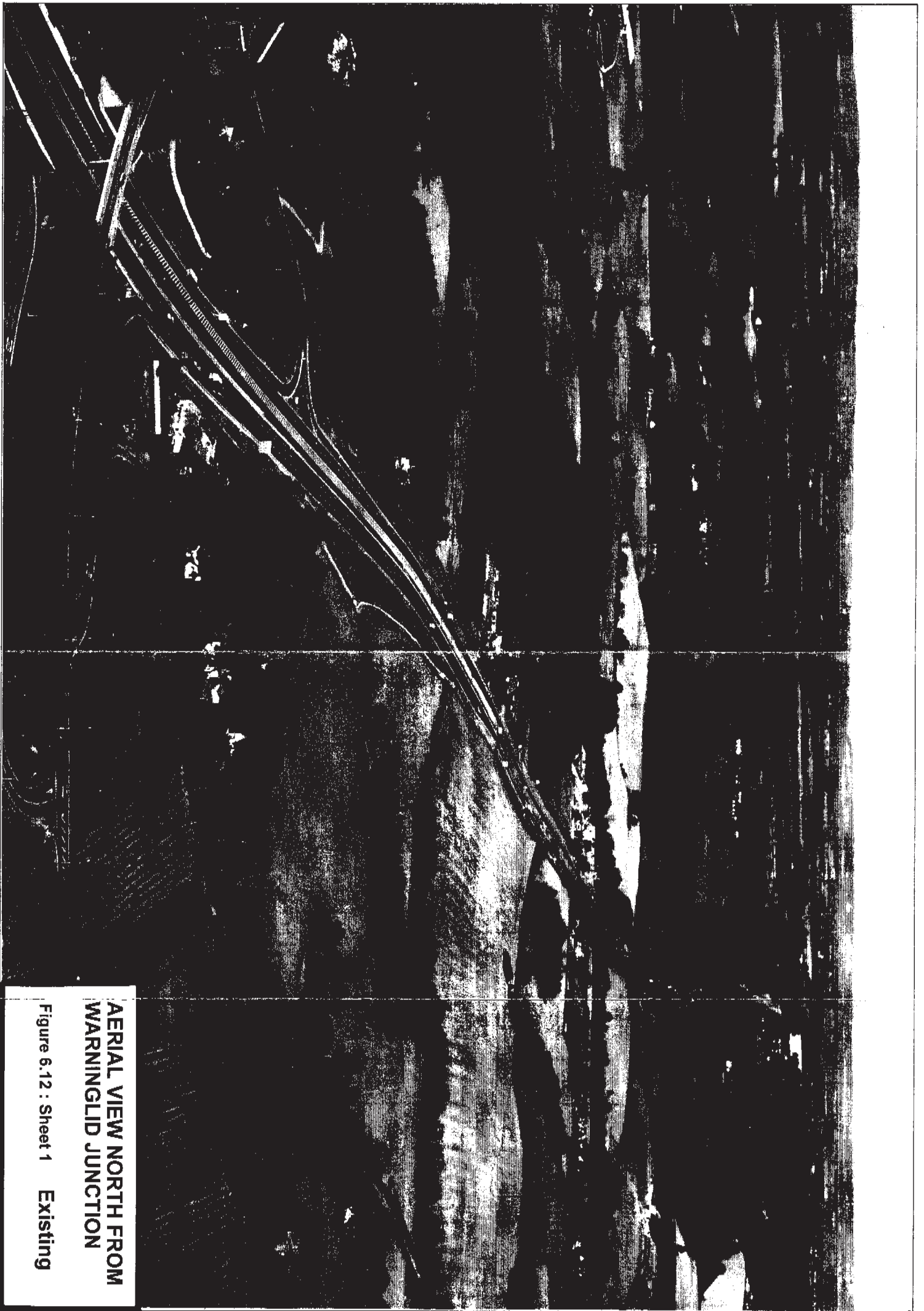
6.7.4 Initially the impact on several properties close to the road would be increased as a result of the loss of existing boundary vegetation. Substantial areas of additional planting are proposed that when established would screen the road, in many places more effectively than at present. It would be many years however before this planting would gain sufficient stature to screen the lampheads and at night, particularly in winter when the trees of the adjacent woodlands and hedgerows are bare of leaves, the lighting would have a significant impact over a wide area of countryside not otherwise affected by the proposed improvements or the present road.



CROSS SECTIONS

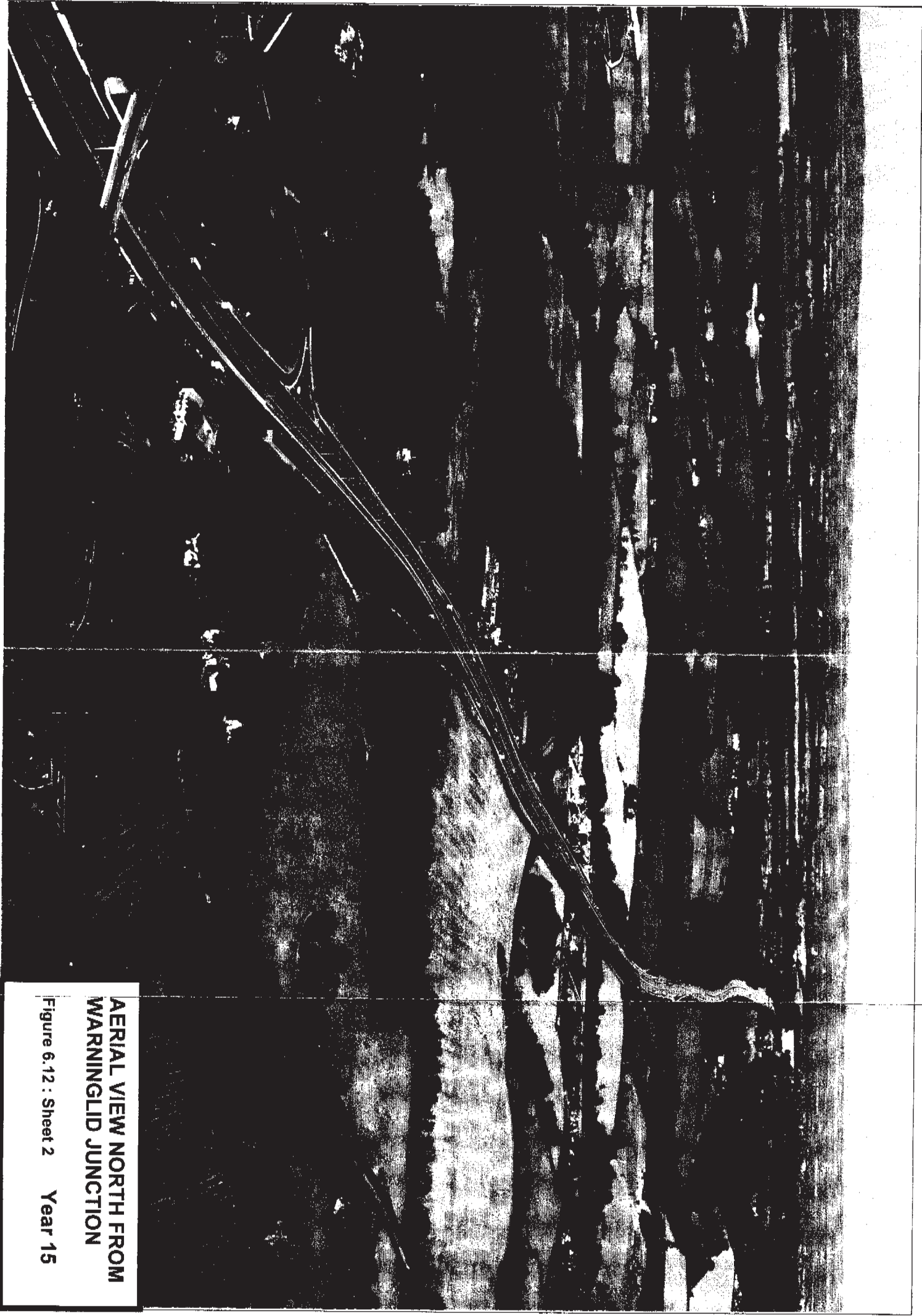
SCALE 1/2500

Figure 6.11 : Sheet 1



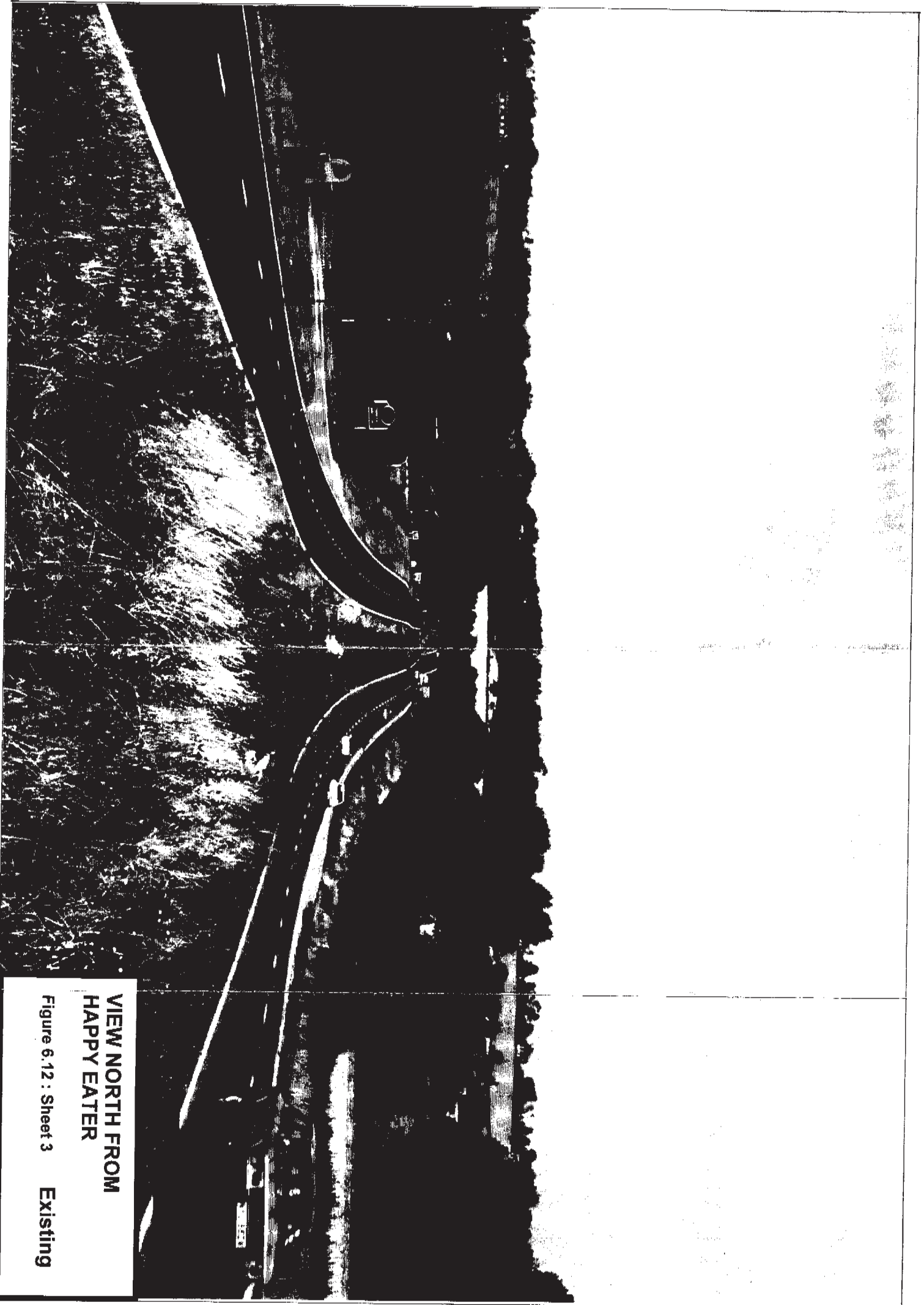
**AERIAL VIEW NORTH FROM
WARNINGLID JUNCTION**

Figure 6.12 : Sheet 1 Existing



**AERIAL VIEW NORTH FROM
WARNINGLID JUNCTION**

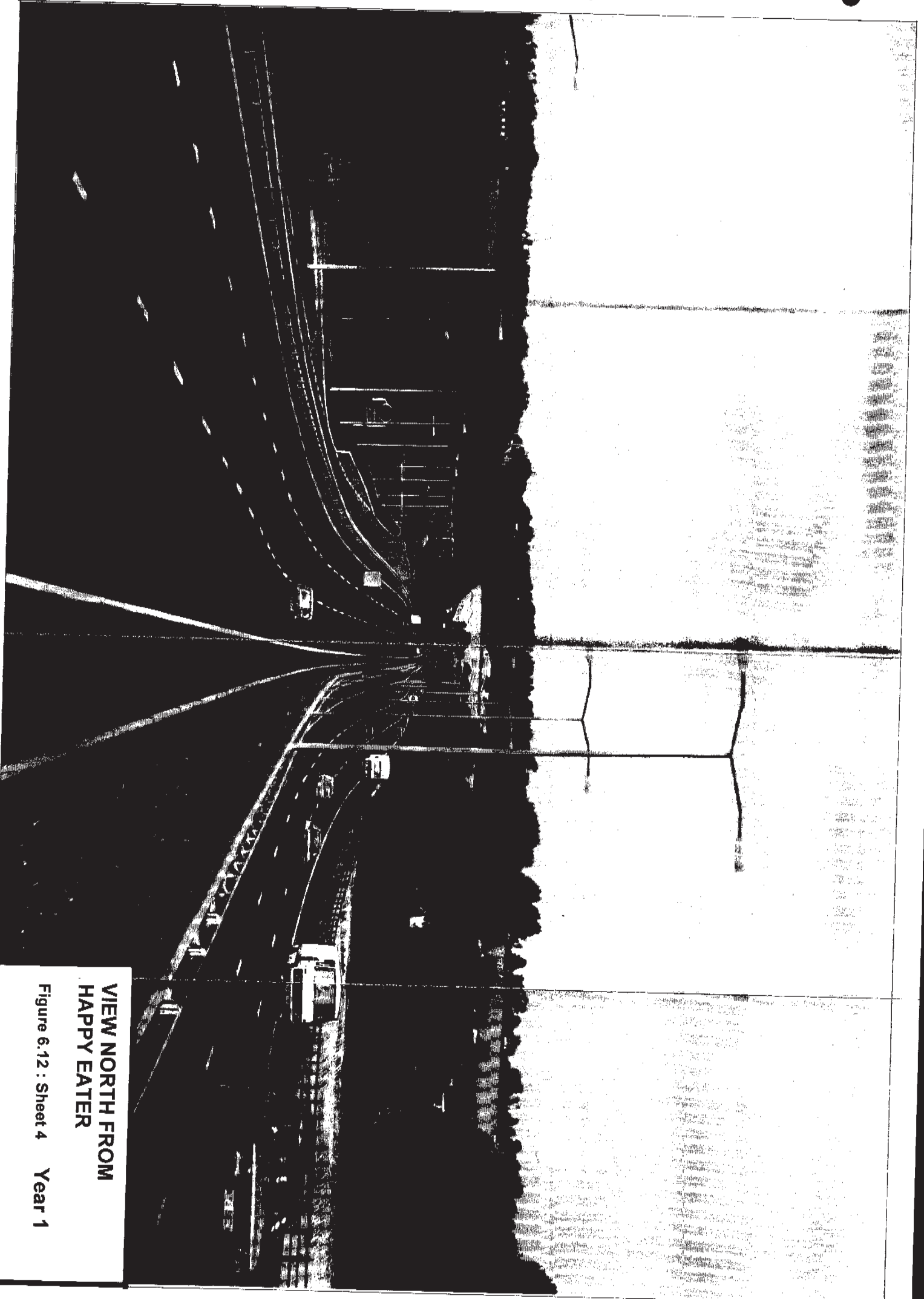
Figure 6.12 : Sheet 2 Year 15



**VIEW NORTH FROM
HAPPY EATER**

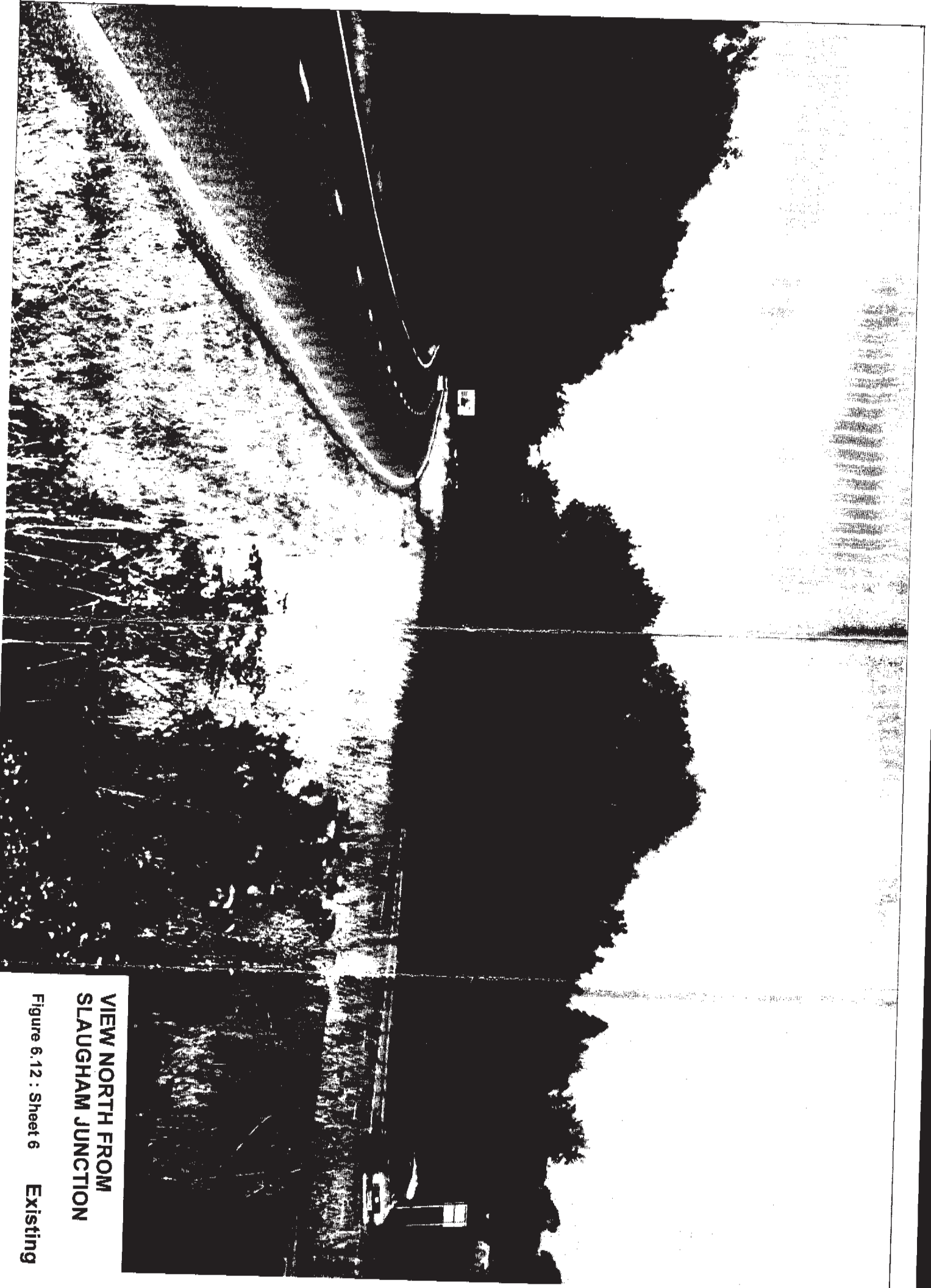
Figure 6.12 : Sheet 3

Existing



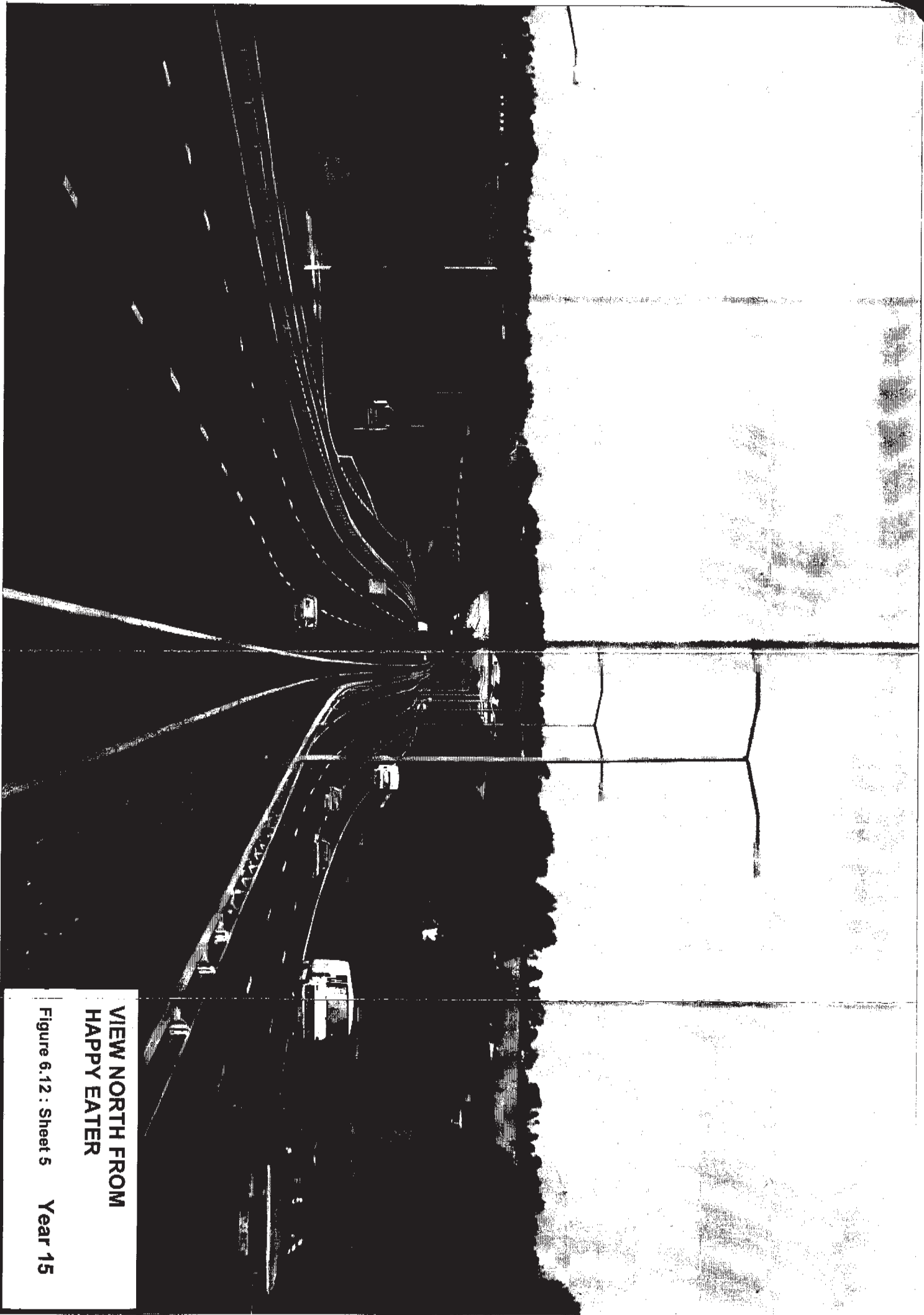
**VIEW NORTH FROM
HAPPY EATER**

Figure 6.12 : Sheet 4 Year 1



**VIEW NORTH FROM
SLAUGHAM JUNCTION**

Figure 6.12 : Sheet 6 Existing



**VIEW NORTH FROM
HAPPY EATER**

Figure 6.12 : Sheet 5 Year 15



**VIEW NORTH FROM
SLAUGHAM JUNCTION**

Figure 6.12 : Sheet 7 Year 1



**VIEW NORTH FROM
SLAUGHAM JUNCTION**

Figure 6.12 : Sheet 8 Year 15

● **Appendix 6/A - Landscape Quality Assessment**

APPENDIX 6.A

LANDSCAPE QUALITY ASSESSMENT

6.A.1 West Sussex County Council Adaptation of 'Tandy Method'

This method, which was used by West Sussex County Council, when undertaking their 'Landscape Appraisal of West Sussex' in 1970/71 assesses the landscape quality of each kilometre square numerically.

Stage 1

Identify an area according to the kilometre square on an ordnance survey map.

Stage 2

In each square identify the following LANDSCAPE ELEMENTS

- | | | |
|---|---------------|--|
| a | surface cover | eg grass, heath, arable land |
| b | undulation | eg rolling, steep hillside |
| c | trees in mass | eg woodland, orchards, clumps, forestry |
| d | trees singly | eg specimens, parkland, hedgerows |
| e | water | eg river, lake, sea (only if significant visual element) |
| f | artefacts | eg castle, gassholder, road |
| g | views out | eg sea, mountain, factory complex |

Stage 3

Give each element a QUANTITY factor

- 0 none (ie none in the kilometre square)
- 1 some
- 2 all

[A '2' quantity factor would only be given to 'views out' for exceptional views in all directions. It should be noted that trees in mass and water may be alternatives to 'surface cover'. A '2' can only be given to one of these elements in a square].

Stage 4

Give each element a QUALITY factor

- 2 intolerable
- 1 undesirable
- 0 acceptable
- +1 desirable
- +2 highly desirable

Stage 5

Multiply the quantity and quality factors together to give a sub total for each element then add these up to give a total SCORE for the kilometre square.

Stage 6

Classify survey results. WSCC used five categories:

less than 1	low
2/3	medium
4/5/6	fairly high
7/8/9	high
10 or more	very high

[Within West Sussex the range was between -2 and +14].

6.A.2 Assessment of Existing Landscape Quality of A23 Corridor Between Handcross and Warninglid

The following tables detail the assessment of the existing Landscape Quality of the scheme corridor which was undertaken in March 1994, the results of which are described in 6.3.3 and shown in Figure 6.5 : Landscape Character/Quality Map.

Km Square TQ 26/26		Quantity	Quality	Score
a	North facing slope, 50% pasture/arable farmland: 50% mature woodland. E side more open than W. Scattered residential properties/some commercial adjacent	1	+1	+1
b	Generally generally sloping incised by streams	1	+1	+1
c	Anne's Wood mature (ancient) woodland	1	+2	+2
d	Hedgerows, mature trees along streams and minor roads	1	+1	+1
e	Not significant visually	0	0	0
f	A23 improvements/lighting/commercial developments/OH powerlines	1	-2	-2
g	Attractive views northwards and westwards from some parts	1	+1	+1
			Total Score	4

Km Square TQ 26/27		Quantity	Quality	Score
a	Undulating valley floor, mostly pasture with some hedgerows containing mature trees. Mature woodland areas in NW (High Tolt) and SW (Anne's Wood) and on stream banks. Groups of high value properties in parkland	1	+1	+1
b	Undulating E - N ridge separates N from S of area. Flatter to E	1	+1	+1
c	Mature woodland areas significant features	1	+1	+1
d	Hedgerows. Scattered mature trees/parkland trees	1	+1	+1
e	Not significant visually (small ponds in old clay workings)	0	0	0
f	Slaugham Place (Ancient Monument/Garden) A23 (Generally well screened) (OH powerlines), Garden Centre	1	-1	-1
g	Limited views out across countryside	1	+1	+1
			Total Score	4

Km Square TQ 26/28		Quantity	Quality	Score
a	South facing hillside. Mixed pasture/parkland with large areas of mature woodland. Occasional mostly high value properties	1	+2	+2
b	Pattern of deeply incised valleys (gills) and ridges	1	+2	+2
c	Mature (ancient) woodland	1	+2	+2
d	Mature trees on hedgerows, and in parkland. Nymans arboretum	1	+1	+1
e	Not significant visually	0	0	0
f	Mansion in parkland setting (S Park). A23 well screened/OH powerline in SE corner	1	-1	-1
g	Attractive views from ridges south across Ouse valley	1	+1	+1
			Total Score	7

Km Square TQ 26/29		Quantity	Quality	Score
a	Hilltop village (Handcross) surrounded mostly by mature woodland/parkland with some pasture	1	+2	+2
b	Hilltop with radiating ridges and valleys	1	+2	+2
c	Mature (some ancient) woodland	1	+2	+2
d	Some specimen trees, especially in parkland (Nymans)	1	+2	+2
e	Not significant visually	0	0	0
f	Conservation village/Nymans House and Gardens. A23 in cutting/lighting	1	-1	-1
g	Views generally limited by vegetation but some good views south from SE corner	1	+1	+1
			Total Score	8

Appendix 6/B - Visual Impact Assessment Schedule

APPENDIX 6.B - VISUAL IMPACT ASSESSMENT SCHEDULE

(Refer to Figures 6.8/1 to 6.8/4)

LOCATION	DESCRIPTION	DISTANCE TO CENTRE OF ROAD	IMPACT OF EXISTING ROAD	IMPACT YEAR 1 WINTER	IMPACT YEAR 15 SUMMER	IMPACT OF LIGHTING	COMMENTS
HANDBROSS VILLAGE (EAST) Horsham Road (East) Meltrum	Two storey detached house adjacent to bridge. Existing view of A23 restricted by location of road in cutting and vegetation on sides of cutting and garden. Some lightspill and glare from existing lighting. <i>The remaining properties between the A23 Bridge and Handbross Cross-Road have no view of the A23.</i>	35	Slight	Moderate	Slight	Slight benefit	The loss of vegetation on cutting would temporarily increase visibility of traffic until new planting was established. The new screen fence would prevent views from ground level and garden therefore the impact would be from upper floor only. The cut-off lanterns would reduce lightspill and glare.
Brighton Road (West) Sycamore Court and Hilltop	Group of residential properties. View of A23 blocked by adjacent works buildings.	60 - 80	None	None	None	None	
Gilbridge, Hillcrest and The Laurels	Two storey detached houses with large gardens backing on to A23. Existing view of A23 restricted by location of road in cutting and vegetation on side of cutting and boundary of gardens. Some lightspill and glare from existing lighting.	45 - 60	Slight	Moderate	Slight	Slight benefit	The loss of vegetation on cutting would temporarily increase visibility of traffic until new planting was established. The new screen fence would prevent views from ground level and garden therefore the impact would be from upper floor only. The cut-off lanterns would reduce lightspill and glare.
Cadburn	Single storey detached house close to highway boundary. Existing view of A23 restricted by vegetation on side of cutting. Lightspill and glare from existing lighting.	25	Slight	Slight	Slight	Slight benefit	The loss of vegetation on cutting would temporarily increase the visibility of traffic until new planting was established. The new screen fence would prevent views in westerly direction, but a restricted view to the A23 in a southerly direction would remain. The cut-off lanterns would reduce lightspill and glare.

<p>Gwyla Wisteria Cottage Lynion and Southeast Cottages</p>	<p>Row of detached houses and semi-detached cottages. Existing view of A23 restricted by location of road in cutting and vegetation on side of cutting and boundary of gardens. Lightspill and glare from existing lighting.</p>	<p>35 - 40</p>	<p>Slight</p>	<p>Moderate</p>	<p>Slight</p>	<p>Slight benefit</p>	<p>The loss of vegetation on cutting would temporarily increase the visibility of traffic until the new planting was established. The new screen fence would prevent views from ground level and garden therefore impact would be from upper floor only. The cut-off lanterns would reduce lightspill and glare.</p>
<p>Brighton Road (East) B2114 Junction to Works</p>	<p>Eleven detached and semi-detached residential properties fronting onto Brighton Road. No existing view of A23, except for restricted oblique view south down Brighton Road, and of lampheads. Some lightspill and glare.</p>	<p>70-100</p>	<p>Slight</p>	<p>Slight</p>	<p>Slight</p>	<p>Slight benefit</p>	<p>No change except for replacement of lampheads with cut-off lanterns which would reduce lightspill and glare.</p>
<p>The Red House and Jindalee</p>	<p>Detached two storey houses in large garden. View of A23 restricted by dense garden planting to glimpses of large vehicles and lampheads especially from upper floor in winter. Some lightspill and glare from existing lighting.</p>	<p>70</p>	<p>Slight</p>	<p>Slight</p>	<p>Slight</p>	<p>Slight benefit</p>	<p>No change except for replacement of lampheads with cut-off lanterns which would reduce lightspill and glare.</p>
<p>Summer Hill</p>	<p>Detached house in mature woodland garden setting. View of A23 is restricted by screen fence on boundary, dense garden planting and vegetation on highway verges to glimpses of large vehicles and lampheads especially in winter. Lightspill and glare from existing lighting.</p>	<p>45</p>	<p>Slight</p>	<p>Moderate</p>	<p>Slight</p>	<p>Slight benefit</p>	<p>The density of the screen planting would be reduced by the loss of vegetation on the highway verges, adjacent to the property and to the south along the boundary of Handcross Market Garden. The retention of the screen fence on the boundary would prevent views of the road and the visibility of traffic would continue to be filtered by existing planting within the property. After the new planting was established the screening effect of the vegetation on the boundary of Handcross Market Garden would be restored. The cut-off lanterns would reduce lightspill and glare.</p>

The Rectory and Tam Hill	<p>Detached two storey houses in mature garden settings. View of A23 is restricted by dense garden planting, to glimpses of large vehicles and lampheads on section between Handcross Market Garden and north end of East Park Wood.</p> <p>Some lightspill and glare from existing lighting.</p> <p>Small market garden at northern end of clearing in East Park Wood.</p> <p>Except for gap at entrance, view of A23 is restricted to glimpses of large vehicles and lampheads by vegetation on highway verge.</p> <p>Lightspill and glare from existing lighting.</p>	90 110	Slight	Slight	Slight	Slight benefit	The loss of some vegetation on the boundary of Handcross Market Garden would slightly increase the visibility of traffic until the new planting was established. The cut-off lighting would reduce lightspill and glare.
Handcross Market Garden	<p>Lightspill and glare from existing lighting.</p>	40	Slight	Moderate	Slight	Slight benefit	The loss of some vegetation on the highway verge would increase the visibility of traffic until the new planting was established. The abandoned entrance would be closed and planted to screen the road. The cut-off lighting would reduce lightspill and glare.
HANDCROSS VILLAGE (WEST) Horsham Road (West) Church	<p>19th century Mission Hall situated adjacent to bridge, with small terrace on east side, along the highway boundary. Existing view of A23 which is in deep cutting is screened by vegetation on cutting slope.</p> <p>Lightspill and glare from existing lighting.</p>	20	Moderate	Substantial	Moderate	Slight benefit	The loss of the vegetation from the cutting slope would significantly increase the impact of the road until the new planting above the new retaining wall was established. The cut-off lanterns would reduce lightspill and glare.
West Lodge to A23 Slip Road Junction	<p>Group of six detached and two semi-detached two storey houses on triangle of land formed by Horsham Road, northbound slip road and A23. Existing view of A23 is restricted by location of road in cutting and vegetation in gardens and on area of land between the back of the gardens and A23.</p> <p>Lightspill and glare from existing lighting.</p>	40 - 100	Slight	Moderate	Slight	Slight benefit	The loss of vegetation from the cutting slope would increase the impact of the road along the length of the proposed retaining wall until the new planting was established. Sufficient vegetation would remain to screen views from ground level, therefore the impact would be from the upper floor only. The cut-off lanterns would reduce lightspill and glare.

West of A23 Slip Road Junction to Covert Mead	Row of six detached and one semi-detached two storey houses. View of A23 from ground floor screened by garden planting and other intervening vegetation, but large traffic and lighting visible intermittently from upper floors between northbound junction and north end of West Park Wood.	200 - 300	Slight	Slight	Slight	Slight benefit	The loss of vegetation along the west verge of the northbound slip road would increase the visibility of traffic until the new planting was established. The cut-off lanterns would eliminate lightspill and glare.
Covert Mead and West Park Road	Some lightspill and glare from existing lighting.	300 - 400	Slight	Slight	Slight	Slight benefit	The loss of vegetation along the west verge of the northbound slip road would increase the visibility of traffic until the new planting was established. The cut-off lanterns would eliminate lightspill and glare.
Handcross Allotment Gardens	Housing estate comprising mixture of two storey semi-detached houses and maisonettes. Thirty eight properties on the eastern edge of estate have view towards A23. The view from ground level is screened by garden planting and other intervening vegetation, but large vehicles and lighting is visible intermittently from upper floors between northbound junction and the north end of West Park Wood.	120 - 260	Slight	Moderate	Slight	Slight benefit	The loss of vegetation along the west verge of the northbound slip road would increase the visibility of traffic until the new planting was established. The cut off lanterns would eliminate lightspill and glare.
B2114 STAPLEFIELD ROAD	Partly used allotment gardens, between Horsesham Road and Park Road. View of A23 is restricted by location of road in cutting and intervening vegetation, but large vehicles and lighting visible intermittently between northbound junction and north end of West Park Wood.	120	None	None	None	None	No change
North of Nymans Cottages	Detached house, semi-detached cottage and row of three cottages. No view of A23.						

Nymans Cottages, Nos 10, 10a and 11	Two storey terraced cottages surrounded by trees at north end of East Park Wood. View towards A23 across open area of Handcross Market Garden, with large traffic and lampposts glimpsed through vegetation (esp. winter). Slight lightspill and glare from existing lighting.	160	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight benefit	The loss of some vegetation on verge along boundary of Handcross Market Garden would slightly increase visibility of traffic until the new planting was established. The cut-off lanterns would eliminate lightspill and glare.
Nymans Cottages, Nos 6, 7 and 9	Two storey terraced cottages adjacent to B2114. View of A23 as described above, but from upper floor only.	230	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight benefit	As above.	
The Garden House, Nymans	Detached two storey house in grounds of Nymans Gardens.	180	None	None	None	None	None	None	None	None	No change.	
North Lodge, Nymans	Detached cottage in grounds of Nymans Gardens.	190	None	None	None	None	None	None	None	None	No change.	
South Lodge, Nymans	Detached cottage in grounds of Nymans Gardens.	235	None	None	None	None	None	None	None	None	No change.	
Nymans House and Gardens (Main Area)	Grade II listed ruined mansion, situated in Grade II* listed gardens, owned by the National Trust and open to the public. The property occupies a ridge of high ground and affords several vantage points from which wide and attractive views in E - SW direction across the Ouse Valley are gained. Views towards the A23 are generally blocked by the extensive woodlands of East Park, but traffic is visible intermittently through gaps in the vegetation on the highway boundary in the vicinity of Mill Hill and again south of Stanbridges from some positions in the southern part of the garden. At night the lighting at Warminglid Junction is conspicuous.	1500+	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight	The widening of the A23 would be discernible south of Mill Hill, but the range of view is such that the road would remain unobtrusive, except at night when the lighting would be visible continuously between Mill Hill and Warminglid Junction.	

Nymans (Woodland Garden)

This part of the garden is on the west side of the B2114 and is also Grade II* listed, owned by the National Trust and open to the public. The area is effectively screened from the A23 by the dense intervening woodland except at its northern end from where large vehicles and lampheads can be seen through the vegetation on the far side of the open ground of Handcross Market Garden. Scattered farm and residential properties adjacent to B2114 between Nymans and Staplefield Village, on high ground with wide attractive views SE - SW across Ouse Valley. Traffic on A23 is visible intermittently through roadside vegetation between south of East Park cutting and Warminglid Junction, except in vicinity of Slaughtam Junction and Mill Hill to Starbridges. North of East Park the A23 is hidden by landform and mass of East Park Wood.

The lighting at Warminglid is conspicuous at night.

140 +

Slight

Slight

Slight

Slight benefit
Slight

The loss of some vegetation on the verge along the boundary of Handcross Market Garden would slightly increase the visibility of traffic until the new planting was established. This would affect the northern area only. The cut-off lanterns would eliminate lightspill and glare from the area adjacent to Handcross Market Garden, but the light south of Slaughtam Junction would be visible from the southern end of the wood.

Combers, Farthings, East Park Cottages, Hill House Farm

800 -

Slight

Slight

Slight

Moderate

The widening of the A23 would be discernible, particularly between Slaughtam Junction and Mill Hill where the loss of the centre reserve trees would increase the visibility of traffic, but the range of view is such that the road would remain unobtrusive by day. At night the new lighting would be visible extensively south of East Park cutting.

STAPLEFIELD VILLAGE

Generally

Conservation village at cross-roads of B2114 and several minor roads centred on large triangular common. The village is enclosed by trees and rising ground to the north but is more open to the south. During summer, views towards the A23 are screened except where the road rises towards Warminglid Junction. During winter traffic on the A23 can be glimpsed intermittently south of Mill Hill. The lighting at Warminglid Junction is conspicuous at night.

Staplefield Place School

Former manor house in historic parkland setting on eastern edge of Staplefield Common. The main view is west towards the A23, but intervening woods and hedgerows screen the road except in winter when traffic can be seen intermittently between Slaughtam Junction and Mill Hill, and south of Stanbridges.

1000 - 2000

Slight (Winter only)

Slight

None

Moderate

No change would be discernible during summer, but during winter the disturbance to the existing vegetation on the east boundary of the highway would slightly increase the visibility of traffic between Slaughtam Junction and Stanbridges. After the proposed 10 metre woodland strip was established these views would be effectively screened. The lighting columns would not be discernible by day, but at night, particularly in winter, the lampheads would be visible extensively south of Mill Hill, and from some locations at the north of the village between Slaughtam Junction and East Park.

850

Slight (Winter only)

Slight

None

Moderate

As for Staplefield generally.

STAPLEFIELD ROAD

Tajan

Cottage at SW corner of Staplefield Common with open views in SE - W direction. A23 corridor is visible, but traffic is screened by hedgerows during summer. In winter traffic is visible intermittently by south of Slaughtam Junction.

850

Slight

Slight

Slight benefit

Moderate

As for Staplefield generally.

Home Farm	Group of buildings comprising farmhouse and attached terrace of four cottages and steading. Traffic on the A23 is visible intermittently through gaps in the intervening vegetation between Slaughtam Junction and Mill Hill and again south of Stanbridges.	280	Slight	Moderate	Slight benefit	Substantial	The loss of vegetation along the east verge of the highway would increase the visibility of traffic, however after the proposed new woodland strip was established, the traffic on this section would be less visible than at present. The lighting columns would be visible during daytime, and at night the lighting would be visible extensively south of Slaughtam Junction. There would be slight illumination from the highway lighting.
EAST PARK East Park House	Large detached two storey house situated on crest of ridge with open view in SE direction across a large garden over the Ouse Valley. Views of the A23 are screened from the house and ornamental garden by mature woodland, except for a distant view of the road south of Stanbridges. The A23 can however be seen at close range from walks in the woodland and the entrance drive.	80	Slight (moderate from woodland garden)	Moderate (substantial from woodland garden)	Slight (moderate from woodland garden)	Moderate	There would be no discernible change where the road is closest to the house. The face of the cutting would not be visible, however the loss of mature trees and highway vegetation from the southern end of the woodland would reduce the effectiveness of the wood in screening views in a southerly direction until the new planting was established. From the house the effect would be limited. From the woodland garden the effect would be significant, however the new screen fence would limit the visibility of traffic at close range. The lighting would not be intrusive by day. At night, because the viewpoint is above the road, the cut-off lanterns would prevent lightspill and glare, however the illuminated road corridor would be clearly visible through the garden trees, especially in winter. There would be no discernible change except for the lighting, the effect of which would be as described for East Park House.
East Park Cottage	Detached cottage, situated immediately north of East Park House, which faces west towards A23. View of the road is effectively screened by mature cypress trees and laurel hedge on boundary between garden and drive to East Park House, and by mature woodland to the north. The only view of the A23 is an oblique glimpse down the entrance drive.	80	Slight	Slight	Slight	Moderate	
East Park Farmhouse	Detached two storey farmhouse, situated on east side of ridge and other buildings at East Park which block views towards the A23.	140	None	None	None	None	No change.

**SLAUGHAM PARK
ESTATE**

Slaugham Park

Grade II listed manorion, situated on high ground against backdrop of mature woodland with wide view SE - SW across parkland over Otse Valley. View to A23 from house and garden is blocked by adjacent farm buildings, landform and mature woodland, except from upper floor from which traffic can be seen intermittently through trees between Slaugham Junction and Mill Hill and south of Stanbridges. The lighting at Warminglid Junction is conspicuous.

450

Slight

Slight

Slight

Moderate

The loss of the centre reserve trees and the edge of the mature woodland in the vicinity of East Park would make the road corridor more visible as a gap in the woodland canopy but sufficient woodland would remain to screen the slopes and traffic on this section, except just north of Slaugham Junction where traffic would be visible through the gap in the mature woodland.

The loss of the centre reserve trees and partial loss of hedgerows along the western boundary between Slaugham Junction and Mill Hill would increase the visibility of traffic on this section until the new woodland strip was established.

During daytime the lighting columns would not be conspicuous because the lampheads would be below the canopy of the woods except at a range at which they would barely be discernible. At night, especially in winter, the illuminated road corridor would be visible between East Park and Mill Hill and south of Stanbridges.

Generally the effect would be as described above.

The new embankment would be visible through trees from the ride in West Park Wood, but after the new planting was established the road would be no more conspicuous than at present.

The effect of the lighting would be as described above.

Estate Grounds

10 - 600

Slight

Slight

Slight

Moderate

The A23 is generally well screened by mature woodland, but in winter when the woods are bare of leaves traffic can be glimpsed through the trees. Generally the impact is slight, except from close range in West Park Wood. Access to this area is limited by thick undergrowth to a ride on the west bank of Orange Gill.

North Lodge

130

Slight

Moderate

Slight

Slight benefit

Loss of the existing boundary planting would increase visibility of traffic until new planting was established. The cut-off lanterns would reduce lightspill and glare.

Cottage at north entrance of estate. Vegetation boundary screens view of the road, but large traffic is visible between weighbridge and the north end of West Park Wood and on the northbound slip road. There is lightspill and glare from the existing lighting.

South Lodge	<p>Cottage at south entrance of estate situated at north end of Slaughtam Village.</p> <p>View in summer screened by woodland, but in winter traffic can be glimpsed through trees between East Park and north of Slaughtam Junction and south of Slaughtam Junction to Mill Hill.</p>	650	Slight (Winter only)	Slight	None	Slight	No change would be discernible during the summer, or during daytime in the winter. At night in winter some lighting would be visible through trees between West Park and Mill Hill.
<p>SLAUGHAM VILLAGE Generally</p>	<p>Small conservation village comprising approximately 25 buildings tightly grouped on either side of Park Road which widens at the southern end to form a small green. St Mary's Church forms an attractive focal point at the southern end of the village. The village is situated on the edge of a ridge and has attractive views southwards over the Ouse Valley. Views towards the A23 are restricted by a combination of landform and woodland and in summer the road can only be seen in the vicinity of the Happy Eater, at which range it is not intrusive. In winter traffic can also be glimpsed occasionally from a few properties through trees, between south of Slaughtam Junction and Mill Hill.</p> <p>The lighting at Warminglid Junction is conspicuous.</p>	750	Slight (Winter only)	Slight	None	Slight	<p>There would be no discernible change in the impact of the road by day, and when the new woodland strip was matured, the existing glimpses of traffic in winter between south of Slaughtam Junction and Mill Hill would be screened.</p> <p>At night the illuminated corridor would be visible from a few properties at the eastern and southern edge of the village between East Park to north of Slaughtam Junction and south of Slaughtam Junction to Mill Hill, and Stanbridges to Warminglid Junction. In summer most lampheads would be concealed, but it is possible that some would be visible in winter between Slaughtam Junction and Mill Hill and south of Stanbridges. (Approximately 8 properties would be affected.)</p>
St Mary's Church	<p>Grade II* listed parish church dating from 12th century, at southern end of village. Traffic on A23 glimpsed intermittently between Slaughtam Junction and Mill Hill from edge of graveyard.</p>	700	Slight (Winter only)	Slight	None	Slight	Effect of the scheme would be as for Slaughtam Village generally.
The Manse	<p>Detached to storey house adjacent to St Mary's.</p>	750	Slight (Winter only)	Slight	None	Slight	Effect of the scheme would be as for Slaughtam Village generally.

Slaugham Place Farm Cottages	Semi-detached two storey cottages west of Slaugham Manor situated near west end of ridge of Mill Hill. A23 is visible south of Happy Eater from upper floor only	660	Slight	Slight	None	Slight	During daytime, the changes would be barely discernible, but at night the lighting would be visible south of Country Gardens.
Slaugham Place (House)	Detached cottage west of Slaugham Manor at west end of ridge of Mill Hill with open views S - W - N. A23 is screened by mature woodland and landform of Mill Hill	800	None	None	None	Slight	During daytime no change would be discernible but at night, in winter, some lighting may be visible north of East Park and south of Stanbridges.
Old Park	Grade II listed two storey farmhouse. Views to A23 are screened by farm and stable buildings on east side of house and elsewhere by intervening landform or woodland.	1150	None	None	None	Slight	During daytime no change would be discernible, but at night some lighting may be visible, especially in winter, south of Country Gardens and north of Slaugham Junction.
New House	Recently built house approximately 250 metres SE of Old Park Farm overlooking pond. A23 corridor is visible between Handcross - East Park and Mill Hill - Stanbridge View, but traffic is effectively screened by woodlands.	850	None	None	None	Slight	No change would be discernible by day, but at night during winter some of the lighting would be visible through trees.
Meadow Cottages	Group of three cottages adjacent to Old Park with northern outlook. A23 corridor is visible between Handcross-Slaugham Junction but traffic is effectively screened by woodland.	1200	None	None	None	Slight	No change would be discernible by day, but at night during winter some of the lighting would be visible through trees.
Merrivale	Detached cottage, situated very close to A23 but relatively well secluded from the road by a high garden wall and dense clumps of evergreen shrubs on the road verge and mature woodland to the north.	30	Moderate	Substantial	Moderate	Substantial	Loss of screen wall, verge planting and edge of woodland to north would result in open frontage to A23. The wall would be replaced and after the new planting was established the impact would be similar to at present. The lighting would have a significant impact on the view from the property and from lightspill.

Country Gardens Garden Centre	Garden Centre comprising indoor and outdoor display areas with extensive car parking behind on the northern part of the site, with a parkland area to the south. Set against a backdrop of mature woodland, the property has an open frontage to the A23 from which it is separated by only a broad verge containing scattered planting.	20	Substantial	Substantial	Substantial	Substantial	Substantial	The loss of existing planting would remove all screening from the front of the property, but sufficient space would be available to recreate an ornamental display in front of the main buildings. When established, the woodland strip along the boundary of the parkland area would create a more effective screen than the existing hedgerow. The lighting would have a significant impact on the view from the property and from lightspill.
Little Stanbridge	Detached two storey house adjacent to Garden Centre, with open frontage to A23, partially screened by scattered planting on wide highway verge.	15	Substantial	Substantial	Substantial	Substantial	Substantial	All planting in front of the property would be lost and the narrow strip that would remain would be insufficient to create effective screening. The lighting would have a significant impact on the view from the property and from lightspill.
Country Gardens House	Detached two storey house adjacent to Garden Centre. Set slightly back from road within garden with dense planting on boundary that partially screens traffic from ground level.	45	Substantial	Substantial	Substantial	Substantial	Substantial	All planting on the road boundary would be lost which would open up a direct view of the road. A screen fence would be erected along the new highway boundary which would restore privacy to the garden. The woodland strip along the boundary of the parkland area, when established, would screen traffic to the south. The lighting would have a significant impact on the view from the property and from lightspill.
Happy Eater	Restaurant which is first phase of redevelopment of site to include a Travel Lodge and Filling Station. The property is set against a backdrop of mature woodland, but has an open frontage to A 23 which dominates its eastwards outlook.	45	Substantial	Substantial	Substantial	Substantial	Substantial	Although the reduction of the width of verge would intensify the impact of the road, the main effect would be its increased scale and changed character. The lighting would be visible along the length of the road to Handcross.
Stanbridge View (Stanbridge Nursery)	Detached cottage and nursery situated on rising ground with extensive view N - E over Ouse Valley. A23 is visible north of Happy Eater to Mill Hill and again north of Slaughtam Junction to Handcross but is screened at close range by planting on the highway boundary and to the south by the location of a road in a cutting. The existing lighting, which extends to the northern boundary of the property is intrusive.	35	Moderate	Substantial	Substantial	Substantial	Substantial	The loss of the existing boundary hedgerow would open up a direct view of the A23 to the east. The screen fence would restore privacy and when established the new planting would create an effective screen. The increased scale of the road would be apparent, and the lighting would be clearly visible over most of the length of the scheme to Handcross.

The scheme would not generally alter the outlook from the property, but the lighting would be visible over most of the length of the scheme to Handcross.

Moderate

Slight

Slight

Slight

35

Private residential caravan site, situated in clearing at the edge of the woodland. The property overlooks the newly completed Warminglid to Sayers Common section of the A23, but the Handcross to Warminglid section little impact.

Pits Head Caravan Site

STANBRIDGES

Stanbridge Place

The proposals would not alter the screening effect of the vegetation on the east boundary therefore the visibility of the road would not be affected at close range. The loss of the centre reserve trees south of Slaughtam Junction and near East Park would make the route more visible in a northerly direction until the new woodland strip was established. When established, the new woodland strip between the entrance and Stanbridge Stream would reduce the visibility of the A23 to the south. The lighting would be visible extensively along the length of the scheme and there would be some lightspill.

Substantial

Slight

Moderate

Slight

60
(20)

Detached two storey house and flat above separate garage block. Apart from intermittent glimpses of large vehicles, traffic on A23 at close range is screened by high wall and mature woodland strip on boundary. The main view from the property is towards SE, and A23 is only visible obliquely beyond a range of 250 metres. The lighting at Warminglid Junction is conspicuous.

Stanbridge Farm (house)

The A23 would continue to be screened where it is closest, but partial loss of vegetation on the boundary south of Slaughtam Junction would increase visibility of traffic until new woodland strip was established, and north of Slaughtam Junction the increased width of road would be apparent as break in woodland canopy. The lighting columns would not be conspicuous by day, but at night the lighting would be visible continuously between Handcross and Warminglid.

Substantial

Slight

Moderate

Slight

170

Grade II listed, two storey house, with outbuilding used as Recording Studio. Planting on boundary of Stanbridge Place screens view at close range, but traffic can be seen intermittently through the hedges elsewhere between East Park and Warminglid Junction. The lighting at Warminglid Junction is conspicuous.

Stanbridge Grange

There would be little change noticeable during daytime, but at night the lighting would be visible intermittently, especially in winter, between Handcross and Warminglid.

Moderate

Slight

Slight

Slight

260

Large two storey house, overlooking parkland with views east along the Cause Valley. Views to A23 are generally screened by mature garden trees and intervening hedges but traffic is visible intermittently south of Happy Eater and in vicinity of Slaughtam Junction.

Stanbridge Park, Stanbridge Grange Farmhouse, Stanbridge Lodge	Converted steading, Farmhouse and semi-detached cottages adjacent to Warminglid-Staplefield Road. Views to A23 are prevented by combination of landform and intervening hedgerows and woodland.	470 - 570	None	None	None	Slight	No change would be discernible by day, but at night some lighting would be visible, especially in winter when the canopy is thin, but the extent would be limited by intervening topography.
EAST OF WARMINGLID- STAPLEFIELD ROAD							
Moorhead	Two storey house with view westwards towards A23. Traffic is visible intermittently through hedgerows in winter between Mill Hill and Slaugham Junction. Lighting at Warminglid Junction is conspicuous.	750	Slight	Slight	Slight benefit	Moderate	There will barely be any discernible change during daytime, but at night the lighting would be visible intermittently between Stanbridge Place and East Park, especially in winter.
White House Farm, Whitehouse Farm Cottage, Whitehouse Cottage	Group of cottages with secluded situation in wooded valley. Traffic on the A23 is not visible, but the properties experience glare from lighting on Warminglid to Sayers Common Scheme.	350	None	None	None	Slight	No change would be discernible by day, but at night some lighting would be visible through trees in winter.
Little Dornick, Thatched Cottage, Russets, Five Ways	Row of two storey houses situated in large gardens containing mature trees near Warminglid Junction, with views northwards across the Ouse Valley. Views of the A23 are partially screened by garden planting, but the recently completed section of the road is conspicuous in the foreground. The A23 corridor is visible to Handcross, but the impact of the study section is slight.	40 - 150	Slight	Slight	Slight	Moderate	The widened road would be visible along the length of the scheme, and its impact would be accentuated by the loss of centre reserve trees and realignment at East Park. The lighting would be visible along the length of the scheme to Handcross.
Mallions Lane							
North Hall	Grade II listed house. The A23 is not visible.	550	None	None	None	Slight	No change would be discernible by day but at night some lighting would be visible between Stanbridges and Mill Hill, especially in winter.
North Hall Cottage	Detached cottage in woodland setting. The A23 is not visible.	600	None	None	None	Slight	As North Hall.

Farthings	Two storey house in woodland setting. The A23 is not visible.	650	None	None	Slight	No change would be discernible by day but at night some lighting would be visible through trees, in winter, between Stanbridges and West Park. As Farthings
Millions Farm	Two storey farmhouse in woodland setting. A23 is not visible	850	None	None	Slight	No change would be discernible by day, but at night, especially during winter, some of the lighting would be visible through trees. (Location shown on Figure 6.9)
Homesstead Farm, Homesstead Farm Cottages, Homesstead Manor, Homesstead Lodge, Little Ashfold	Scattered residential properties situated in generally open countryside west of B2114 between Slapfield at the B2115. The A23 is visible, but traffic on the road is screened by intervening woodland and hedgerows.	1200 - 1700	None	None	Slight	
B2115 East of Warminglid Junction	Mansion house and lodge in mature woodland setting which prevents all views of A23.	700	None	None	Slight	No change would be discernible by day but at night, in winter, some lighting may be visible through trees between Mill Hill and Handcross when viewed from the Hall.
Beacon Hill and Lodge						
West of Warminglid Junction Generally	Approximately ten residential properties scattered along north side of B2115 with views in a northerly direction across the Ouse Valley. The A23 corridor is discernible from occasional viewpoints, but most vistas are contained by mature woodlands and hedgerows, and the road generally has little impact. The existing lighting at Warminglid Junction affects approximately half of the properties.	60 - 600	Slight increase	Slight increase	Moderate	The increased scale of the road would be apparent from some viewpoints, especially north of Slaughterham Junction where the loss of centre reserve trees and realignment at East Park would emphasise the break in the woodland canopy. By day the impact would be only slight, but at night especially in winter because the lighting would be visible over considerable sections of the scheme, the impact would be more significant.

**WARNINGLID
VILLAGE**

Conservation Area

Although situated on the ridge of hills followed by the B2115, views to the north and east from the village are restricted by large areas of mature woodland and the A23 is not visible from the conservation area.

1600 None None None None No change.

B2115 Cuckfield Lane

Row of approximately nine residential properties on north side of road. Views towards the A23 are blocked by the mature woodland of Anne's Wood.

1300 - 1600 None None Slight None Slight

No change would be discernible by day, but at night during winter the lighting may be visible north of Slaughtam Junction from some of the properties.

Slaughtam Lane

Row of approximately four residential properties on east side of lane. Views towards southern part of scheme are blocked by Anne's Wood. The A23 corridor is however visible north of Slaughtam Junction although traffic is screened by the canopy of West Park Wood.

1600 None Slight Slight Slight

The loss of the centre reserve trees and realignment at East Park would make the road corridor more apparent and traffic may be visible on the southbound carriageway. The illuminated road corridor would be visible between Slaughtam Junction and Handcross. (Location shown on Figure 6.9)

SLAUGHAM LANE

Hawkins Hill

Primary school, and small community of approximately eight residential properties adjacent to Slaughtam Lane. Situated on elevated ground with predominantly SE - S outlook. The A23 corridor is visible between Mill Hill and Stanbridge View but traffic is effectively screened by Anne's Wood.

1400 None None None Slight

No change would be discernible by day, but at night during winter some of the lighting would be visible through trees. (Location shown on Figure 6.9)

Pond Tail Farm

Farm steading and riding stables with residential buildings. No view of A23.

1500 None None None No change.

RIGHTS OF WAY

Slaughtam 3

Footpath between Horsham Road and Park Road passing Handcross Allotments. View of A23 is restricted by location of road in cutting and intervening vegetation, but large vehicles and lighting visible intermittently between northbound junction and north end of West Park Wood.

150 - 260

Moderate

Slight

Slight benefit

The loss of vegetation along the west verge of the northbound slip road would increase the visibility of traffic until the new planting was established.

Slaughtam 7a/7b
(Park Road)

Bridleway between Handcross northbound slip road and Slaughtam Village passing through Slaughtam Park Estate. Except at its northern end (where the effect is as Slaughtam 3) the A23 is effectively screened by West Park Wood.

100 - 650

Slight

Slight

Slight

Except at the northern end (where the effect would be as Slaughtam 3) no change would be discernible by day, but at night the lighting would be visible from the section between Slaughtam Park House and Slaughtam Village.

Slaughtam 6

Footpath between Coos Lane and Slaughtam Village. The A23 corridor is visible between north of Slaughtam Junction to Mill Hill and south of Stanbridge from where the path crosses the ridge of open ground west of Hornstead Wood but the traffic is screened by intervening hedgerows.

850 - 1050

Slight

None

Slight

The partial loss of boundary vegetation and loss of centre reserve trees would enable traffic to be seen between Slaughtam Junction and Mill Hill until the new woodland strip was established. At night the lighting would also be visible south of Stanbridges.

Cuckfield Rural 7/
Slaughtam 9

Footpath between B2114 at East Park Cottages and A23 north of Slaughtam Junction. The A23 is visible for 350 metres from the B2114, but it is only the last 200 metres approaching the highway boundary that the road has a significant impact. The existing highway planting south of East Park screens traffic except if viewed from immediately adjacent to the highway boundary.

15 - 900

Slight/
moderate/
substantial

Slight/
moderate

Moderate/
substantial

The eastern section of the path would barely be affected by the scheme. The loss of the verge planting, removal of the centre reserve trees and realignment of the road in the vicinity of East Park would have a significant impact from the western section, until the new planting was established. The widened road would remain more prominent than at present. The lighting would be conspicuous during the day as well as at nighttime.

[The impact of the road can be avoided if the path along the west edge of East Park Wood (South) is followed to Staplefield Road, although this is not a right of way]

Slaugham 14	Footpath from St Mary's Church, Slaugham past Slaugham Place to A23 at Mill Hill. Apart from intermittent glimpses of traffic through trees in winter, views of the A23 from the section of the path to the west of the road to Slaugham Manor are effectively screened. Between Slaugham Manor and the A23, the path climbs to follow the east ridge of Mill Hill, from which the corridor is visible extensively to the north, although traffic is generally screened by vegetation.	15 - 750	Slight	Slight/moderate	Slight benefit/slight	Slight/moderate/substantial	There would be no significant change in outlook from the western section of the path. The partial loss of planting along the highway verge between Slaugham Junction to Mill Hill, together with the loss of centre reservation trees here, and near East Park would open up the visibility of the road and traffic until the new planting was established. The lighting would be visible between Handcross and Mill Hill.
Cuckfield Rural 10 Slaugham 15	Footpath from Warminglid - Staplefield Road past Stanbridges to A23 at crossing of Anne's Wood Stream. Apart from intermittent glimpses of large vehicles, traffic on the A23 is generally screened by the vegetation along the highway boundary.	10 - 500	Slight	Slight	Slight benefit/slight	Substantial/moderate	The footpath would be diverted to follow the new private means of access between Stanbridges and Staplefield Road. The effect of the scheme on the existing path in the vicinity of Stanbridges would be slight. From the new section, the partial loss of vegetation along the eastern boundary of the road would result in traffic being visible. After the new woodland strip was established the path would be effectively screened from the road and would have attractive views eastwards across farmland. The lighting would be visible extensively and their would be some lightspill.
Slaugham 11	Footpath from St. Mary's, Slaugham to Mill Pond. A23 is completely screened by intervening landform and vegetation.	700	None	Slight	None	Slight	Except in the vicinity of St Mary's Church, no change would be discernible by day, but at night some lighting may be visible, especially in winter.
Slaugham 12	Footpath from Mill Pond to B2115 across generally open undulating farmland. There are some views of the A23 corridor from elevated sections of the path, but traffic is effectively screened by woodlands.	750	None	None	None	Slight	No change would be discernible by day, but at night some lighting may be visible, especially in winter, particularly from higher ground at west ridge of Mill Hill and near the B2115.

Slougham 13	Footpath from Mill Pond, past Old Park to Slougham Lane near Warminglid, across generally open undulating farmland. There are some views of the A23 corridor from elevated sections of the path, but traffic is effectively screened by woodlands.	750 - 1600	None	None	Slight	No change would be discernible by day, but at night some lighting may be visible, especially in winter, particularly from higher ground in the vicinity of Old Park near Warminglid.
Cuckfield Rural 8	Footpath from Staplefield Lane east to B2114. There are some views towards the A23 corridor, but traffic is screened by hedgerows and woodland	700-1550	None	None	Slight	No change would be discernible by day, but at night some lighting may be visible, especially in winter
Cuckfield Rural 9	Footpath from Staplefield Village which joins CR8. Views towards A23 are screened by ridge of high ground, except near junction.	1000	None	None	Slight	No change would be discernible by day, but at night some lighting may be visible, in winter near junction with CR8.
Slougham 10	Footpath from Slougham Village to Slougham Lane with attractive view over Slougham Mill pond to Slougham Place.	900-1350	None	None	Slight	No change would be discernible by day, but at night some lighting may be visible, in winter

● **Appendix 6/C - Planting Proposals**

APPENDIX 6.C

LANDSCAPE PROPOSALS

6.C.1 Landform

Because of the primary concern to limit the effect of the scheme on adjacent areas of nature conservation importance, the opportunity to remodel the landform to soften the appearance of cuttings and embankments has been restricted to three situations, all of which are on existing highway land.

- At Handcross northbound slip road the cutting would be graded to a maximum 1 in 5 slope.
- At the abandoned section of carriageway opposite East Park, the existing road construction would be broken out and the ground graded to merge with the adjacent landform.
- At the island formed by Slaugham northbound slip road, the area of waste ground would be infilled to form continuous slope between edge of slip road and the mains carriageway.

6.C.2 Topsoiling

Topsoil from areas of Ancient Woodland would be conserved separately for re-use on the appropriate section of the new verges.

6.C.3 Grassing

The seed mix would be selected to be sympathetic with the adjacent land and would incorporate native grasses and herbaceous species.

6.C.4 Tree Surgery

Clearance up to the new highway boundary would be supervised by the Landscape Architect to reduce the extent of damage to adjacent vegetation to a minimum. Tree surgery would be carried out to trees retained within the highway boundary and, by agreement with the affected landowner, to trees on the edge of neighbouring land.

6.C.5 Planting

6.C.5.1 *Planting Strategy*

The main aims of the planting proposals have been threefold:

- To restore the edge of the canopy of the mature woodlands.
- To replace screening where lost and/or to reinforce the screening effect where practicable by planting wide woodland strips along the highway boundary. Additional off-site planting could be carried out to reinforce hedgerows by agreement with the affected landowners.
- To replace/reinforce the nature conservation value of the planting along the highway boundary as a linear habitat linking together the fragmented areas of mature woodland.

The planting proposals are illustrated on Figure 6.10. The emphasis for plant selection has been to use native mainly deciduous species that would be complimentary to the vegetation of the adjacent areas both visually and ecologically, and that would restore the road corridor as far as possible to its existing appearance.

6.C.5.2

*Woodland Planting Schedule: Mix W1**Woodland Canopy Layer*

To be planted at 3.0 metre centres = 1 no transplant per 9 m²

SPECIES		% MIX	NURSERY SIZE	FORM	GROUPINGS
Quercus robur	(Oak)	30	1 + 2 yr	Feathered bareroot transplant	1 - 3 no
Fraxinus excelsior	(Ash)	25	1 + 2 yr	Feathered bareroot transplant	3 - 5 no
Fagus sylvatica	(Beech)	25	1 + 2 yr	Feathered bareroot transplant	1 - 3 no
Betula pendula	(Silver Birch)	10	1 + 2 yr	Feathered bareroot transplant	5 - 7 no
Pinus sylvestris	(Scots Pine)	5	2 litre	Container grown 300 - 450 mm high	1 - 3 no
Larix decidua	(Larch)	3	1 + 2 yr	Feathered bareroot transplant	3 - 5 no
Quercus ilex	(Holm Oak)	2	2 litre	Container grown 300 - 450 mm high	Individual

Woodland Understorey Layer

To be planted at 1.0 metre centres = 8 no transplants per 9 m² including 1 no tree transplant

SPECIES		% MIX	NURSERY SIZE	FORM	GROUPINGS
Corylus avellana	(Hazel)	35	1 + 1 yr	Feathered bareroot transplant	5 - 7 no
Ilex aquifolium	(Holly)	35	2 litre	Container grown 300 - 450 mm high	5 - 7 no
Viburnum opulus	(Guelder rose)	10	1 + 1 yr	Feathered bareroot transplant	3 - 5 no
Prunus spinosa	(Blackthorn)	10	1 + 1 yr	Feathered bareroot transplant	7 - 9 no
Rosa canina	(Dog rose)	5	1 + 1 yr	Feathered bareroot transplant	5 - 7 no
Hedera helix	(Ivy)	5	2 litre	Container grown 450 - 600 mm high	3 - 5 no

Management Strategy

- Type: Open woodland.
- Character: Mature tree canopy layer selectively thinned to encourage growth and regeneration of healthy understorey species beneath.
- Management regime: Inspections on a four year cycle to identify and remove unwanted trees and shrubs. Selective coppicing of retained shrub layer as appropriate. Placing cut branches in selected areas to encourage fauna. Scarifying exposed areas of ground to encourage ground flora. Tree surgery operations as necessary to remove damaged branches.

Notes

- All plants to be distributed throughout planting area in percentages and groupings indicated.
- No woodland canopy layer species to be planted within 1.5 metres of outer edge of understorey layer.
- Where road embankments/cuttings exceed a 1:3 gradient the woodland canopy layer is to be omitted and woodland understorey density increased to 9 no transplants per 9 m².

6.C.5.3

*Woodland Planting Schedule: Mix Type W2**Woodland Canopy Layer*

To be planted at 3.0 metre centres/ 1 no transplant per 9 m²

SPECIES		% MIX	NURSERY SIZE	FORM	GROUPINGS
Quercus robur	(Oak)	35	1 + 2 yr	Feathered bareroot transplant	1 - 3 no
Alnus glutinosa	(Alder)	35	1 + 2 yr	Multi-stemmed feathered b/r transplant	7 - 9 no
Betula pubescens	(Downy Birch)	15	1 + 2 yr	Feathered bareroot transplant	5 - 7 no
Sorbus aucuparia	(Rowan)	10	1 + 2 yr	Bareroot transplant	3 - 5 no
Pinus sylvestris	(Scots Pine)	5	2 litre	Container grown 300 - 450 mm high	1 - 3 no

Woodland Understorey Layer

To be planted at 1.0 metre centres = 8 no transplants per 9 m² (allowing for 1 no woodland tree).

SPECIES		% MIX	NURSERY SIZE	FORM	GROUPINGS
Viburnum opulus	(Guelder rose)	40	1 - 1 yr	Feathered bareroot transplant	5 - 7 no
Hedera helix	(Ivy)	20	2 litre	Container grown 450 - 600 mm spread	7 - 9 no
Rubus fruticosus	(Bramble)	15	2 litre	Container grown 600 - 900 mm high	7 - 9 no
Corylus avellana	(Hazel)	10	1 + 1 yr	Multistem bareroot transplant	5 - 7 no
Ilex aquifolium	(Holly)	10	2 litre	Container grown 450 - 600 mm high	5 - 7 no
Ulex europaeus	(Gorse)	5	2 litre	Container grown 450 - 600 mm high	1 - 3 no

Management Strategy

- Type: Open woodland.
- Character: Mature tree canopy layer selectively thinned to encourage growth and regeneration of healthy understorey species beneath.
- Management regime: Inspections on a four year cycle to identify and remove unwanted trees and shrubs. Selective coppicing of retained shrub layer as appropriate. Placing cut branches in selected areas to encourage fauna. Scarifying exposed areas of ground to encourage ground flora. Tree surgery operations as necessary to remove damaged branches.

Notes

- No woodland canopy layer species to be planted within 1.5 metres of outer edge of understorey layer.
- All plants to be distributed throughout planting area in percentages and groupings indicated.
- Where road embankments/cuttings exceed a 1:3 gradient the woodland canopy layer is to be omitted and woodland understorey density increased to 9 no transplants per 9 m².

6.C.5.4

*Woodland Planting Schedule: Mix Type W3**Woodland Canopy Layer*To be planted at 3.0 metre centres/ 1 no transplant per 9 m²

SPECIES		% MIX	NURSERY SIZE	FORM	GROUPINGS
Fraxinus excelsior	(Ash)	40	1 + 2 yr	Feathered bareroot transplant	3 - 5 no
Betula pendula	(Silver Birch)	25	1 + 2 yr	Feathered bareroot transplant	5 - 7 no
Tilia cordata	(Lime)	15	1 + 2 yr	Feathered bareroot transplant	3 - 5 no
Quercus robur	(Oak)	15	1 + 2 yr	Bareroot transplant	1 - 3 no
Pinus sylvestris	(Scots Pine)	5	2 litre	Container grown 300 - 450 mm high	1 - 3 no

*Woodland Understorey Layer*To be planted at 1.0 metre centres = 8 no transplants per 9 m² (allowing for 1 no woodland tree).

SPECIES		% MIX	NURSERY SIZE	FORM	GROUPINGS
Crataegus monogyna	(Hawthorn)	40	1 + 1 yr	Feathered bareroot transplant	7 - 9 no
Sambucus nigra	(Elder)	20	1 + 1 yr	Feathered bareroot transplant	5 - 7 no
Ilex aquifolium	(Holly)	20	2 litre	Container grown 400 - 600 mm high	5 - 7 no
Viburnum opulus	(Guelder rose)	20	1 + 1 yr	Feathered bareroot transplant	3 - 5 no

Management Strategy

Type:	Open woodland.
Character:	Mature tree canopy layer selectively thinned to encourage growth and regeneration of healthy understorey species beneath.
Management regime:	Inspections on a four year cycle to identify and remove unwanted trees and shrubs. Selective coppicing of retained shrub layer as appropriate. Placing cut branches in selected areas to encourage fauna. Scarifying exposed areas of ground to encourage ground flora. Tree surgery operations as necessary to remove damaged branches.

Notes

1. No woodland canopy layer species to be planted within 1.5 metres of outer edge of understorey layer.
2. All plants to be distributed throughout planting area in percentages and groupings indicated.
3. Where road embankments/cuttings exceed a 1:3 gradient the woodland canopy layer is to be omitted and woodland understorey density increased to 9 no transplants per 9 m².

6.C.5.5

*Woodland Planting Schedule: Mix Type W4**Woodland Canopy Layer*To be planted at 3.0 metre centres/ 1 no transplant per 9 m²

SPECIES	% MIX	NURSERY SIZE	FORM	GROUPINGS
<i>Quercus robur</i> (Oak)	30	1 + 2 yr	Feathered bareroot transplant	3 - 5 no
<i>Betula pendula</i> (Silver Birch)	30	1 + 2 yr	Feathered bareroot transplant	7 - 9 no
<i>Acer pseudoplatanus</i> (Sycamore)	10	1 + 2 yr	Bareroot transplant	7 - 9 no
<i>Sorbus aucuparia</i> (Rowan)	10	1 + 2 yr	Feathered bareroot transplant	5 - 7 no
<i>Pinus sylvestris</i> (Scots Pine)	8	2 litre	Container grown 300 - 450 mm high	1 - 3 no
<i>Prunus avium</i> (Gean)	8	1 + 2 yr	Bareroot transplant	3 - 5 no
<i>Fagus sylvatica</i> (Copper Beech)	2	1 + 2 yr	Bareroot transplant	Individual
<i>purpurea</i>				

*Woodland Understorey Layer*To be planted at 1.0 metre centres = 8 no transplants per 9 m² (allowing for 1 no woodland tree).

SPECIES	% MIX	NURSERY SIZE	FORM	GROUPINGS
<i>Prunus spinosa</i> (Blackthorn)	30	1 + 1 yr	Feathered bareroot transplant	7 - 9 no
<i>Crataegus monogyna</i> (Hawthorn)	30	1 + 1 yr	Feathered bareroot transplant	7 - 9 no
<i>Malus sylvestris</i> (Crab Apple)	10	1 + 1 yr	Feathered bareroot transplant	3 - 5 no
<i>Corylus avellana</i> (Hazel)	10	1 + 1 yr	Feathered bareroot transplant	5 - 7 no
<i>Viburnum opulus</i> (Guelder rose)	10	1 + 1 yr	Feathered bareroot transplant	3 - 5 no
<i>Salix caprea</i> (Goat willow)	10	1 + 1 yr	Feathered bareroot transplant	7 - 9 no

Management Strategy

Type: Open woodland.

Character: Mature tree canopy layer selectively thinned to encourage growth and regeneration of healthy understorey species beneath.

Management regime: Inspections on a four year cycle to identify and remove unwanted trees and shrubs. Selective coppicing of retained shrub layer as appropriate. Placing cut branches in selected areas to encourage fauna. Scarifying exposed areas of ground to encourage ground flora. Tree surgery operations as necessary to remove damaged branches.

Notes

1. No woodland canopy layer species to be planted within 1.5 metres of outer edge of understorey layer.
2. All plants to be distributed throughout planting area in percentages and groupings indicated.
3. Where road embankments/cuttings exceed a 1:3 gradient the woodland canopy layer is to be omitted and woodland understorey density increased to 9 no transplants per 9 m².

6.C.5.6

Hedge Planting Schedule: Mix Type H1

SPECIES		% MIX	NURSERY SIZE	FORM
Crataegus monogyna	(Hawthorn)	100	1 + 1 yr	Feathered bareroot transplant

Management Strategy

Type: Clipped hedge.

Management regime: Cut annually in late summer/autumn.

Planting Notes

1. To be planted in a double staggered row with 600 mm between rows.
 2. Planting density to be 5 transplants per linear metre.
-

6.C.5.7

Climber Planting Schedule: Mix Type C1 - C3

SPECIES		% MIX	NURSERY SIZE	FORM	GROUPINGS
<i>Mix Type C 1</i>					
Parthenocissus tricuspidata	(Boston Ivy)	60	2 litre	Container grown	5 - 7 no
Hedera helix	(Ivy)	40	2 litre	Container grown	3 - 5 no
<i>Mix Type C 2</i>					
Parthenocissus tricuspidata	(Boston Ivy)	60	2 litre	Container grown	5 - 7 no
Lonicera periclymenum	(Honeysuckle)	30	2 litre	Container grown	5 - 7 no
Hedera helix	(Ivy)	20	2 litre	Container grown	3 - 5 no
<i>Mix Type C 3</i>					
Hydrangea petiolaris	(Climbing Hydrangea)	85	2 litre	Container grown	7 - 9 no
Hedera helix	(Ivy)	15	2 litre	Container grown	3 - 5 no

**Appendix 6/D - Existing Conditions Photographs.
Sheets 1-10**



Handcross Bridge from Northbound Slip Road



Handcross Bridge from Southbound Slip Road



A23 from Handcross Southbound Slip Road



A23 Southbound from Handcross Southbound Slip Road



A23 Southbound from chainage 600



A23 Northbound from opposite entrance to East Park



A23 Southbound from new entrance to East Park (new alignment would cut through trees on left edge of curve)



A23 Northbound from chainage 1200 (new alignment would cut across trees on bend near car)



A23 Southbound
Entrance to East Park House and Cottage



10

East Park House and Cottage from A23
Southbound verge near entrance



11

East Park House and Cottage from entrance off A23



View southwards from East Park House



A23 from drive to East Park House



A23 from Woodland Garden of East Park House (see also photograph in Appendix 5/E)



A23 from Drive to East Park Cottage



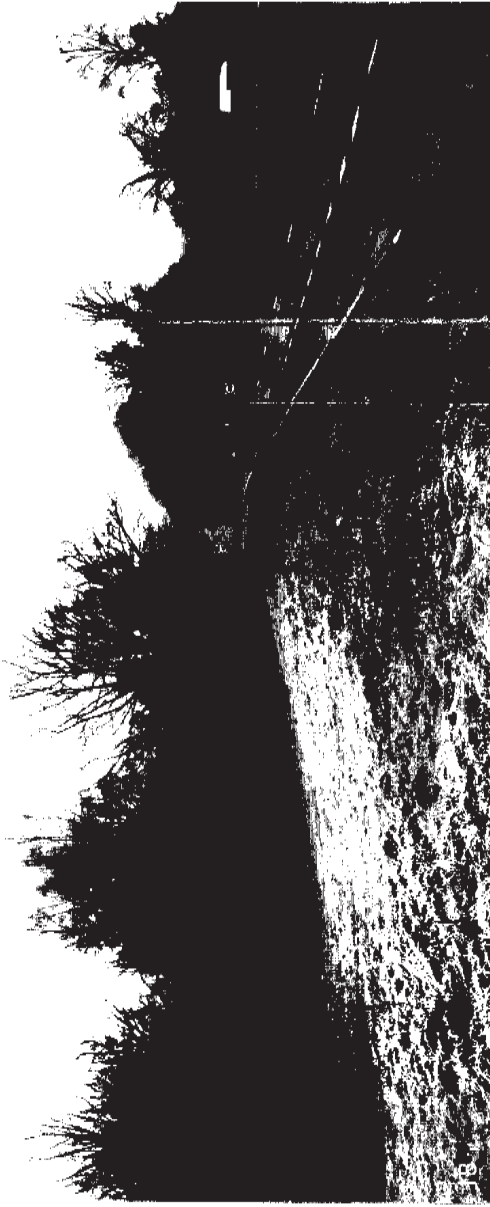
Slaugham Park
View eastwards towards A23 from field east of Stables. In winter large vehicles are visible through trees of West Park Wood in vicinity of entrance to East Park



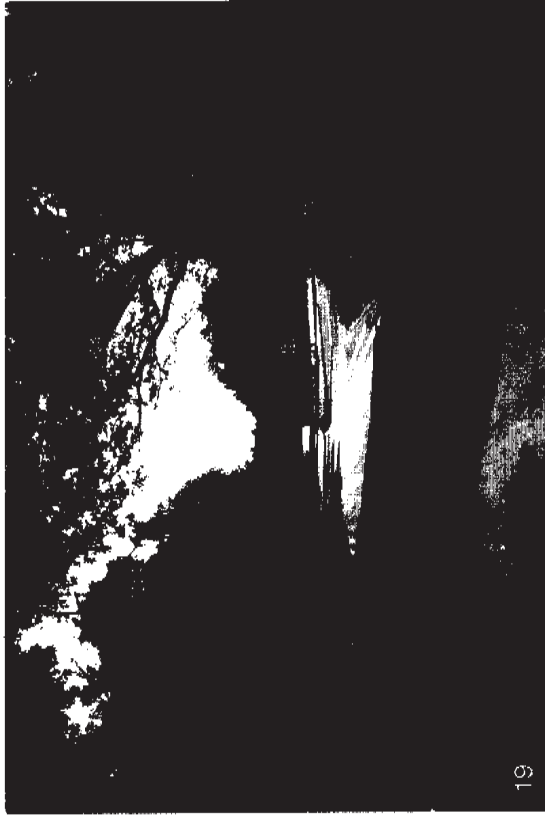
Slaugham Park
View south eastwards from upper floor window on east elevation. In winter vehicles can be glimpsed through trees in vicinity of Slaugham Junction.



Slaugham Park
View southwards from upper floor window on south elevation which overlooks parkland. The A23 is visible from south of Stanbridges to Warringlid Junction.



Staplefield Road Overbridges looking north from northbound sliproad at Slaughtam Junction.



Staplefield Road Overbridges from Staplefield Road east of Slaughtam Junction.



Staplefield Road Overbridges viewed from west.



View towards A23 from Home Farm Cottages. In summer traffic on A23 is mostly screened by foliage.



View to A23 from Slaugham Place Access Road from where traffic is visible in vicinity of Slaugham Junction.



Home Farm and Cottages from gap in verge planting in winter when screening effect of trees is reduced. The line of East Park Stream is visible crossing the centre of the picture.



25

A23 looking south from River Ouse crossing. The visual effect of the ridge of Mill Hill is apparent.



24

A23 looking north from crest of ridge of Mill Hill at chainage 2100



26

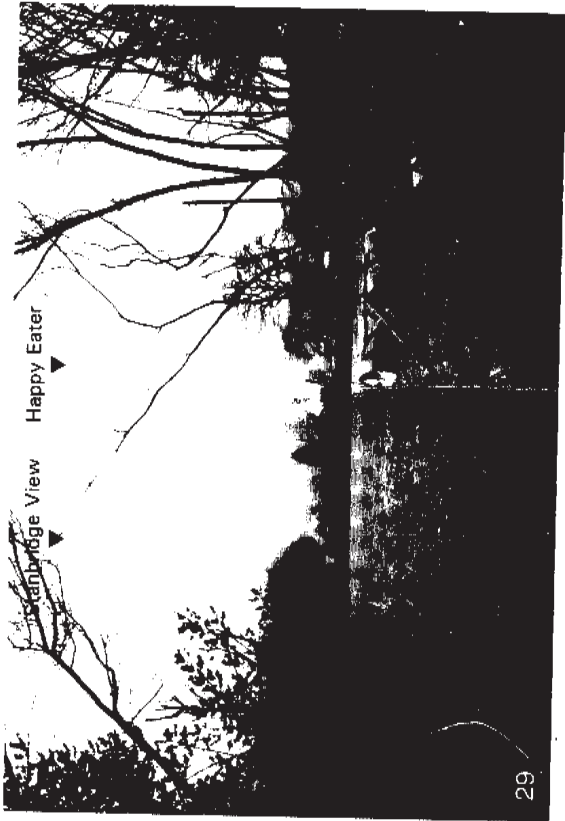
A23 looking south from crest of ridge of Mill Hill. Entrance to Garden Centre/Merrivale on right behind the van.

Slaugham Park Handcross Hill

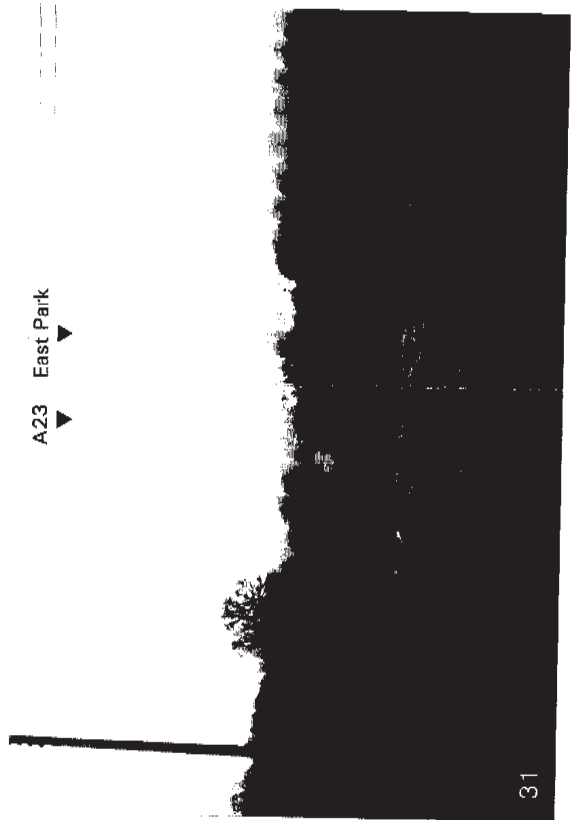


27

View north from in front of the Happy Eater.



View south from Stanbridges towards A23.



View north from field to north of Stanbridges. Woodland strip in foreground is Anne's Wood Stream corridor.



Stanbridges from field access Ch 2250. (Woodland strip in foreground is Anne's Wood Stream corridor)



View to Stanbridges from East Verge, 70 metres south of access (Stanbridge Place hidden at left hand edge)



32 View south from CH 2200 - Properties at Garden Centre visible but Merrivale concealed.



33 Merrivale



34 Domestic Properties adjacent to Garden Centre



35 Handcross Garden Centre (roof of Merrivale at centre of picture)

7.0 LAND USE

7.1 INTRODUCTION

- 7.1.1 This chapter describes the effects that landtake and changed access would have on the land as a primary resource and on its use for residential, commercial, industrial, agricultural and other purposes.
- 7.1.2 The effects of the scheme on the cultural heritage, ecology and landscape value of the land are described in chapters 3, 5 and 6 respectively.
- 7.1.3 Figure 7.1 shows the existing land uses in the study area with the proposals overlain to show graphically the effect of the scheme.

7.2 DEMOLITION OF PRIVATE PROPERTY AND ASSOCIATED LANDTAKE

7.2.1 Generally

7.2.1.1 Existing Conditions

Because of its rural setting in an area of countryside with a low density of development, there are relatively few properties in the vicinity of the road. Several of these however border and have direct access from the highway.

7.2.1.2 Effect of the Scheme

The proposed scheme would require the demolition of the garage at Merrivale.

- 7.2.1.3 A landtake amounting to approximately 6.590 hectares would be required from several properties, some of which would also be affected by temporary and/or permanent accommodation works.

- 7.2.1.4 All direct access from the A23 would be closed. Alternative means of access have been proposed after consultation with the affected landowners and occupiers. A service road would be constructed parallel to the northbound carriageway between Stanbridge View and Merrivale. A new private means of access would be provided to Handcross Market Garden and East Park from the B2114 and to the group of properties in the Stanbridge area from Staplefield Road. Although the proposed access arrangements would increase the length of journey to some destinations, they would be much safer than the present provision.

7.2.2 Residential Property

7.2.2.1 *Summer Hill, Handcross* (Land reference No 1)

This property is situated to the east side of the southbound slip road at Handcross Junction and is surrounded by a mature garden. Access to the property is from a private drive which is shared with two adjacent properties.

7.2.2.2 The proposed scheme would not require any landtake, but it may be necessary to adjust the levels of the entrance drive to tie-in with the reduced levels of the slip road. It is unlikely that these works would cause any disturbance to the garden area.

7.2.2.3 *East Park Farm (House)* (Land Reference No 3)

The farm house is situated on the east side of the group of properties at East Park, and is approached by a track from the west which joins the southbound carriageway of the A23 at chainage 770.

7.2.2.4 The direct access from the A23 would be closed. A new private means of access would be provided, from the B2114, which would be shared with Handcross Market Garden and the two other properties at East Park to give access to the existing track approximately 100 metres in from the present entrance.

7.2.2.5 *East Park Cottage* (Land Reference No 5)

The house, which is situated approximately 60 metres from the road, is approached from the west by a drive, through a mature woodland garden, from the A23 by an entrance at chainage 910. The entrance is shared with East Park House.

7.2.2.6 The direct access from the A23 would be closed. A new private means of access would be provided from the B2114 which would be shared with Handcross Market Garden and the two other properties at East Park. The point of entrance to the property would remain roughly the same and there would not be any disturbance to the garden area.

7.2.2.7 *East Park House* (Land Reference No 6)

The house, which is located approximately 60 metres from the road, is approached from the west by a drive, through a mature woodland garden, from the A23 by the entrance shared with East Park Cottage. The property

is at the north end of a large garden, the eastern edge of which borders the A23 over a length of 300 metres.

7.2.2.8 The direct access from the A23 would be closed. A new private means of access would be provided from the B2114 which would be shared with Handcross Market Garden and the two other properties at East Park. The point of entry would remain unchanged.

7.2.2.9 A landtake of about 0.314 hectares would be required for construction of the new cutting between chainage 1100 - 1400. The land is part of an area of mature woodland which has been underplanted with shrubs and developed with a pergola and grass walks to form an informal extension to the garden, the ornamental part of which is situated immediately in front of the house. The attractiveness of the west side of the woodland garden, which overlooks the A23, is detracted from by traffic, which can be seen through gaps in the trees. Since it is on the far side of the ridge, the face of the cutting would not be visible from the house but the loss of mature trees, in addition to being a significant reduction of the garden area, would lessen the effectiveness of the wood as a screen to the A23. To mitigate the impact on the amenity of the garden it is proposed that a screen fence would be erected which, because it would be sited along the top of the slope, would be more effective than the present fence which is below the line of vision.

7.2.2.10 *Stanbridge Place and Stanbridge Place (Flat)*
(Land Reference No 8)

There are two buildings occupied as residences on this property. The main house is set back approximately 60 metres from the road. The smaller residence which comprises a flat above a garage is situated only 25 metres from the road. Both properties are behind a screen wall that runs along the highway boundary. Access to the property is from the private drive to Stanbridge Farm which is gained directly from the southbound carriageway of the A23 at chainage 2575.

7.2.2.11 The access to the A23 would be closed. A new private means of access would be formed which would enter the northern boundary of the property as a branch off the new private means of access from the Staplefield Road.

7.2.2.12 *Stanbridge Farm (House)*
(Land Reference No 9)

The house is set back approximately 200 metres from the A23 and is approached by a private drive which joins the southbound carriageway at chainage 2575. The drive also gives access to Stanbridge Place and Field 6909 to the south.

7.2.2.13 The access from the A23 would be closed. A new access would be formed which would enter the northern boundary of the property as a branch off the new private means of access from Staplefield Road.

7.2.2.14 *Slaugham Park*
(Land Reference No 17)

Slaugham Park Estate occupies all the land immediately to the west of the A23 between Handcross Junction and Slaugham Junction and comprises extensive areas of woodland and parkland which provide a setting for the manor house which is set back more than 300 metres from the A23. Access to the property is by Park Road at North Lodge, which joins the northbound slip road at Handcross, or at the South Gate, which is at the northern end of Slaugham Village.

7.2.2.15 The realignment of the A23 would result in a landtake amounting to approximately 0.532 hectares from West Park Wood. The affected area is all mature woodland or recently felled plantation that is on the eastern boundary of the estate. The extent of the encroachment would be reduced by the use of a reinforced earth embankment which would allow a steep 60 degree side slope to be achieved. The effect of the landtake would be to increase the visual impact of traffic on the A23 as a result of a partial loss of screening. When viewed from the manor and its gardens the impact would only be slight. However, when viewed from the path along the west bank of Orange Gill the impact would be moderate. Once the proposed planting has established the edge of the woodland would be restored after 15 years and the extent to which traffic could be seen would be no greater than at present.

7.2.2.16 In addition to the landtake, a wayleave would be required for construction of a diverted foul sewer between Handcross Junction and the sewage works. This would extend for a length of 90 metres and would require a 5 metre wide path to be cleared through 60 metres of mature conifer plantation and 30 metres of mature mostly deciduous woodland. These works would not have any significant effect on the amenity of the estate.

7.2.2.17 Minor works would be required to connect ground water drainage and culverts from East Park into the existing tributaries of Orange Gill. This work would be carried out with access from the highway corridor in a manner that would reduce disturbance within the woodland area. No surface water run-off from the road would be discharged into the woodland area.

7.2.2.18 The area of highway land between chainages 1000 - 1400 which would be isolated by the eastwards realignment of the road south of East Park would be reinstated and planted to form an extension to West Park Wood.

7.2.2.19 The removal of the lay-by, which is frequently occupied by a mobile snack

bar, and informal parking along the western verge of the northbound carriageway, together with the proposed renewal of the existing dilapidated boundary fence would benefit the amenity of the property by reducing the extent of trespass and tipping of rubbish which occurs along the western boundary of the Estate.

7.2.2.20 *Merrivale*
(*Land Reference No 18*)

This small cottage is situated between Anne's Wood Stream and Country Gardens Garden Centre and is accessed directly from the A23. Despite its close proximity to the highway the cottage is remarkably secluded. The construction of the widened embankment for the new service road would require a landtake of about 0.033 hectares from the garden to the east of the cottage and would result in the demolition of the free standing garage and screen wall on the eastern boundary of the property. The existing access from the A23 would be closed. The property would experience increased noise and visual intrusion as a result of the scheme and significant disturbance during the construction period.

7.2.2.21 A new private means of access would be provided using the existing tracks through the adjacent garden centre to connect with the existing drive on the west side of the cottage. The proposed cycleway would provide a pedestrian route to Warninglid and Slaugham junctions. A screen wall would be constructed along the new eastern boundary of the property to return seclusion to the garden area which would be restructured to allow for the changed access arrangements. Except for the new lighting and increase in noise levels, the impact of the road and traffic after construction would be similar to that at present.

7.2.2.22 *Little Stanbridge*
(*Land Reference No 16a*)

This property and its neighbour is believed to be in the same ownership as the adjacent Country Gardens Garden Centre. It has open frontage to the A23 and is screened only by groups of semi-mature trees and shrubs which extend beyond the property's boundary onto the wide highway verge. Pedestrian access to the front door is directly from the highway verge. Vehicular access is from the south entrance to the garden centre.

7.2.2.23 The scheme would require a landtake of approximately 0.006 hectares as a strip along the highway boundary. This would result in a substantial increase in visual and noise intrusion and cause significant disturbance during the construction period. Vehicle access would be maintained from the garden centre road however as described in 7.2.3.4, this road would become the exit from the garden centre to the new service road that would run parallel to the A23. The proposed cycleway would provide a pedestrian route to Warninglid and Slaugham junctions.

7.2.2.24 *Country Gardens House*
(*Land Reference No 16b*)

The property is situated immediately to the south of Little Stanbridge and is set slightly further back from the A23. The house is partially screened from the highway by mature planting on the boundary of its garden and semi-mature trees on the highway verge. The access to the property is directly from the A23.

7.2.2.25 The proposed scheme would result in a landtake of approximately 0.016 hectares as a strip along the highway boundary. The loss of vegetation on the boundary would increase the visual impact of the A23 although sufficient space would remain for the garden to be restructured. To mitigate this impact it is proposed to erect a screen fence along the highway boundary.

7.2.2.26 The entrance to the property would remain in the same position. However, access would be from the new service road rather than directly from the A23. The new arrangement would be much safer than at present, and the proposed cycleway would provide a pedestrian route to Warninglid and Slaugham Junction.

7.2.2.27 *Stanbridge View*
(*Land Reference No 14*)

There are two houses on this property which is situated on the west side of the A23 at the southern end of the scheme. The access, which is shared with Pitts Head Gypsy Site to the south, was formed as part of the recently completed Warninglid to Sayers Common Scheme.

7.2.2.28 The would be a landtake of approximately 0.068 hectares which would result in the loss of a hedgerow along the boundary of the property. A screen fence would be erected along the new boundary to restore privacy and new planting provided which would create a substantial screen when established. The existing access on the boundary with the Happy Eater and the flight of steps would be replaced to give access onto the service road and cycleway respectively. Vehicle access would generally be as present. However, the inside lane of the A23 would become part of the proposed new service road. Access would therefore no longer be directly from the A23. Vehicles leaving the property would follow the service road to join the A23 at Merrivale. The new arrangement would be a significant improvement in terms of safety and convenience.

7.2.3 Commercial Property

7.2.3.1 *Handcross Market Garden* (Land Reference No 2)

This small market garden occupies land owned by the National Trust east of the A23 just south of the Handcross southbound slip road. The entrance to the garden centre is at the point at which the slip road and the A23 merge. Direct access can be gained from the A23, and right hand turning movements are carried out to exit the property to return to Handcross by the slip road. Both movements cross the flow of traffic and are hazardous. Pedestrian access is also by the slip road although there is no footway to Handcross.

7.2.3.2 The existing entrance would be closed. A new private means of access would be provided from the B2114 which would be shared with the three other properties owned by the National Trust at East Park, which would enter the area from the west. Any necessary restructuring of the internal layout would be undertaken by agreement with the landowner.

7.2.3.3 A detailed assessment of the commercial effect of the proposals has not been carried out. It is assumed from the lack of prominent signage and difficulty of access from the A23, however, that most of the trade is local or from regular customers. The new access route via the B2114 would, for most regular customers, be as convenient and much safer than the existing route. The effect of the proposals would therefore, on balance, be slightly beneficial.

7.2.3.4 *Country Gardens* (Land Reference No 16)

Country Gardens has been developed into a major business during the last few years and in addition to horticultural products now sells conservatories and pools. The garden centre occupies a large area of land west of the A23 between Anne's Wood Stream and the Happy Eater Restaurant, and includes the residential properties Little Stanbridge and Country Gardens House.

7.2.3.5 The main development is on the northern part of the site and comprises both indoor and outdoor displays and car parking. To the south, land that was formerly covered with derelict glass houses has been made into an informal parkland recreational area, whilst the area of scrub between Garden Centre Stream and the Happy Eater has been left undeveloped.

7.2.3.6 Access to the garden centre is directly off the A23 just north of Little Stanbridge. Traffic entering the centre can either turn right to a small car park that has space for approximately 20 cars in front of the building or continue to the main car parks at the rear of the buildings which have

space for approximately 120 cars. Traffic leaving the garden centre should use the exit on to the A23 at the north end of the site adjacent to Merrivale, but many vehicles leave using the entrance route. There are no deceleration or acceleration lanes and the junction splays on the accesses are small. Exiting and joining the fast moving heavy traffic on the A23 is hazardous and there have been several accidents in this vicinity.

- 7.2.3.7 The scheme would result in a total landtake from the property of about 1.123 hectares (including the land from Little Stanbridge and Country Gardens House referred to above). Along the developed northern part of the garden centre the landtake would be as a strip approximately 4 metres wide. To the south of the Country Gardens House the width of land to be acquired would be approximately 14 metres to allow for a 10 metre wide woodland strip to be planted along the new boundary. To the south of the Garden Centre Stream, the woodland strip would continue to the boundary of the Happy Eater.
- 7.2.3.8 The effect of the landtake in front of the buildings would be to prevent use of the existing front car park. Sufficient land exists at the rear of the site to form additional car parking to compensate for this loss. The residual land at the front could be restructured and landscaped presenting an attractive frontage to the garden centre.
- 7.2.3.9 To the south of the Country Gardens House, the landtake for the woodland strip would reduce the area available for informal recreation. When established, the screening effect of the new planting would be significantly greater than the existing hedge which contains only a few semi-mature trees.
- 7.2.3.10 Access to the garden centre would be from the new service road, with a new entrance formed along the southern boundary of the Country Gardens House and with the existing entrance/exit road changed to exit only. The exit at the northern end of the site, adjacent to Merrivale, would be closed. Advance direction signs would be provided on the A23 south of Warninglid Flyover and north of Warninglid Slip Road to inform motorists of the route to the Garden Centre with a sign on the service road indicating the entrance.
- 7.2.3.11 It is possible that some passing trade may be lost because, by the time motorists unfamiliar with the Centre have seen the frontage display, it would be too late to enter the service road. It is however at present difficult and dangerous for motorists to enter the Centre from the A23 unless they have anticipated turning off in advance, and the relative ease and safety of access from the new service road may well make the Centre more popular with local customers and regular users of the route. The Garden Centre would also be well placed to attract passing custom from motorists rejoining the A23 after visiting the Happy Eater restaurant.

7.2.3.12 As described previously it is proposed that the tracks through the Garden Centre would be used to provide a new private means of access to Merrivale to replace the existing access that would be closed.

7.2.3.13 During the construction period there would be some disruption as a result of works on the property's boundary and because of traffic management on the A23. The phasing of the work would be the responsibility of the contractor although there would be a requirement to maintain access to the Garden Centre at all times.

7.2.3.14 *Happy Eater*
(*Land Reference No 15*)

The Happy Eater motorists restaurant is the first stage of the redevelopment of this area for which planning consent has also been granted for a Filling Station and Travel Lodge. All the development would be along the A23 frontage of the site, with the area of scrub woodland at the rear left undisturbed.

7.2.3.15 The proposed scheme would require a strip of land approximately 13 metres wide at its maximum to be acquired along the frontage of the site to the north of the existing access and an approximate 5 metre wide strip to the south of the existing access, amounting to a total of about 0.119 hectares. This would not affect the ornamental shrub planting within the site.

7.2.3.16 Access to the Happy Eater would be from the new service road, using the existing entrance. Advanced direction signs would be provided on the A23 south of Warninglid Flyover and north of Warninglid Slip Road with a sign on the service road indicating the entrance. The new arrangement would be a significant improvement in terms of both safety and convenience and would be likely to lead to increased custom.

7.2.3.17 During the construction period there would be some disruption as a result of works on the property's boundary and because of traffic management on the A23. The phasing of the work would be the responsibility of the contractor although there would be requirement to maintain access at all times.

7.2.3.18 *Stanbridge Nursery*
(*Land Reference No 14*)

This small nursery garden occupies land adjacent to Stanbridge View which is in the same ownership. A new access to the area, which is shared with Pitts Head Gypsy Site to the north, was formed as part of the recently completed Warninglid to Sayers Common Scheme.

7.2.3.19 The landtake from Stanbridge View would not affect the nursery garden of

the property. The point of access would remain the same. However, the inside lane of the A23 would become part of the new service road and therefore access would no longer be directly from the A23. Vehicles leaving the site would follow the service road to re-join the A23 at Merrivale. Advanced signing would be provided on the A23 south of Warninglid Flyover and north of Warninglid Junction with a sign on the service road indicating the entrance. The new arrangement would be a significant improvement in terms of both safety and convenience and would likely to lead to increased custom. There would be no significant construction disturbance.

7.2.3.20 *Stanbridge Farm (Recording Studio)*
(Land Reference No 9)

One of the buildings on this property is used as a recording studio. The effect of the scheme would be as described for the residence in 7.2.2.12.

7.2.4 Other Properties

7.2.4.1 *Nymans Estate*
(Land Reference No 4)

Nymans is a large estate which occupies much of the land on the east side of the A23 between Handcross and Slaugham Junction. Since 1954 it has been owned by the National Trust at which time it was declared 'inalienable'.

7.2.4.2 The most important part of the estate with regard to cultural heritage is Nymans House and Gardens which has been described in Chapter 3. The proposed scheme would not have any effect on the land use of this area.

7.2.4.3 The agricultural land of the estate has been tenanted to a local farmer and the houses at East Park have been leased as private residences. The proposed scheme would require an overall landtake of a figure in the region of 0.781 hectares comprising:

East Park House	(woodland garden)	0.314 Ha
Field 5636	(leased to farmer)	0.398 Ha
East Park Wood South	(woodland)	<u>0.069 Ha</u>
	Total	0.781 Ha

7.2.4.4 The National Trust has indicated that it would be prepared in principle to sell this land. It is proposed to close the existing accesses from the A23 which would be replaced with a new private means of access to be gained from the B2114. The proposed route for the private means of access, which would mostly follow the line of existing tracks and clearings through East Park Wood, has been agreed with the National Trust.

7.2.4.5 *Pitts Head Gypsy Site*
(*Land Reference No 20*)

This private caravan site is situated to the west of the A23, by the scheme boundary. The access to the area, which is shared with Stanbridge View/Nursery, was formed as part of the recently completed Warninglid to Sayers Common Scheme.

7.2.4.6 There would be no landtake from this property. The point of access would remain the same. However, the inside lane of the A23 would become part of the new service road and therefore access would no longer be directly from the A23. Vehicles leaving the site would follow the service road to re-join the A23 at Merrivale. The new arrangement would be a significant improvement in terms of both safety and convenience. There would be no significant disruption during construction.

7.3 COMMUNITY LAND

7.3.1 Common Land

7.3.1.1 *Staplefield Common*

Reference CL315

Description The green which is used as a cricket ground and other land adjacent to the cross roads at Staplefield Village amounting to about 5.128 hectares.

Effect There would be a slight visual impact on parts of the land but otherwise the area would not be affected by the scheme.

7.3.2 Village Greens

7.3.2.1 *Slaugham Green*

Reference VG68

Description The open space at the centre of the village and in front of the entrance to St Mary's Parish Church.

Effect There would be a slight visual impact on a small part of the west side of the green in the vicinity of the cross roads.

7.3.3 Allotment Gardens

7.3.3.1 There is an allotment garden west of the northbound slip road at Handcross, access to which is gained from Horsham Road. The area would not be affected by the scheme.

7.3.4 Public Open Space

7.3.4.1 Apart from the areas referred to in 7.3.1 and 7.3.2, there are no areas of public open space in the vicinity of the scheme or which would be likely to be affected by the proposals.

7.4 DEVELOPMENT LAND

7.4.1 Land Designated for Development in Structure and Local Plans

7.4.1.1 There are no designated areas for development in the vicinity of the scheme or which would be likely to be affected by the proposals.

7.4.2 Planning Consents

7.4.2.1 *Happy Eater*

Planning consent has been granted for the development of a Filling Station and Travel Lodge on this site. A detailed description of the effect of the scheme on this area is given in 7.2.3.14. The scheme would not affect the feasibility of the development.

7.5 AGRICULTURAL LAND

7.5.1 General

7.5.1.1 Information taken from the Agricultural Land Classification of England and Wales is shown on Figure 7.2. Of the areas shown as agricultural land, several are in permanent non-agricultural use, and some land classified as being primarily in non-agricultural use, is used for agricultural purposes. The current land use has been shown on Figure 7.1 and this has been used at the basis for the assessment of the effects of the proposals.

7.5.1.2 The areas of landtake as they affect property ownership have been measured as the areas between the existing and proposed highway boundaries, and accommodation works, that would be constructed outside the highway boundary, have not been included in this area.

7.5.1.3 The areas of landtake as they affect agricultural land as a resource have been measured as the areas of land that would be lost to agricultural production and therefore include the effect of accommodation works.

7.5.2 Agricultural Land Quality

7.5.2.1 The land adjacent to the A23 is predominantly classed as Grade 3 with an area of Grade 4 on either side of the Ouse crossing.

7.5.2.2 No information regarding the subdivision of the Grade 3 land into sub-grades 3a and 3b was available from the Ministry of Agriculture, Fisheries and Food (MAFF). Since the total loss of agricultural land would be small it was not considered that a specialist site investigation to establish the sub-grade for each parcel was warranted.

7.5.2.3 The scheme would result in the loss of an approximate total of 3.858 hectares of agricultural land. Of this total, approximately 1.736 hectares is Grade 3 and 2.122 hectares is Grade 4.

7.5.3 Effect on Agricultural Units

7.5.3.1 *Home Farm, Staplefield (Land Reference No 7)*

This business owns several fields on both side of the A23 south of Slaughtam Junction and also farms some land which is owned by the National Trust.

7.5.3.2 *Field 5636 (owned by National Trust)*

Area: 7.515 hectares
Classification: Grade 3 (slight slope limitation)
Use: Short term grassland/occasional arable cropping

Effect of Scheme:

A landtake of about 0.398 hectares would be required as a strip tapering from 0-30 metres along the western edge of the field. Compared with the overall area this would represent a loss of only 5% and would not significantly affect the size or shape of the field for efficient working.

The present access to the field which is from Staplefield Road would not be affected.

7.5.3.3 *Field 5600/5792*

Area 3.076 hectares
Classification: Grade 4 (area adjacent to East Park Stream has severe wetness limitation)
Use: Permanent pasture

Effect of Scheme:

An area of about 1.157 hectares would be acquired. However, the loss of pasture would be increased to about 1.392 hectares to allow the construction of the new private means of access to the properties in the Stanbridge area. Compared with the overall area this would represent a loss of 45% which, in addition to the fragmented shape and wet ground conditions of the land that would remain would significantly reduce the usefulness of the field. The existing access would be closed and replaced by entrance to the PMA approximately 100 metres further away from the farm buildings, and its

location relative to the slip road from Slaugham Junction would make it more difficult to drive stock along the road between the farm and the field. Part of the new access would be designated as a Public Footpath as a diversion to footpath S15 which would be stopped up at the highway boundary near Stanbridge Place. The right of passage for pedestrians this would confer, would prevent use of the field for grazing bulls.

- 7.5.3.4 *Field 6463*
Area: 5.168 hectares
Classification: Grade 3 - 1.135 hectares (south)
Grade 4 - 4.033 hectares (north)
Use: Arable with grass in rotation

Effect of Scheme:

An area of about 0.257 hectares would be acquired. However, the loss of productive land would be increased to about 0.485 hectares on account of the new private means of access to the properties in the Stanbridge area. Of the land that would be lost, about 0.235 hectares is Grade 3 and about 0.250 hectares is Grade 4. Compared with the overall area the loss would represent a 9% reduction in the size of the field, but would not alter the basic shape for ease of operating machinery. In addition to the permanent landtake, a 6 metre wide wayleave would be required along the southern edge of the field for the construction of the drainage outfall and for access to construct and maintain the reedbed that would be sited in field no 7759 to the east. A surfaced track would not be required, but the need to allow access would preclude arable cropping of an area of about 0.081 hectares. The existing access from the A23 at chainage 2300 would be closed. New alternative accesses would be provided using the new private means of access to the Stanbridge area or the bridge over the Ouse at the north-east corner of the field. The new arrangement would be a significant improvement on the present arrangement that entails a lengthy journey and a hazardous exit onto the A23.

- 7.5.3.5 *Field 7759*
Area: 1.937 hectares
Classification: Grade 4
Use: 2 year old woodland plantation

Effect of Scheme:

A landtake of about 0.301 hectares would be required which would represent 16% of the present area. This would not significantly affect the area's value as a new woodland. Access to the area would remain unchanged.

- 7.5.3.6 *Field 6776/0082*
Area: 16.192 hectares
Classification: Grade 3
Use: Arable

Effect of Scheme:

A landtake of about 0.046 hectares would be required as a strip tapering to 3 metres wide along a length of 270 metres on the western edge of the field. This would represent less than 1/2% of the present area. The existing access from the A23 at chainage 3030 would be closed. However, this is seldom used and an alternative more convenient and safer access already exists from the Staplefield to Warninglid Junction road to the east.

7.5.3.7 *Field 3900*

Area: 3.0 hectares
Classification: Grade 3 - 2.138 hectares
Grade 4 - 0.862 hectares
Use: Short term grassland, occasional arable

Effect of the Scheme:

A landtake of about 0.587 hectares would be required of which about 0.523 hectares is Grade 3 and 0.064 hectares is Grade 4. This would represent nearly 20% of the area of the field but would not significantly alter its basic shape or usefulness. Access would remain as at present which is from the fields to the west and south which are gained from Slaugham Manor.

7.5.3.8 *Field 4366*

Area: 3.610 hectares
Classification: Grade 3 1.447 hectares
Grade 4 2.163 hectares
Use: Arable/grass rotation

Effect of Scheme:

A landtake of approximately 0.106 hectares of Grade 4 land would be required as a strip tapering from 0 to 12 metres along the eastern edge of the field. This would represent less than 3% of the area of the field and would not significantly alter its shape or usefulness. The existing access from the A23 at chainage 2050 would be closed. This is seldom used and the normal and safer access via Slaugham Manor would remain unaffected.

7.5.3.9

The total area of agricultural land to be acquired from Home Farm amounts to a figure in the region of 2.453 hectares. However, the overall loss of agricultural land would be about 3.323 hectares if the effect of access works and loss of land rented from the National Trust were taken into account. Of this land about 1.201 hectares is Grade 3 and about 2.122 hectares is Grade 4. With exception of field 5600/5792, which is of low agricultural value, the landtake would not significantly affect the future usefulness of the fields. The existing accesses to the A23 would all be closed. Because of the heavy traffic on the A23 they are unsuitable and seldom used at present, and in any case more convenient and safer alternatives already exist or would be provided. Compared with the overall

area of land farmed the area of landtake would be small, and the other effects of the scheme would have minimal effect on the viability of the farming unit.

7.5.3.10 *Stanbridge Place (Flat)*
(Land Reference No 19)

There are three parcels of agricultural land that are owned by the occupant of Stanbridge Place (Flat). None of the area is in agricultural production.

7.5.3.11 *Field 7036 (north part)*

Area: 2.968 hectares (approximately)
Classification: Grade 3
Use: Grazing horses

Effect of Scheme:

The proposed new private means of access to the properties at Stanbridge would result in the reduction of the pasture land by about 0.197 hectares which would represent 7% of the area of the field. The passage of traffic through the field would be disruptive to the use of the field for grazing horses, and it is assumed that the owner would want to erect a fence between the access track and the field.

7.5.3.12 *Field 7036 (south part)*

Area: 0.333 hectares (approximately)
Classification: Grade 3
Use: Vegetable garden

Effect of Scheme:

The proposed private means of access to Stanbridge Place would result in a loss of 0.043 hectares (13%) of the garden area. Use of this part of the private means of access would be private to the occupants of the two residences at Stanbridge Place.

7.5.3.13 *Field 6926*

Area: 0.947 hectares
Classification: Grade 3
Use: Grazing/training horses

Effect of Scheme:

The construction of the access would result in the reduction of pasture land by approximately 0.068 hectares (7%). This would have a marginal effect on the value of the area for grazing but the position of the track would reduce the usefulness of the area for training because a significant part of the field would be effectively severed. Since the need for access to field 6909 would be infrequent, gates could be provided at either end of the track, and disturbance as a result of use of the new private means of access would be slight. Overall the loss of pasture would be significant, but would

not affect the number of horses carried on the land. The presence of the new private means of access would have a greater effect, arising from disturbance as a result of its use and the reduction of the effective area of field 6926 which is used for training. The new private means of access would however facilitate movement between the house and the fields and would provide a new and attractive equestrian route to Staplefield Road which in turn could be used to link up with other routes suitable for riding.

7.5.3.14 *Field 6919 (north part)*
(Land Reference No 19)

This field contains the drive to Stanbridge Farm (house) and is not in agricultural production.

Area: 0.079 hectares
Classification: Grade 3
Use: Grassland

Effect of Scheme:

The proposed private means of access to Stanbridge Farm would result in a loss of 0.011 hectares (14%). Use of this part of the access track would be private to the occupants of Stanbridge Farm and the owner of field 6909.

7.5.3.15 *Field 6909*
(Land Reference No 13)

This field is owned in isolation from other property in the vicinity of the scheme. Access is from the drive to Stanbridge Farm (house).

Area: 2.015 hectares
Classification: Grade 3
Use: Grassland

Effect of Scheme:

A landtake of about 0.207 hectares would be required which would represent 10% of the area. This would reduce the stocking capacity of the field, but in the absence of knowledge of other land managed by the same farmer it is not possible to assess what effect it would have on the overall enterprise. Access to the A23 via the drive to Stanbridge Farm would be closed, with alternative access provided by the access from Staplefield Road. This might increase the travel length to the field, depending on where the owner is based.

7.5.3.16 *Field 6919 (south part)*
(*Land Reference No 9*)

This field contains the drive to Stanbridge Farm (house) and is not in agricultural production.

Area: 0.698 hectares
Classification: Grade 3
Use: Grassland

Effect of Scheme:

The proposed private means of access to Stanbridge Farm would result in a loss of 0.010 hectares (1%). Use of this part of the access track would be private to the occupants of Stanbridge Farm and the owner of field 6909.

7.6 **WOODLAND**

7.6.1 The scheme would require some woodland in addition to that required from West Park Wood which has been described under 7.2.2.15.

7.6.2 *East Park Wood (south)*
(*Land Reference 4*)

A landtake of about 0.069 hectares consisting of a narrow strip along the edge of this wood would be required in order to allow the realignment of the southbound slip road at Slaugham Junction.

8.0 TRAFFIC NOISE AND VIBRATION.

8.1 INTRODUCTION

- 8.1.1 A stream of traffic generates noise which can be identified as coming from two separate sources. One is the component attributable to vehicle design - the engine, transmission and exhaust noise. This is dominant when the traffic is not free flowing. The second comes from the interaction of the tyres with the road surface and depends on the speed, the type of surface and weather conditions. This is the dominant source in free flow conditions with moderate to high vehicle speeds.
- 8.1.2 Traffic vibration can be transmitted either through the ground or the air. Its effects are both on buildings and their occupants. The air-borne vibrations are usually caused by exhaust noise from engines whilst the interaction of rolling wheels and the road surface produces ground borne vibrations.
- 8.1.3 Noise Nuisance is defined as "a feeling of displeasure evoked by noise" and mainly affects people in their homes or when they are in their gardens or near a road.
- 8.1.4 Research has shown that people are more sensitive to abrupt changes in traffic noise associated with a new road than with steady growth of traffic noise on an existing highway. In the period following a change, people may find appreciable benefits or disbenefits where noise changes are as low as 1dB(A). These benefits or disbenefits last for a number of years. In the longer term, however, perceived noise nuisance levels may settle at a point close to the level of dissatisfaction with the new ambient noise level predicted by the steady growth models.
- 8.1.5 The "noise nuisance assessment" makes use of a relationship, which has been derived from research, between the short term change in noise level and the likelihood of people being bothered by the noise.

8.2 METHODOLOGY

- 8.2.1 An assessment has been made of all properties and other relevant locations where existing traffic is likely to be increased or decreased by at least 25% in the year 2012. This is equivalent to a change in noise level of 1dB(A).
- 8.2.2 The noise levels for the properties have been calculated according to the prediction method in the document "Calculation of Road Traffic Noise". This method is valid for locations between 4m and 300m from a road. Beyond 300m the varying effects of wind and temperature combine to make forecasting difficult in most circumstances. TRRL Supplementary Report 425 "Rural Traffic Noise Prediction - an approximation" is the approved method for locations further than 300m from a road.
- 8.2.3 Noise nuisance is directly related to changes in traffic noise levels and has been assessed for properties using the method described in Volume 11, Section 3, Part 7 of the Department of Transport's Design Manual for Roads and Bridges.

8.3

EXISTING SITUATION AND ENVIRONMENTAL EFFECT

8.3.1

Traffic Noise

- 8.3.1.1 A total of 89 residential properties lie within 300 metres of the scheme (see Figure 8.4) with the vast majority of them located in Handcross. Other properties are located at East Park, Home Farm, the Stanbridge area and in the vicinity of the Happy Eater. Noise levels have been calculated for 23 individual properties within this assessment area. These properties have been chosen either because of their proximity to the road or because they were considered to experience noise levels that would be representative for a neighbouring group of properties.
- 8.3.1.2 Traffic flows used in the calculations were the high growth 18 hour average annual week day flows in the relevant year.
- 8.3.1.3 Noise levels have been calculated at a point 1 metre from the facade of a building and at the window height that gave the highest noise level.
- 8.3.1.4 Ambient noise is defined as the level of noise in the area before any change produced by the scheme has taken effect. It may include traffic noise, as well as noise from other sources. For the individual properties assessed, the ambient noise level has been taken as being the traffic noise from the existing road.
- 8.3.1.5 The following noise levels have been calculated for the individual properties; ambient noise in 1994, traffic noise from the existing road in 2012 and traffic noise from the scheme in 2012. Figures 8.1, 8.2 and 8.3 show the property locations within 300 metres of the scheme and the calculated noise levels.
- 8.3.1.6 The ambient noise levels, calculated for the selected properties have been used to categorise all the properties in the assessment area into ambient noise bands. There are four noise bands: <50dB(A), 50-60dB(A), 60-70 dB(A) and >70dB(A). Twenty-nine properties have current noise levels in the band 50-60dB(A), 47 are in the noise band 60-70dB(A) and 13 are in the noise band >70dB(A). There are no properties within the assessment that have ambient noise levels <50dB(A).
- 8.3.1.7 Calculated traffic noise levels, from the existing road and the scheme in 2012 for individual properties, have been used to estimate the noise levels for all the properties in the assessment area. From these predicted levels all the properties have been categorised as to the likely increase or decrease in noise level for the existing road and the scheme in 2012. There are five bands of increase: 1-<3dB(A), 3-<5dB(A), 5-<10dB(A), 10-<15dB(A) and >15dB(A). Tables 8.1, 8.2 and 8.3 show the number of properties in each increase or decrease band. Each table relates to the ambient noise band previously mentioned.

8.3.1.8 When comparing the effects of traffic noise if the scheme was built against the existing road, with no improvement, in 2012 there are 14 properties predicted to experience an increase in noise of between 1 and 3dB(A) and 1 property an increase of between 3 and 5dB(A). Four properties are predicted to experience a decrease in noise of between 3 and 5dB(A).

8.3.1.9 Noise levels were also calculated for the following properties that are more than 300 metres from the scheme: Nymans, Slaugham Park, Slaugham Place, Slaugham Manor and Stanbridge House. Figure 8.4 shows the property locations and the calculated noise levels. It can be seen that the increase in noise levels due to the scheme would not be greater than 1dB(A).

8.3.2 Vibration

8.3.2.1 Ground-borne traffic induced vibrations only occur when vehicles pass over uneven surfacing and are limited to the immediate vicinity of the road. Air-borne vibration only occurs with properties within a few metres of the carriageway.

8.3.2.2 In view of the fact that the scheme involves re-construction the carriageway throughout the improvement, ground vibration should not be a problem.

8.3.2.3 There are no buildings where the improvement reduces the distance from the road to such a degree as to there being any likelihood of air-borne vibration.

8.3.3 Nuisance

8.3.3.1 Tables 8.1, 8.2 and 8.3 show the number of properties estimated to experience an increase or decrease in nuisance level with and without the scheme being built.

8.3.3.2 Table 8.2 indicates that when comparing the existing road with the scheme for properties in the ambient noise band 50-60dB(A), there would be no difference in the change in nuisance level experienced by occupants.

8.3.3.3 Table 8.3 for the ambient noise band 60-70dB(A), shows that when compared with existing road the scheme is likely to result in 3 properties experiencing a greater increase in nuisance level and 4 properties a decrease in nuisance level.

8.3.3.4 Table 8.4 for the ambient noise band >70dB(A), shows that when compared with the existing road the scheme is likely to result in 4 properties experiencing a greater increase in nuisance level.

8.3.3.5 For those properties outside the assessment area, there would be between a 14% and 23% increase in nuisance level from the scheme compared with

approximately 1% for the existing road.

8.4 MITIGATION

8.4.1 Noise Insulation

8.4.1.1 Criteria for the entitlement for noise insulation treatment is set out in the documents "Calculation of Road Traffic Noise" and in the Noise Insulation Regulations 1975. The latter imposes a duty on the Highway Authority to provide secondary insulation to habitable rooms of dwellings adversely affected by traffic noise from the new scheme. The entitlement, in this case, requires all the following conditions to be met:-

- a) the noise level experienced by properties in the year 2012 is greater than 68.0dB(A).
- b) the noise level in the year 2012 is at least 1.0dB(A) greater than the ambient noise level in 1994
- c) the noise level from the scheme must contribute at least 1.0dB(A) to the increase experienced by the properties.
- d) the property is within 300 metres of the scheme.

8.4.1.2 It has been assumed that the increase in noise experienced by properties would only be as a result of the scheme and therefore condition b) does not need to be applied.

8.4.1.3 Table 11.4 shows the properties assessed and the ones that would be likely to qualify for noise insulation.

8.4.2 Noise Barriers

8.4.2.1 The use of noise barriers has been examined and the benefits were not sufficient to justify the cost.

8.5 SUMMARY

8.5.1 As the scheme is an "on-line" improvement the likelihood of any large scale changes in the noise environment as result of the improvement is small. The change in physical position of the road is relatively small and the consequential changes in noise levels are also of a low level. Until recently 3dB(A) was the threshold for inclusion in Environment Appraisal tables and only one property (East Park House) exceeds this value.

8.5.2 Properties at eleven locations are assessed as being likely to be eligible for noise insulation. These are Caburn, North Lodge, Summer Hill, East Park House, East Park Cottage, Merrivale, Little Stanbridge, Country Gardens House, Stanbridge Place, Stanbridge Place (Flat) and Stanbridge View.

NOISE ASSESSMENT SUMMARY TABLE

TABLE 8.1: AMBIENT NOISE BAND 50-60 dB(A)

	Residential		Commercial		Industrial		Community Facilities		Comments
	The Scheme	Existing Situation	The Scheme	Existing Situation	The Scheme	Existing Situation	The Scheme	Existing Situation	
Increase in Noise Level	15	12	1	1	0	0			
LA10, 18hr dB	0	0	0	0	0	0			
Increase in Nuisance Level	29	29	-	-	-	-			
LA10, 18hr dB	0	0	0	0	0	0			
Increase in Noise Level	0	0	0	0	0	0			
LA10, 18hr dB	0	0	0	0	0	0			
Increase in Nuisance Level	0	0	-	-	-	-			
LA10, 18hr dB	0	0	0	0	0	0			
Increase in Noise Level	0	0	0	0	0	0			
LA10, 18hr dB	0	0	0	0	0	0			
Increase in Nuisance Level	0	0	-	-	-	-			
LA10, 18hr dB	0	0	0	0	0	0			
Increase in Noise Level	0	0	0	0	0	0			
LA10, 18hr dB	0	0	0	0	0	0			
Increase in Nuisance Level	0	0	-	-	-	-			
LA10, 18hr dB	0	0	0	0	0	0			

NOISE ASSESSMENT SUMMARY TABLE

TABLE 8.2: AMBIENT NOISE BAND 60-70 dB(A)

	Residential		Commercial		Industrial		Community Facilities		Comments
	The	Existing	The	Existing	The	Existing	The	Existing	
	Scheme	Situation	Scheme	Situation	Scheme	Situation	Scheme	Situation	
Increase in	40	29	2	2	1	1	Church		
Noise Level	1	0	0	0	0	0			
LA10, 18hr dB	0	0	0	0	0	0			
Increase in	40	47	-	-	-	-	Church	Church	
Noise Level	3	0	-	-	-	-			
LA10, 18hr dB	0	0	-	-	-	-			
Increase in	0	0	0	0	0	0			
Noise Level	4	0	0	0	0	0			
LA10, 18hr dB	0	0	0	0	0	0			
Increase in	0	0	0	0	0	0			
Noise Level	0	0	0	0	0	0			
LA10, 18hr dB	0	0	0	0	0	0			
Increase in	4	0	-	-	-	-			
Noise Level	0	0	-	-	-	-			
LA10, 18hr dB	0	0	-	-	-	-			

NOISE ASSESSMENT SUMMARY TABLE

Table 8.3: AMBIENT NOISE >70 dB(A)

	Residential		Commercial		Industrial		Community Facilities		Comments
	The Scheme	Existing Situation	The Scheme	Existing Situation	The Scheme	Existing Situation	Engineering Layout	Do Minimum	
Increase in Noise Level	1 - < 3	8	3	1	0	0			
	3 - < 5	0	0	0	0	0			
	5 - < 10	0	0	0	0	0			
	10 - < 15	0	0	0	0	0			
	> 15	0	0	0	0	0			
LA10, 18hr dB									
Increase in Nuisance Level	< 20%	9	-	-	-	-			
	20 - < 30%	4	-	-	-	-			
	30 - < 40%	0	-	-	-	-			
	> 40%	0	-	-	-	-			
Decrease in Noise Level	1 - < 3	0	0	0	0	0			
	3 - < 5	0	0	0	0	0			
	5 - < 10	0	0	0	0	0			
	10 - < 15	0	0	0	0	0			
	> 15	0	0	0	0	0			
LA10, 18hr dB									
Decrease in Nuisance Level	< 20%	0	-	-	-	-			
	20 - < 30%	0	-	-	-	-			
	30 - < 40%	0	-	-	-	-			
	> 40%	0	-	-	-	-			

TABLE 8.4 - NOISE ASSESSMENT RESULTS

NOISE LEVEL LA10 18hr dB(A)				
Location	Existing Road 1994	The Scheme 2012	Difference in noise level	Likely to qualify for noise insulation
West Lodge	65.4	66.6	+1.2	NO
Talgarth	62.0	63.0	+1.0	NO
Viburnum	65.5	66.9	+1.4	NO
The Laurels	62.3	65.0	+2.7	NO
Claerwen	53.5	55.5	+2.0	NO
Caburn	77.9	80.4	+2.5	YES
Southend Cottage	74.0	74.8	+0.8	NO
North Lodge	66.6	69.0	+2.4	YES
Jindalee	65.2	63.0	-2.2	NO
North Lodge (Nymans)	64.1	65.6	+1.5	NO
Summer Hill	76.0	77.6	+1.6	YES
The Rectory	67.4	65.1	-2.3	NO
East Park Farm	64.9	66.4	+1.5	NO
East Park House	68.2	71.3	+3.1	YES
East Park Cottage	68.1	70.9	+2.8	YES
Home Farm	61.3	63.2	+1.9	NO
Merrivale	76.9	79.1	+2.2	YES
Little Stanbridge	79.6	81.6	+2.0	YES
Country Gardens House	75.2	76.7	+1.5	YES
Stanbridge Farm	63.5	65.2	+1.7	NO
Stanbridge Place	70.7	73.0	+2.3	YES
Stanbridge Place (flat)	74.4	77.0	+2.6	YES
Stanbridge View	76.1	78.9	+2.8	YES

9.0 PEDESTRIANS, EQUESTRIANS, CYCLISTS AND COMMUNITY EFFECTS.

9.1 INTRODUCTION.

- 9.1.1 This section of the Statement assesses the effect of the scheme on local journeys.
- 9.1.2 Where the existing patterns are largely unaltered, the assessment is based on changes in journey lengths and amenity of the routes.
- 9.1.3 Figure 9.1 shows the location of the features referred to in the text.

9.2 EXISTING SITUATION

9.2.1 Handcross Village

- 9.2.1.1 The village is already severed by the A23.
- 9.2.1.2 There are a small number of facilities such as shops and light commercial premises in the village.
- 9.2.1.2 The access to and from the A23 is provided by slip roads at the junction near Horsham Road bridge and by the local road system from the north.

9.2.2 Slaugham Junction

- 9.2.2.1 This grade separated junction provides all turning movements between the A23 and the Staplefield Road.

9.2.3 Staplefield Road (C96)

- 9.2.3.1 Staplefield Road passes under the A23 at Slaugham Junction. There are no footways on this road within the immediate vicinity of the A23.

9.2.4 A23.

- 9.2.4.1 The verges of the road are generally overgrown and are not suitable for pedestrian use.
- 9.2.4.2 There is a surfaced footway, approximately 1 metre wide and set 4 metres back from the kerb line, that runs from Handcross Market Gardens to the access to East Park. The path is overgrown and deteriorating.
- 9.2.4.3 There is a combined cycleway and footway adjacent to the northbound carriageway which runs from a location south of Warninglid Junction to south of Stanbridge Nursery.

9.2.5 Footpath Slaugham 4.

9.2.5.1 This short footpath used to cross the A23, connecting Park Road with the Brighton Road. It has been formally closed in the area of the existing A23 but a part still exists and joins the A23 and Brighton Road. There is no gap in the central reserve safety fence, discouraging direct crossing of the A23. Currently there are signs both at Brighton Road and near Park Road which state that the crossing of the A23 is via the Horsham Road Bridge in Handcross Village 200m to the north.

9.2.6 Bridleway Slaugham 7a and 7b.

9.2.6.1 Slaugham 7a and 7b, otherwise known as known as Park Road, is a private road running through Slaugham Park Estate between Slaugham Village and Handcross Village. It is a designated bridleway.

9.2.7 Footpath Slaugham 9.

9.2.7.1 Slaugham 9 is a signposted footpath which starts at a stile in the highway boundary just north of Slaugham Junction on the southbound carriageway and then leads in a north-easterly direction across field to the B2114 at East Park Cottages. The fields have been cultivated and resown, and there is no actual track to follow or desire line evident that would suggest frequent use. There is no path within the highway boundary connecting with the start of the path, but the grass verge southwards is sufficiently wide to give access to the Staplefield Road via the southbound slip road.

9.2.8 Footpaths Slaugham 14 and Slaugham 15.

9.2.8.1 Slaugham 14 starts with a flight of steps up the side of the cutting leading to a path which crosses fields to Slaugham Place, and then continues to Slaugham Village. The line of the path can be seen crossing the field between the A23 and Slaugham Manor.

9.2.8.2 Slaugham 15 is a signposted footpath that leads at first eastwards, then across a field in a south-easterly direction to join a track which it follows to Staplefield Road at Stanbridge Grange Farm.

9.2.8.3 Slaugham 14 and Slaugham 15 are considered to be a continuous route across the A23 although it is considered that the road is very difficult to cross at present.

9.2.9 Facilities.

9.2.9.1 The facilities in the area include Handcross Village shops, Handcross Market Gardens, Nymans (the National Trust Estate), Country Gardens Centre (and its associated facilities), The Happy Eater and Stanbridge

Nursery.

9.3 EXISTING USAGE

9.3.1 A 6 day survey of pedestrians, equestrians and cyclists was carried out at the end of April 1994 and the results are given in tables 9.1 - 9.3. The fine weather throughout the survey may have produced slightly more journeys than usual.

9.3.2 Handcross Village

9.3.2.1 In view of the fact that the scheme would not change the provision for access to and from the village it is not necessary to have details of the usage.

9.3.3 Slaugham Junction

9.3.3.1 In view of the fact that the scheme would not change the provision it is not necessary to have details of the usage.

9.3.4 Staplefield Road.

9.3.4.1 Although this route does not have footways there was an average of 6 pedestrian journeys per day during the week and 30 journeys over the weekend period. Equestrian journeys over the survey period totalled 28. The maximum number of cyclist journeys, recorded on a Sunday, was 40.

9.3.5 A23

9.3.5.1 Use of the A23 by cyclists was recorded just north of the Country Gardens Centre. Generally, cyclist journeys were very low during the week days with a total of 55 journeys over the weekend. There were 2 pedestrian journeys in the week and 5 over the weekend.

9.3.5.2 There was no equestrian use of the A23 during the period.

9.3.5.3 There was no recorded use of the footway on the east of the A23 between Brighton Road and East Park.

9.3.6 Footpath Slaugham 4.

9.3.6.1 During the survey period only 5 people used the path. All but one of these were from cars which stopped on the A23 allowing the passengers to walk back into Handcross Village.

9.3.7 Bridleway Slaugham 7a and 7b

9.3.7.1 Park Road is well used by pedestrians, especially at the weekends, and also by cyclists and a small number of equestrians.

9.3.7.2 The week day pedestrian average was 40 journeys whilst on the Saturday 124 journeys were recorded together with 6 equestrians and 24 cyclists.

9.3.8 Footpaths Slaugham 14 and 15.

9.3.8.1 Over the survey period only 6 pedestrian journeys were recorded on these paths. All of these people crossed the A23 and none were observed coming to or from the A23 itself.

9.3.9 Facilities

9.3.9.1 Observations indicate that access to facilities in the area is by car, with little, if none, by pedestrians.

9.4 CONSULTATION.

9.4.1 Officers of West Sussex County Council have been consulted with regard to the provisions within the scheme and their views taken into account.

9.4.2 Officers of Mid Sussex District Council have also been consulted and their views taken into account.

9.5 SCHEME IMPACT

9.5.1 Handcross Village

9.5.1.1 The scheme would have no impact on the village in terms of access from the local area by road.

9.5.2 Slaugham Junction

9.5.2.1 The provision of cycle crossing points at the junction would assist in the safe passage of cyclists along the A23.

9.5.3 Staplefield Road.

9.5.3.1 This is not affected by the scheme physically but the use may change as a result of changes elsewhere in the network routes.

9.5.4 A23.

9.5.4.1 The length of footway on the east side of the A23 from Handcross Village, on the east side of Brighton Road, along the east of the trunk road as far as the second access to the East Park area would be removed and not replaced. Pedestrian access to the properties at East Park would be via the new means of access from the B2114.

9.5.4.2 There is provision under the scheme for the construction of a combined

cycleway/footpath from Warninglid Junction, where a combined facility already exists, alongside the proposed service road, to Slaugham Junction, adjacent to the northbound carriageway.

9.5.4.3 At Slaugham Junction an existing network of routes exist for both pedestrians and cyclists to continue their journeys on a route of their choice.

9.5.4.4 There clearly is the opportunity for cyclists to continue on the A23 but this would be adjacent to the climbing lane and therefore not of high amenity value. However, the alternatives via the existing network are longer and in some places narrow.

9.5.5 Footpath Slaugham 4

9.5.5.1 The scheme would widen the A23 to 3 lanes in each direction. The improved alignment would allow higher speeds and crossing from Park Road across the A23 to Brighton Road would be even more dangerous. The proposal to stop up the remaining part of the path seeks to reinforce the fact that this route is not safe. The closure also mitigates against the unauthorised dropping of passengers from private cars in the area of the steps. It is considered that the impact of the loss of this path would negligible.

9.5.6 Bridleway Slaugham 7a and 7b

9.5.6.1 The scheme would have no direct impact on this facility but the usage may be change as a result of alterations in other routes. It is considered that there would be the possibility of minor visual impact from the proposed lighting.

9.5.7 Footpath Slaugham 9

9.5.7.1 The effect of the scheme would be to shorten this path by 4.5 metres. The route from the B2114 to the Staplefield Road at Slaugham Junction would be maintained using the path and the grass verge. Visually the proposed cutting at East Park would initially have a significant impact when viewed from approximately the first 200 metres closest to the A23. However this impact would diminish to being similar to the existing after the new planting had matured in about 15 years.

9.5.7.2 It is not known if there are currently any pedestrians who walk along the verges of the A23 between this footpath and Slaugham 14 or Slaugham 15. However, the proposed means of access and combined cycleway/footpath would be an improvement making this link easier and less hazardous.

9.5.8 Footpaths Slaugham 14 and Slaugham 15

- 9.5.8.1 The scheme would widen the A23 to 3 lanes on each carriageway making crossing the A23 at road level unsafe. The construction of a grade separated footbridge or underpass would be both expensive and intrusive, and could not be justified considering the light use of this path. It is not proposed to leave a gap in the central reserve safety barrier.
- 9.5.8.2 It is intended, however, that part of the proposed new means of access, from Staplefield Road to the properties in the Stanbridge area, would be designated a Public Footpath. On the west side of the A23, the proposed combined cycleway and footway would provide a new surfaced pedestrian route between the Staplefield Road and the B2115 Cuckfield Lane at Warninglid Junction. The route would also include access to the eastern end of Footpath Slaugham 14.
- 9.5.8.3 A short length of Slaugham 15 would be stopped up under the Side Road Orders to prevent access to the A23 from the east. Table 9.4 shows the diversion length involved as a result of closing S15 and stopping the crossing of the A23. It is considered that the main use of these footpaths is for recreational use. Given the current safety implications of crossing the A23, the increased distance is considered to be only a slight impact given the benefit of increased safety.
- 9.5.8.4 Visually the impact of the proposals from these footpaths would be slight. Neither path has views southwards, and both have views directly to the road screened by the thick verge/highway boundary vegetation which would be substantially retained. The tops of lighting columns may be visible in places and both paths would have views of the A23 north of the Staplefield Road junction as it climbs Handcross Hill, over which increased scale of the upgraded road would be appreciable. At a range of 700 - 2100 metres the impact would be slight.

9.5.9 Facilities

- 9.5.9.1 The scheme would provide, where required, alternative means of access for those from the A23 that are stopped up, either from new private means of accesses or from the service road.
- 9.5.9.2 The scheme would have no impact on the access to facilities in Handcross Village or Nymans. Handcross Market Gardens does not appear to attract a large amount of traffic. Access to Country Gardens Centre (and its associated facilities), The Happy Eater and Stanbridges Nursery would not be changed in that the facility would still be "left in - left out" .

9.6 SUMMARY

- 9.6.1 The proposed scheme is an "on-line" improvement and therefore there is little disruption to existing routes used by pedestrians. The only exception being the link from Slaugham 14 to Slaugham 15 footpaths which would require a diversion as a result of the stopping up of part of Slaugham 15.
- 9.6.2 Equestrians would not be affected by the scheme since the routes used by them do not cross the A23 at grade.
- 9.6.3 Cyclists would have a designated cycle route between Warninglid Flyover and Slaugham Junction, this being an improvement to the existing situation.
- 9.6.4 In view of the small effect of the scheme on Handcross Village and other local facilities, the overall impact on the community as a whole would be minimal.

TABLE 9.1

PEDESTRIAN JOURNEYS

	TUES	WED	THUR	FRI	SAT	SUN
Slaugham 4	0	1	0	0	4	0
Slaugham 7a & 7b	51	23	37	51	51	124
Staplefield Road	9	5	7	3	7	23
Slaugham 14 & 15	0	0	2	4	0	0
A23 near Garden Centre. (S14 and S15)	0	1	1	0	3	2

TABLE 9.2

EQUESTRIAN JOURNEYS

	TUES	WED	THUR	FRI	SAT	SUN
Slaugham 4	-	-	-	-	-	-
Slaugham 7a & 7b	0	0	0	2	4	6
Staplefield Road	6	6	8	2	0	6
Slaugham 14 & 15	-	-	-	-	-	-
A23 near Garden Centre. (S14 and S15)	-	-	-	-	-	-

TABLE 9.3

CYCLIST JOURNEYS

	TUES	WED	THUR	FRI	SAT	SUN
Slaugham 4	-	-	-	-	-	-
Slaugham 7a & 7b	0	2	3	1	8	24
Staplefield Road	7	5	6	12	15	40
Slaugham 14 & 15	-	-	-	-	-	-
A23 near garden Centre (S14 and s15)	3	0	6	1	13	42

TABLE 9.4

SCHEDULE OF DIVERSIONS

Description of pedestrian journey once the scheme is completed	EXISTING	PROPOSED	INCREASE
Slaugham 14 to Slaugham 15 via proposed cycleway/footpath and means of access	250m	1390m	1140m
Slaugham Village to Slaugham 15 via Staplefield Road and the proposed means of access	1270m	1550m	280m
Slaugham Place to Slaugham 15 via proposed cycleway/footpath and means of access	680m	1850m	1170m

10.0 VEHICLE TRAVELLERS.

10.1 INTRODUCTION

10.1.1 This section of the Statement is concerned with those aspects of the impacts on vehicle travellers that are not included in the cost-benefit analysis as a quantifiable effect.

10.1.2 There are two impacts considered. The first is "The View From The Road" and the second is "Driver Stress"

10.2 VIEW FROM THE ROAD

10.2.1 Figures 5.1, 5.2 and 6.10 show the location of features and chainages referred to in the text.

10.2.2 Handcross To Slaugham Junction

10.2.2.1 Existing Conditions

The northern part of the route is in the Central Weald Plateau (South) zone, and the steep, narrow wooded valley of Orange Gill, which the road descends, is typical of the topography of this area.

10.2.2.2 The mature woodland that bounds both sides of the road prevents extensive lateral views. A brief view southwards across the Ouse Valley is gained along the line of the road from the vicinity of Handcross Junction, but this is soon blocked by the canopy of the trees in the central reserve and by the bends in the road at East Park.

10.2.2.3 The woodlands on both sides comprise mostly mature deciduous species which form an attractive enclosure to the road. The sense of enclosure is emphasised on the section opposite East Park by the line of trees along the central reserve which, because they screen traffic on the opposite carriageway, effectively reduce the apparent scale of the route to that of a single carriageway road.

10.2.2.4 The only elements that detract from the view from the road are sections of verge where the grass has been destroyed by traffic. This is most noticeable on the west verge, where an extensive section of the broad verge is used as an informal extension to the lay-by which is frequently occupied by a snack bar, but also occurs on the east verge adjacent to the entrances to East Park.

10.2.2.5 *Impact*

The proposals would cause disturbance to the woodlands and verge vegetation on both sides of the road.

10.2.2.6 Between chainage 200 and 350, where the realignment of the northbound slip road to Handcross would result in the loss of the hedgerow along the west verge, the view north-west from the A23 would extend across an open area of recently felled woodland and allotments to the housing at the west end of the village.

10.2.2.7 Between chainage 1230 and 1540, the straightening of the A23 and the realignment of the southbound slip road at Slaugham Junction would result in the loss of the existing hedgerow along the east verge.

10.2.2.8 The realignment of the carriageways would require the removal of the mature trees from the central reserve.

10.2.2.9 *Mitigation*

Generally the effect would be of scarring to the edge of the canopy that would be reinstated by planting, and the view out from the road would not be affected. Over two sections, however, the disturbance would open up views out from the road.

10.2.2.10 Between chainage 200 and 350, it is proposed to plant a broad woodland screen along this section of the boundary which, when mature, would close off this view, and the long term effect would therefore be similar to the present.

10.2.2.11 Between chainage 1230 and 1540 an attractive view of the fields surrounded by mature woodland that lie to the south of East Park would be opened up. The cutting slopes, which would be planted with trees and shrubs to restore the woodland edge and screens to East Park House, would close off the view along the northern half of this section, but the southern half would be planted with a clipped hedge. This would maintain a view out from the road in a north-easterly direction that would be appreciated by travellers on the northbound carriageway.

10.2.2.12 The removal of the mature trees from the central reserve would increase visibility along the line of the route. Looking uphill in a northbound direction the view would generally be contained by the adjacent woodland, therefore the effect would be to emphasise the impact of the increased scale and altered character of the road. In a southbound direction, however, travellers descending Handcross Hill would have an attractive view across the Ouse Valley.

10.2.3 Slaugham Junction To Warninglid

10.2.3.1 *Existing conditions*

The southern part of the route is in the Weald-Intermediate zone, and the undulating landform, wooded slopes and hedgerowed fields of the land adjacent to the A23 are typical of the topography of this area.

10.2.3.2 Although the countryside along this part of the route is more open than that to the north, views out from the road are generally restricted by the mature hedgerows on both sides and it can only be glimpsed intermittently through small gaps.

10.2.3.3 Between Slaugham Junction and the Happy Eater restaurant, because the A23 is generally at a low level, where they do occur, the range of view is generally limited by rising ground and by hedgerows bordering the fields immediately adjacent to the road. Where the road crosses the east ridge of Mill Hill, however, the elevation allows forward views in both directions.

10.2.3.4 The view northbound is the more attractive because the A23 bends out of sight beyond Slaugham Junction, and it is the woods and parkland of the southern slopes of Handcross Hill that dominate.

10.2.3.5 In relative contrast, the A23 remains conspicuous in the view southwards (particularly the recently completed widening south of Stanbridge View), and the commercial developments on the west side detract from the otherwise undeveloped countryside adjacent to the road.

10.2.3.6 South of the Happy Eater the A23 climbs to cross the ridge of high ground that forms the southern watershed of the Ouse valley. Views to the west are restricted by the face of road cuttings and hedgerows on the highway boundary or by the mass of Anne's Wood. To the east, however, the vegetation on the highway boundary consists only of a clipped hedge and the road's elevation, especially where it is on an embankment, affords broad and attractive views out in a northerly to easterly direction across the valley to the hills of the High Weald.

10.2.3.7 *Impact*

Between Slaugham Junction and the Happy Eater restaurant, although generally the proposals would not disturb the boundary hedgerows, the loss of several areas of vegetation within the highway boundary would reduce their screening effect.

10.2.3.8 The forward view to the north from the road as it crosses the east ridge of Mill Hill would be affected by the loss of trees from the central reserve and by the straightening of the bends opposite East Park, which would

make the road corridor more prominent as a break in the woodland canopy of Handcross Hill, as well as by the intrusion of lighting columns in the foreground. Although the quality of the road corridor would be reduced, these changes would not significantly diminish the traveller's appreciation of the high quality of the surrounding landscape.

- 10.2.3.9 The view south from Mill Hill ridge would be less changed, except that the altered vertical alignment to improve forward visibility would emphasise the increased scale and changed character of the road, and the lighting columns would be intrusive.

10.2.3.10 *Mitigation*

Between Slaugham Junction and the Happy Eater restaurant, although generally the proposals would not disturb the boundary hedgerows, short term this would have the effect of opening up attractive intermittent views from the road over the adjacent farmland, especially between Slaugham Junction and Anne's Wood Stream to the east and between Slaugham Junction and the east ridge of Mill Hill to the west. Since these sections are overlooked from properties, 10 metre wide planting strips are proposed to screen the road which, when mature, would block off these views and the long term effect would therefore be similar to the present.

- 10.2.3.11 A 10 metre wide planting strip would also be provided to reinforce the existing clipped hedge along the eastern boundary between the Stanbridge area and Stanbridge Stream to screen the road from the group of properties in the Stanbridge area. South of Stanbridge Stream however, because the road is not overlooked, the boundary treatment would continue to be limited to a clipped hedge so as to maintain the broad views over the Ouse Valley that are to be had from the A23 as it climbs towards Warninglid Junction.

10.2.4 Summary

- 10.2.4.1 The road passes through attractive countryside that is typical of the St Leonard's Forest district of the High Weald Area of Outstanding Natural Beauty. With the exception of the open view north-eastwards across the Ouse Valley from the section between the Happy Eater restaurant and Warninglid Junction, views from the road are restricted to intermittent glimpses through the areas of woodland and hedgerows that border both sides of the road.

- 10.2.4.2 Disturbance to the vegetation resulting from the works would initially open up some views over the adjacent fields, but generally the proposed planting, designed to screen the road from neighbouring property, would when established block off those views and in the long term the effect would be similar to the present.

- 10.2.4.3 An exception would be to the east, just north of Slaugham Junction, where the removal of the trees from the central reserve and the provision of a clipped hedge would open up a view from the northbound carriageway to the tree enclosed fields south of East Park House.
- 10.2.4.4 The removal of the central reserve trees, together with the realignment of the carriageways would open up visibility along the line of the road corridor. Although the general effect of this would be to emphasise the changed character and increased scale of the road, it would also permit more of the countryside to be seen. In particular, the view south when descending Handcross Hill would allow an appreciation of the attractive landscape of the Ouse Valley.
- 10.2.4.5 The provision of lighting columns would be an intrusive element in the foreground of the view from the road by day, and by night the visibility of the generally unlit countryside would be restricted by the relatively high level of illumination of the road corridor. At both times the provision of continuous lighting along the A23 would detract from the present experience of passing through the special landscape of the AONB in contrast to other less rural sections of the route.

10.3 DRIVER STRESS

10.3.1 Introduction

- 10.3.1.1 Research has shown that driver stress has three main components; frustration, fear of potential accidents, and uncertainty relating to the route being followed.
- 10.3.1.2 Frustration is caused when a driver is unable to drive at the speed that he or she wishes to, in relation to the general standard of the road. A decrease in the average speed of vehicles on a road may be due to high flows, intersections, roadworks or difficulties in overtaking vehicles. Congestion can lead to frustration by a creating situation in which the driver does not feel in control.
- 10.3.1.3 The main factors leading to fear are the presence of other vehicles, inadequate sight line distances and the likelihood of pedestrians stepping into the road. Fear is highest when speeds, flows and the proportion of heavy goods vehicles are all high. A road scheme might increase driver fear to some extent because it could increase traffic speeds. However, this increased perception of danger is likely to be offset by the superior design standards to which the new scheme would be built.
- 10.3.1.4 Route uncertainty is caused primarily by signing that is inadequate for an individual's purpose. Good design and layout of signs can go a long way towards eliminating this cause of stress.

10.3.1.5 The method of assessing driver stress is that set out in Volume 11 of the Department of Transport's "Design Manual for Roads and Bridges" Section 3, Part 9 - "Vehicle Travellers".

10.3.1.6 The methodology relates driver stress to the average journey speed and traffic flow in flow units per hour per lane. One flow unit is defined as a car or light van. Commercial vehicles over 1½ tons unladen or a public service vehicles equal 3 flow units.

10.3.2 Existing conditions

10.3.2.1 An assessment has been made of driver stress for the existing road and for the scheme in the year 2012.

10.3.2.2 Peak hour flows and speeds have been used for the assessment.

10.3.2.3 Tables 10.1 to 10.4 show the results of the assessment for different sections of the existing road in 2012. A section of the road falls into a particular stress category, either because of the average journey speed or the flow units, or a combination of both. The shading shows how a section of road falls into a particular stress category.

10.3.2.4 All sections of the existing road are classified as giving high driver stress. This due to the high predicted traffic flows per lane, leading to low average speed of between 60kph and 80kph, and the consequent driver frustration.

10.3.3 Impact

10.3.3.1 Tables 10.1 to 10.4 show the results of the assessment for the 4 main sections of the scheme in 2012.

10.3.3.2 The majority of the scheme would be classified as giving high driver stress and this is mainly due to the high predicted traffic flows. However, the additional lane and the improved horizontal and vertical alignment gives an average speed of above 80 kph, raising fear of accidents and also contributing to driver stress. The northbound carriageway between Slaugham Junction and Handcross is classified as giving moderate driver stress, this being due to slightly lower flows per lane than on other sections.

10.3.4 Summary

10.3.4.1 Whilst the analysis shows the improvement would cause a change in classification for only one of the four major sections of the improvement (due to the climbing lane), the reduction in flow per lane to two thirds or less of its original value is quite dramatic and much improved compared to the existing road.

- 10.3.4.2 There can be no doubt that the improvement, which brings the road geometry up to an acceptable standard, can only improve the situation for the driver.

10.4 SUMMARY OF IMPACT ON VEHICLE TRAVELLERS

10.4.1 View from the Road

- 10.4.1.1 Disturbance to the vegetation would result from the scheme, initially opening up some views. However, the proposed planting, designed to screen the road from neighbouring property, would when established block off these views and in the long term the effect would be similar to the present.
- 10.4.1.2 An exception would be just north of Slaugham Junction where a view from the northbound carriageway to the tree enclosed fields south of East Park would be opened up. In addition the removal of the central reserve trees would emphasise the changed character and increased scale of the road as well as open up a view south across the landscape of the Ouse Valley to the benefit of drivers.

10.4.2 Driver Stress

- 10.4.2.1 The level of driver stress for the scheme remains largely unchanged in comparison to the existing road. The additional lanes would reduce the flow per lane to two thirds of its existing value. This, combined with the improved geometry, can only improve the situation for the driver and hence be a significant benefit.

11.0 WATER QUALITY AND DRAINAGE

11.1 INTRODUCTION

- 11.1.1 The Government sets standards for water quality and is committed to maintaining and where justifiable, improving the water quality.
- 11.1.2 The National Rivers Authority (NRA), which was established by the Water Act 1989, is the regulatory body responsible for the approval of drainage schemes where their interests may be affected.
- 11.1.3 The NRA have been consulted during the design of the system for this scheme and, where appropriate, their requirements have been included.
- 11.1.4 The drainage scheme has been designed to cope with a 1 in 5 year storm (for highway drainage) and 1 in 50 years for the box culverts under the A23.

11.2 EXISTING CONDITIONS

11.2.1 Highway drainage

- 11.2.1.1 The drainage of the existing highway, whilst apparently working efficiently, is capable of improvement.
- 11.2.1.2 The highway drainage appears to flow, treated only by the trapping effects in gulley pots, directly into the adjacent watercourses.
- 11.2.1.3 There is no apparent attempt to limit the discharge rates, which must encourage scour in watercourses under storm conditions.
- 11.2.1.4 From Horsham Road Bridge, at Handcross Village, southwards for approximately 50 metre the carriageway drainage has recently been renewed as part of the A23 Pease Pottage to Handcross Improvement. Both carriageways are kerbed and the surface water is collected by gullies and the sub-surface drained by filter drains, all of which connect into an existing manhole in the central reserve at chainage 50.
- 11.2.1.5 From Horsham Road Bridge there is approx 650 m of french drain in the centre reserve. There are also lengths of french drain in both east and west verges for 300 m south of the merge/diverge area. The outfall of these is not known.
- 11.2.1.6 From chainage 1200 to 1290 there is a length of french drain in the southbound verge. The outfall of this is unknown.
- 11.2.1.7 Over the length from Horsham Road bridge to Slaugham Junction the carriageway is drained by top entry gullies but the outfall of these is not

known.

- 11.2.1.8 From Slaugham Junction to the southern limit of the scheme, the existing carriageways are drained by top entry gullies which appear to be connected to a carrier drain on the west side for the length from Anne's Wood Stream southwards. Over the other section of the road the drainage paths are unknown.

11.2.2 Watercourses

- 11.2.2.1 The River Ouse is the main watercourse in the area. It flows west to east draining the area from Handcross Village in the north to Lower Beeding in the west and Warninglid in the south. This is illustrated on Figure 11.1. The river passes through a culvert beneath the A23 south of Slaugham Junction. The culvert is constructed of stone walls 0.8 metres high supporting a 1.15 metre span brick arch, and has been extended east and west by 1.5 metre diameter concrete pipes. Brick manholes are located where the culvert changes direction.
- 11.2.2.2 The character of the river in this area is that of a small stream between 1.5 and 2.5 metres wide flowing through farm land. The banks are mainly tree lined and the bed is generally 1m below field level. Some areas are overgrown and waterlogged land exists where fallen trees have blocked the flow. Debris in the river is a problem as it can block the centre of the culvert and cause flooding upstream.
- 11.2.2.3 Anne's Wood Stream drains a sub-section of the Ouse catchment area to the north of Warninglid Village (see Figure 11.1). It also passes under the A23 through a culvert, just north of the garden centre. This culvert also consists of 3 sections, with one intermediate manhole. The construction is 0.9 metre diameter concrete pipes. It also suffers from blockage by water borne debris. The stream is of similar character to the River Ouse but on a slightly smaller scale.
- 11.2.2.4 Orange Gill is a small stream which issues to the west of Handcross Village (see Figure 11.1) in a valley which runs south, parallel to the A23, joining the Ouse some 100m upstream of the culvert on the A23. On its eastern side it is also fed by flushes from water bearing strata and pipes from what appears to be the existing drainage system. A feature of the Gill is a pond just north of Staplefield Road and it is also notable for its sequence of pools and faster-flowing cascades.
- 11.2.2.5 East Park Stream and Stanbridge Stream (see Figure 11.1) also drain sub-sections of the Ouse catchment area but are not affected by the proposed improvement to any great extent.

11.2.3 Water quality

- 11.2.3.1 The National Rivers Authority, which tests all river water for Quality, has a sampling point approximately 1 km downstream of the A23 at Stanbridge Bridge. (see Figure 11.1)
- 11.2.3.2 The classification of the River Ouse is 1b which is "good" and would therefore meet the standard for a "Cyprinid River" under the EC Fish Directive (1978). This is achieved despite the apparent inclusion of untreated highway drainage water.

11.3 IMPACT AND MITIGATION

11.3.1 Highway drainage

- 11.3.1.1 The entire drainage system for the scheme would be designed to have a low impact on the adjacent area by taking all the carriageway surface water through bypass interceptors and reed beds before discharging into the watercourses (see Figure 11.2). This would reduce the danger from accidental contamination and also improve the existing situation by treating the carriageway run-off.
- 11.3.1.2 The method of carriageway drainage proposed is open channels and carrier drains, with fin drains for sub-surface water.
- 11.3.1.3 Surface water run-off from embankment slopes and verges, and ground water would not be treated. This water would be allowed to discharge directly to the existing water courses. Figure 11.2 shows the outfall locations.

11.3.2 Water courses

- 11.3.2.1 The design of the reed beds would include storage capacity reducing the flow from the highway drainage under storm conditions.
- 11.3.2.2 The River Ouse culvert would be replaced as part of the works with a 2.1 metre x 1.5 metre box culvert and re-aligned to reduce the likelihood of blockage by debris. During construction there may be some silt disturbed which would wash downstream. Screens are not proposed as these can cause water levels to rise upstream if they are not regularly cleared
- 11.3.2.3 Anne's Wood stream culvert would be replaced as part of the scheme with a 1.5 metre x 1.2 metre box culvert and re-aligned to reduce the likelihood of blockage by debris. During construction there may be some silt disturbed which would wash downstream. Screens are not proposed as they can cause more problem than they solve.
- 11.3.2.4 The flows in Orange Gill are likely to be reduced by the scheme as none

of the highway drainage would be allowed to enter it but all existing pipes and flushes would be maintained to keep the flow as high as possible. The flow south of Staplefield Road would not suffer such a large change as the outfall from the reed beds joins the stream at this point.

- 11.3.2.5 East Park Stream would be largely unaffected by the scheme although the lower reaches, before the junction with the River Ouse would have an increased flow due to the reedbed outfall in that area. The ditch of this stream would need to be cleared and re-cut to cope with this increased flow.
- 11.3.2.6 Stanbridge Stream would only be affected by the proposals in that the highway drainage, from the scheme to the south would be diverted under the A23 to the reed bed adjacent to the Garden Centre Stream. Ground and embankment run-off water from the eastern side of the road would join the stream at the highway boundary.
- 11.3.2.7 A reedbed outfall is proposed into the Garden Centre Stream west of the A23. The change in the flows in this stream is likely to be more dramatic than in those previously mentioned, as currently it appears to issue from a point on the highway boundary and has a shallow gradient. The ditch of this stream would therefore need to be cleared, re-cut and regraded to cope with the increased flow.

11.3.3 Water quality

- 11.3.3.1 Whilst the analysis of the water shows no abnormal levels of chemical pollution. The addition of bypass interceptors and the reed beds to treat highway run-off must improve the overall quality of the water by reducing the pollutants to even lower levels. The enhancements provided also afford a degree of protection against accidental spillage.

11.4 SUMMARY

- 11.4.1 The overall effect of the scheme, whilst potentially increasing the likelihood of problems due to scour by reason of the improved pipe system and increased carriageway area, has an overall beneficial effect.
- 11.4.2 All highway run-off is treated by bypass interceptors and reed beds before entering the watercourses.
- 11.4.3 Reduction of flows under storm conditions would be achieved by the provision of storage in the reed beds.
- 11.4.4 Dry weather flows into Orange Gill would, where possible, be maintained by the maintenance of existing pipes and by allowing all embankment and verge run-off, and groundwater to discharge directly into Orange Gill or one of its tributaries.

11.4.5 Volume 2, Section 5.0 describes the effect of the scheme on ecology and nature conservation value of the watercourses in the area.

12.0 GEOLOGY AND SOILS.

12.1 INTRODUCTION

12.1.1 Soils and geology play an important part in determining the environmental character of an area. Rocks have a major influence on the land form as well as providing the parent material from which soils are created. Soil chemistry and structure strongly influence the type of vegetation which occurs naturally in an area. In addition, the soil would also have a considerable influence on the types of agricultural and horticultural practices an area can support. An assessment has been made of the potential impacts of the scheme on both the soil and underlying rocks in the area.

12.2 GEOLOGY AND SOILS OF THE AREA

12.2.1 The scheme lies within the geographical area known as the Weald (see Figure 12.1), which is considered to be the region between the chalk escarpments of the North and South Downs. Geologically, the Weald comprises the two Wealden clay Vales of Sussex and Kent and the intervening sandstone ridge composed of the Hastings Beds.

12.2.2 Within the study area (see Figure 12.2) two broad belts of distinctive scenery may be recognised, each reflecting the local geology, namely the undulating area of the High Weald and more gentle lowland area of the Weald Clay.

12.2.3 High Weald

12.2.3.1 The first of these belts in the north of the study area (see Figure 12.2) corresponds to an outcrop of Hastings Beds, comprising Upper Tunbridge Wells Sand, Cuckfield Stone Lower Tunbridge Wells Beds, Wadhurst Clay and Ashdown Beds. At Handcross Village the Hastings Beds reach 145 metres above sea level. The ground slopes south and south-westwards from here, the Hastings Beds outcrop being characterised by rolling country with deeply incised, steep sided wooded valleys.

12.2.3.2 The sandy formation of Hastings Beds give rise to generally well drained, light silty to sandy soils as well as pockets of clay and silty clay. Many of these soils are covered by areas of woodland, although they also provide good arable land. The River Ouse valley contains alluvial deposits consisting of clayey silts, silty clays and gravels.

12.2.3.3 Both the South Petherton and Curtisden soil associations are located in this area. The South Petherton Association is particularly important as it only covers an area equivalent to 14% of the land surface of England and Wales.

12.2.4 Weald Clay

12.2.4.1 The land on the Hastings Beds outcrop falls away gently to the second area of scenery, which is a broad belt of lowland marking the outcrop of Weald Clay. This comprises Upper Weald Clay, Horsham Stone, Lower Weald Clay and Grinstead Clay.

12.2.4.2 The Weald Clay gives rise to slightly undulating country, sloping gently south-south-westwards. Locally, thin beds of limestone (Sussex Marble), ironstone and sand form minor scarps. Soils tend to be fine silt over clay, fine loam over clay and clay. Much of the Weald Clay area is used as pasture land.

12.2.4.3 Wickham 1 soil association is located in this area.

12.2.5 Geological Structure of the Area

12.2.5.1 Geological maps show extensive faulting over the southern part of the study area. There are two faults trending east-west, the North Boundary and South Boundary faults (see Figure 12.2) which are connected by minor faulting.

12.2.5.2 The North Boundary Fault crosses the A23 just south of Country Gardens and marks the geological boundary between the Upper Tunbridge Wells sand to the north and Weald Clay to the south. This fault is associated with the occurrence of several clay pits from which ironstone was extracted.

12.2.5.3 The South Boundary fault crosses the A23 just north of the Southern limit of the scheme. This fault marks the geological boundary between the Weald Clay in the north and Lower Grinstead Clay and Cuckfield Stone to the south.

12.2.6 SSSI and RIGS Designated Areas

12.2.6.1 The study area does not contain any designated geological or geomorphological sites of Special Scientific Interest or Regionally Important Geological Sites.

12.2.7 Hydrogeology

12.2.7.1 The River Ouse supplies water to a pumped storage reservoir downstream of the study area at Barcombe. Approximately 30,000 cu m /annum of groundwater is abstracted from the Tunbridge Wells Sand, although no licensed abstraction points are located in the study area.

12.3 SCHEME IMPACT ON GEOLOGY AND SOILS

12.3.1 The impact of the scheme in relation to geological formations and soils is discussed with reference to Figure 12.2 where the sections are shown.

12.3.2 Section A-A

12.3.2.1 The existing A23 runs in cutting at the A279 Horsham Road bridge in Handcross Village, the Upper Tunbridge Wells Sand being exposed. This formation comprises alternating beds of sand, friable sandstone, coloured silt and sandstone. In some areas a 600mm seam of pale grey clayey silt is exposed. The soils in section A-A tend to be pale buff and grey silts becoming red in colour with depth overlying Upper Tunbridge Wells Sand. Towards the southern end of this section the soils comprise red and buff coloured clay.

12.3.2.2 It is anticipated that the scheme would involve some additional cutting slopes in the Tunbridge Wells Sand adjacent to the main alignment and in connection with improved slip roads. These are expected to be no deeper than 1.5m with cut faces of 45 degrees. In areas where land take is restricted due to the proximity of property boundaries, it is envisaged that retaining walls would be provided.

12.3.3 Section B-B

12.3.3.1 This section comprises fine to medium grained sandy loams overlying Upper Tunbridge Wells Sand. The east slope of Orange Gill comprises red and buff coloured silty clay.

12.3.3.2 The greatest geological impacts occur within this section. In the north of section B-B it is expected the scheme would be constructed on a shallow embankment with 45 degree slopes. The existing road is also constructed on shallow embankment and therefore construction would involve a small amount of embankment extension using reinforced soil techniques. The shallow embankment would be constructed directly on Upper Tunbridge Wells Sand and in places areas of clay and silt overlying Upper Tunbridge Wells Sand.

12.3.3.3 Adjacent to West Park the existing northbound carriageway is on an embankment, approximately 5.0 - 7.0m high with 60 degree slopes. It is anticipated that the scheme would require an extension to this embankment westwards over the west facing slope of Orange Gill. The embankment would be constructed using reinforced soil techniques and may have a temporary effect on groundwater draining into Orange Gill.

12.3.3.4 Adjacent to East Park it is anticipated that a 300 metre long section of cutting would be required in order to accommodate the alignment of the scheme. The cutting would have a maximum depth of approximately 7m

with 45 degree slopes, and would involve excavation of the Upper Tunbridge Wells Sand and in some areas, medium grained sandy loam overlying Upper Tunbridge Wells Sand. The work may cause local disturbance to groundwater conditions in the upper part of the Tunbridge Wells Sand.

12.3.4 Section C-C

12.3.4.1 The soils in Section C-C comprise sandy loam containing many hard iron bearing sandstone fragments overlying the Upper Tunbridge Wells Sand at shallow depth.

12.3.4.2 It is anticipated that the scheme would follow closely the existing alignment north of Slaugham Bridge, the northbound carriageway being constructed on low embankment. It is expected that Slaugham Bridge would be widened in order to accommodate the carriageways and slip roads, and therefore excavation or piling may be required in Upper Tunbridge Wells sand.

12.3.5 Section D-D

12.3.5.1 The soils in this section comprise of clay and silts overlying Upper Tunbridge Wells Sand. The slopes of the River Ouse valley comprise orange mottled pale grey clayey silt, overlying fine orange blocky sandstone. The valley floor comprises deposits of silty clays, silts, sand and fine gravel.

12.3.5.2 It is envisaged that the scheme would descend southwards from Slaugham Bridge onto a shallow embankment as the River Ouse passes beneath the road in a new culvert. Construction works would locally affect the alluvial deposits associated with the River Ouse flood plain and may cause local turbidity and sedimentation of the River Ouse downstream.

12.3.6 Section E-E

12.3.6.1 Section E-E represents an area of higher ground forming an interlocking spur between Anne's Wood Stream to the south and the River Ouse to the north. South of the River Ouse the soils comprise clays and silty clays overlying Upper Tunbridge Wells Sand. At the top of the interlocking spur the soils comprise sandy loam containing slabby clay ironstone and fine orange sandstone blocks. The sandy loam soils on the south dip slope of the interlocking spur contain numerous blocks of dark brown fissile, iron bearing sandstone.

12.3.6.2 It is expected that the scheme would be constructed in shallow cutting with 45 degree slopes in the higher ground of the interlocking spur.

12.3.7 Section F-F

- 12.3.7.1 This section is associated with the valley of Anne's Wood Stream, which flows in a south-west to north-east direction to join the River Ouse. The soils in the valley tend to comprise orange mottled pale grey silt overlying slabby clay ironstone, overlying Upper Tunbridge Wells Sand.
- 12.3.7.2 It is expected that Anne's Wood stream would be realigned in a new culvert in a shallow embankment beneath the road. Construction works would involve disturbance of the alluvial deposits of Anne's Wood stream and may cause local turbidity and sedimentation of the stream.

12.3.8 Section G-G

- 12.3.8.1 The soils of the north part of the Section G-G comprise sandy loam overlying Upper Tunbridge Wells Sand. Immediately south of Country Gardens the North Boundary Fault marks the geological boundary of the Upper Tunbridge Wells Sand to the north and the Weald Clay to the south. Small outcrops of Horsham Stone occur along the North Boundary fault in this area. The soils associated with the Weald Clay outcrop tend to be heavy clay soils containing clay ironstone nodules. South of the Happy Eater there is an outcrop of Horsham Stone, having a north facing dip slope, and an escarpment at its southern boundary.
- 12.3.8.2 Immediately, south of the South Boundary Fault there is an area of Cuckfield Stone with possible areas of Upper Grinstead Clay and Lower Grinstead Clay to the west and east sides of the existing carriageway respectively.
- 12.3.8.3 It is envisaged that the scheme would continue southward from Anne's Wood Stream at grade then gradually rising to a shallow embankment leading to a cutting and the southern extent of the scheme.

12.4 SUMMARY

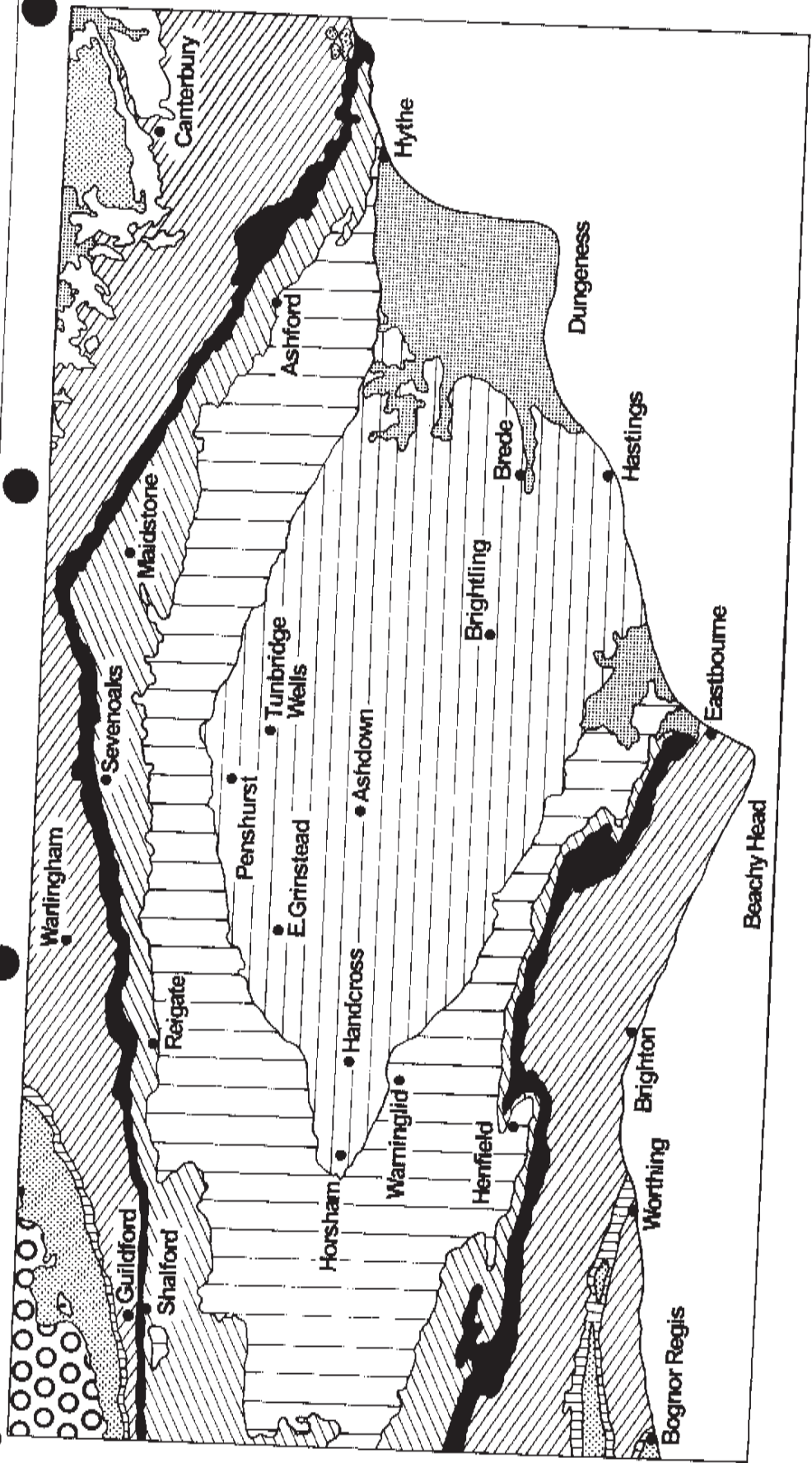
- 12.4.1 There are sections of cut required at Handcross and adjacent to East Park and Upper Tunbridge Wells Sand would be exposed in these locations. However, it is expected that the cut faces would be planted with trees and bushes.
- 12.4.2 The construction of an embankment adjacent to West Park would impose a surcharge on the Upper Tunbridge Wells Sand and overlying clay. This may temporarily effect groundwater flow patterns into Orange Gill stream but would not affect the use of Upper Tunbridge Wells sand as an aquifer.
- 12.4.3 It is anticipated that where possible the scheme would remain within the limits of the existing highway boundary. However, there are locations where the horizontal and vertical alignment of the current road would be improved and the scheme would fall outside the existing highway boundary. In addition it is expected that land would be

required for landscaping, in order to mitigate the overall impact of the scheme. This would result in the loss of nearly 4 hectares of land containing soils of agricultural value.

12.4.4 Overall the impact of the scheme on the geology and soils of the area would be minimal.

GEOLOGICAL SKETCH MAP OF THE WEALD AND NEIGHBOURING AREAS

Figure 12.1



- | | | | |
|--|-----------------------------------|--|----------------|
| | Alluvium | | Weald Clay |
| | Lenham Beds, Netley Heath Beds | | Hastings Sands |
| | Bracklesham and Bagshot Beds | | Purbeck |
| | London Clay | | |
| | Woolwich, Reading and Thamet Beds | | |
| | Chalk | | |
| | Gault and Upper Greensand | | |
| | Lower Greensand | | |

13.0 POLICIES AND PLANS.

13.1 INTRODUCTION

13.1.1 Generally

13.1.1.1 The development plan system provides the basis on which decisions about the development and use of land are made. Development plans are prepared by local planning authorities within the framework of national and regional policies and any strategic planning advice.

13.1.1.2 There are important interactions between transport and land use policies at County and District Council levels.

13.1.2 Local Authorities

13.1.2.1 The study is located entirely within the boundaries of West Sussex County Council and Mid Sussex District Council. The policies of these councils are reviewed by reference to the Structure Plan and Local Plan respectively. The current Structure Plan is the 1993 update. The current Local Plan was adopted in 1992.

13.1.2.2 Edited extracts of policies are given, of those considered potentially to be relevant to an on-line improvement of the A23, which are accompanied by comment as to their likely influence.

13.1.2.3 Information contained on the Key Diagram that is published with the Structure Plan, and Proposals Map that is published with the Local Plan, has been shown as Figure 13.1: Policies and Plans Map.

13.2 WEST SUSSEX COUNTY COUNCIL - STRUCTURE PLAN 1993

13.2.1 The relevant policies are given in the chapters on General Strategy, the Countryside, the Built Environment, Transport and Waste Disposal.

13.2.1 General Strategy ('G' Policies)

13.2.1.1 Policy Number: G1

Summary Great weight is to be attached to protecting and improving the rural environment, and great care to be taken to maintain the attractiveness of the county.

Effect The alignment of the published route was selected and the design of the scheme and mitigation measures have been developed to reduce the environmental impact of the proposals.

The drainage scheme would improve water quality and protect the aquatic environment of the areas of Special Nature Conservation Interest.

13.2.1.2 *Policy Number: G4*

Summary Infrastructure, such as transport networks, is to be in place before development is normally permitted.

Effect Handcross to Warninglid is the only section of the A23 between the M23 and Brighton that has not been improved. The present alignment and carriageway provision is inadequate for existing traffic volumes. The improved road would support the development policies for the County.

13.2.1.3 *Policy Number: G8*

Summary Development of an integrated transportation network is necessary to provide safe and adequate means of travel for people and the movement of freight. A particular objective is to improve accessibility between the Coastal Districts and Central Sussex.

Effect The scheme would have sufficient capacity to meet high traffic growth predictions up to the year 2013, relieving congestion and delays and improving safety. Access between the Coastal Districts and Central Sussex would be improved.

13.2.2 **The Countryside (C Policies)**

13.2.2.1 *Policy Number: C1*

Summary Generally the countryside is to be protected from development. Where development is to take place in the countryside, the land taken should be kept to the minimum necessary to achieve a quality environment.

Effect The scheme involves the on-line improvement of an existing major road through the countryside.

Relatively small amounts of land outside the highway boundary would be required. The extent of landtake has been limited in certain areas by the use of retaining walls and 60° reinforced earth embankments. Most of the land to be taken is needed to carry out landscaping, or to construct alternative access routes and drainage treatment areas to mitigate the environmental effect of the scheme.

13.2.2.2 *Policy Number: C2*

Summary Development, including roads, that would be harmful to the visual quality, distinctive characteristics and quiet enjoyment of the Areas of Outstanding Natural Beauty should only be allowed if essential.

Effect Effect of the scheme on the landscape character and quality of the area of the High Weald Area of Outstanding Natural Beauty through which it passes, would be slight.

The scheme is necessary because the present alignment and carriageway provision is inadequate to meet existing and predicted traffic volumes.

13.2.2.3 *Policy Number: C3*

Summary Only in compelling circumstances would development be permitted which affects SSSIs or other sites of nature conservation importance.

Effect There are no SSSIs in the immediate vicinity of the scheme or which would be likely to be affected by the scheme. There would be a landtake of 0.082 hectares from Orange Gill Site of Nature Conservation Importance (SNCI) which is an area of Semi-natural Ancient Woodland. No rare or protected species would be affected and the relatively small area lost would not be critical to the viability of the remaining woodland. The alignment of the published route and development of the scheme design has sought to reduce the impact on this area. Woodland management and planting would be undertaken to restore the woodland edge. The drainage proposals would maintain the existing hydrological features of Orange Gill and protect the watercourses from pollution from the highway.

13.2.2.4 *Policy Number: C4*

Summary Only in compelling circumstances would development be permitted on the best quality agricultural land.

Effect The scheme would result in the loss of a total of 3.858 hectares of agricultural land. Of this total 1.736 hectares is Grade 3 and 2.122 hectares is Grade 4. No information regarding the subdivision of Grade 3 land into sub-grades 3a and 3b was available from MAFF.

13.2.2.5 *Policy Number: C7*

Summary Importance is attached to the need to safeguard agricultural and horticultural production and forestry.

Effect The effect of the loss of land on individual farms would be slight. New means of access have been proposed where necessary to replace existing direct accesses from the A23.

None of the woodland adjacent to the road is commercial forestry.

13.2.2.6 *Policy Number: C14*

Summary

Particular care is to be taken to protect AONBs, SSSIs and other sites of natural conservation importance. The practical measures to be taken would include:

- (1) The conservation of woodlands, trees and hedgerows.
- (2) The conservation of significant wildlife corridors.
- (3) The creation and conservation of local nature reserves.
- (4) Promotion of tree planting, especially broadleaves.
- (5) Screening eyesores.
- (6) Landscaping new roads appropriately and managing existing highway land for amenity and nature conservation.
- (7) Encouraging private and voluntary countryside management and improvement schemes.
- (8) Conserving historic features including archaeological sites.

13.2.2.7 *Nature Conservation Effects*

The alignment of the published route was selected and the design of the scheme has been developed to reduce its impact on areas of nature conservation importance. The most significant nature conservation impact would be the loss of approximately 1.419 hectares of mature woodland, especially the area of semi-natural ancient woodland of West Park that forms part of Orange Gill SSSI. The loss of other less mature woodland, hedgerows and verge vegetation would also be significant because these areas form an edge to, or link together the areas of ancient woodland and are therefore an integral part of the overall habitat. The loss of mature trees from the central reserve would be of minor ecological significance. Woodland management and extensive planting using native species is proposed to restore the woodland edge and create wildlife corridors. In some situations the proposals would result in long term nature conservation benefits. Two tunnel crossings and fencing would be provided to protect wildlife from road accidents without disrupting their traditional routes.

The proposed drainage system would improve water quality in the streams and protect the environment of the areas of special ecological interest from pollution. The reedbeds would create a useful additional habitat.

13.2.2.8 Landscape Effect

Because the scheme is an "on-line" improvement and would necessitate only limited disturbance beyond the present boundary, the impact on the landscape character would be slight. The main effect would be of scarring to the edge of the woodlands when viewed from within the road corridor. The woodland edge would be restored, if agreement can be reached with the affected landowners, by tree surgery and under planting of the exposed margins. The realignment of the carriageways at East Park and the loss of mature centre reserve trees would accentuate the line of the road through the woodlands of Handcross Hill when viewed from the south only. Except for a few properties immediately adjacent to the road, the visual impact of the scheme would only be slight. Substantial areas of additional planting are proposed that, when established, would screen the road more effectively than at present. All planting would be carried out using native species to create a natural appearance in keeping with the surrounding woodlands. During daytime the lighting columns would only be visible from a few properties close to the road, but at night the lighting would be visible from a wider range and would detract from the rural character of the area. Full cut-off lanterns would be used to reduce glare and lightspill.

13.2.2.9 Heritage Effect

An area of land owned by the National Trust would be disturbed at East Park. It is not, however, a part of Nymans Estate that is of special heritage value and the Trust has stated that it would not object in principle to the Department of Transport buying the land. The scheme would have no direct impact on known sites of archaeological or heritage interest. There would be some visual impact on some of the sites of heritage importance. The effect, however, would be limited to a slight reduction of the amenity of the sites and would not significantly alter their historic setting. Where practicable additional planting is proposed to screen the road.

13.2.3 The Built Environment ('B' Policies)

13.2.3.1 *Policy Number: B3*

Summary The best buildings are to be conserved, including those in villages and the countryside, with protection to their setting and views of them from public places.

Effect The scheme would have no direct effect on any Listed Building or Conservation Area.

There would be some visual impact on some listed buildings and on the conservation areas of Slaughtam and Staplefield Villages. The effect would be limited to a slight loss of amenity and would not significantly alter their setting. Additional planting is proposed to screen the road.

13.2.3.2 *Policy Number: B5*

Summary The fabric and setting of archaeological sites is to be preserved.

Effect An assessment of the archaeological effect of the scheme has been undertaken by a qualified archaeological consultant who would be retained to maintain a watching brief during the construction contract.

No archaeological site would be directly affected by the scheme. There would be some visual impact on some of the sites but the effect would be limited to a slight loss of amenity and would not significantly alter their setting. Additional planting is proposed to screen the road.

13.2.4 **Transport ('T' Policies)**

13.2.4.1 *Policy Number: T1*

Summary The main traffic flows should be channelled onto the Strategic Road Network. This includes a list of Motorway and Primary Routes which the Council has agreed with the Department of Transport, which includes the M23/A23 Trunk Road.

Effect The scheme would reduce congestion and provide capacity to meet projected traffic growth to the year 2013. This would encourage use of the route in preference to the local road network.

13.2.4.2 *Policy Number: T2*

Summary The Council encourages the early completion of road improvements of roads listed by the Department of Transport in 'Roads for Prosperity' and subsequent White Papers, which includes the Handcross to Warninglid section of the A23 Trunk Road, subject to their effect on the environment being acceptable.

Effect The scheme would result in the completion of the planned improvement of the A23 route between the M23 and Brighton envisaged in the National Trunk Road Programme.

The alignment of the published route was selected and the design of the scheme has been developed to reduce its effect on the environment, which overall would be slight. Extensive mitigation measures are proposed, which in some cases would enhance the environment of the road corridor.

13.2.4.3 *Policy Number: T4*

Summary

Traffic management measures should be introduced where they would:

- reduce the number and severity of accidents;
- improve the flow of traffic;
- reduce problems caused by heavy vehicles;
- improve facilities for pedestrians and cyclists and reduce conflicts between them and traffic;
- improve the quality of the environment.

Effect

The proposed scheme would provide a high standard road designed to meet present and future traffic flows. The improvement of the alignment of the road, junctions and other sub-standard features would reduce the number and severity of accidents, and the lighting would improve safety at night. The provision of a climbing lane would remove congestion caused by lorries on Handcross Hill. A new route would be created for pedestrians and cyclists between Warringlid and Slaugham Junction. No provision would be made to cross the A23 at road level. Footpath S4, which is redundant, would be closed. Footpath S15 would be diverted. The new drainage system would help protect the watercourses from pollution and lead to an overall improvement in water quality. Measures would be taken to protect wildlife and facilitate safe crossing of the road.

13.2.4.4 *Policy Number: T6*

Summary Provision of motorists facilities is encouraged except in AONBs.

Effect

The proposed service road would facilitate access to the Happy Eater restaurant which is understood to have planning consent for expansion to include a Filling Station and Travel Lodge. The elimination of the lay-bys and wide verges, used for mobile snack bars and related informal parking, would remove the problems they cause to traffic on the A23. Problems of trespass and litter on adjacent land would also be alleviated.

13.2.5 Waste Disposal ('W' Policies)

13.2.5.1 *Policy Number: W1*

Summary A reduction in waste disposed by landfill is sought through the encouragement of alternatives, particularly recycling.

Effect Materials arising from the breaking out of the existing carriageways would be recycled within the works. Approximately 70,000 cubic metres of other excavated material, surplus to the works, would be disposed of off site to licensed tips or other approved locations.

13.3 CENTRAL MID SUSSEX LOCAL PLAN 1992

13.3.1 The relevant policies are described under chapters dealing with the Rural Environment, the Built Environment, Countryside Recreation and Tourism, Mobility, Handcross, and the Smaller Settlements.

13.3.1 Chapter 2: The Rural Environment

13.3.1.1 *Policy Number: CM2/1*

Summary There is a general presumption against development in the countryside shown on the Proposals Map as 'Countryside Area of Development Restraint'.

Effect The whole scheme would be within the 'Countryside Area of Development Restraint'. Since the proposals are for an on-line widening of an existing trunk road they would not constitute the development of a new element in the countryside.

13.3.1.2 *Policy Number: CM2/2*

Summary Within an Area of Outstanding Natural Beauty, the aim to conserve natural beauty is regarded as the overall priority and particular attention would be paid to siting, design, materials and screening of developments in order to ensure that they do not detract from its landscape quality.

Effect The scheme is within the St Leonards Forest District of the High Weald Area of Outstanding Natural Beauty. The effect of the scheme on the landscape character and quality of the area would be slight. Since the widening would be mostly on-line, the improved road would not be a new element in the landscape although its increased scale would be apparent from some viewpoints. The introduction of lighting would at night be a

new element in an otherwise dark rural setting. Extensive landscaping would be carried out to mitigate the impact of the scheme on the landscape of the area generally and from individual viewpoints.

13.3.1.3 *Policy Number: CM2/4*

Summary Development would not normally be permitted which would involve the loss of high quality agricultural land (Grades 1, 2 or 3a), or which would adversely affect the established farm pattern, or lead to the subdivision of agricultural land into unproductive units.

Effect The scheme would result in the loss of a total of about 3.858 hectares of agricultural land. Of this total approximately 1.736 hectares is Grade 3 and 2.122 is Grade 4. No information regarding the subdivision of Grade 3 land into sub-grades 3a and 3b was available from MAFF. The effect of the loss of land on individual farms would be slight. New means of access have been proposed where necessary to replace existing direct accesses from the A23.

13.3.1.4 *Policy Number: CM2/10*

Summary The Local Planning Authority would seek the retention and conservation of woodlands and hedgerows which are important in the landscape, or as natural habitats, or historically. Encouragement would be given to the proper management of the existing woodlands and hedgerows and to trees and hedgerow planting with appropriate species. Tree Preservation Orders would be made where trees are at risk and are of visual importance in the landscape, or in the villages themselves.

Effect The alignment of the published route was selected and the design of the scheme has been developed to reduce its impact on the surrounding woodlands and hedgerows which are of landscape and nature conservation importance. Since the scheme is mostly on-line and would necessitate only limited disturbance beyond the present boundary the extent of disturbance would be relatively slight. Woodland management, and extensive planting using native species would be carried out to restore the woodland edge and create wildlife corridors. No trees which are protected by TPOs would be affected.

13.3.1.5 *Policy Number: CM2/11*

Summary The Local Planning Authorities would not normally permit development proposals which have a detrimental impact on

nature conservation interests and wildlife habitats. There would be a strong presumption against development on Sites of Special Scientific Interest, Nature Reserves, Ancient Woodland or other areas of importance to wildlife. Particular attention would be paid to the design and layout of any new development permitted in the plan area so as to reduce the impact on features of nature conservation importance and to take advantage of opportunities for habitat creation wherever possible.

Effect The alignment of the published route was selected and the design of the scheme has been developed to reduce its impact on the areas of importance for nature conservation. The most significant nature conservation impact would be the loss of approximately 1.419 hectares of mature woodland, especially the area of semi-natural ancient woodland of West Park that forms part of Orange Gill SNCI. The loss of other less mature woodland, hedgerows and verge vegetation would also be significant because these areas form an edge to, or link together the areas of ancient woodland and are therefore an integral part of the overall habitat. The loss of mature trees from the central reserve would be of minor ecological significance. Woodland management and extensive planting using native species is proposed to restore the woodland edge and create wildlife corridors. In some situations the proposals would result in long term nature conservation benefits. Two tunnel crossings and fencing would be provided to protect wildlife from road accidents without disrupting traditional routes. The proposed drainage system would improve water quality in the streams and protect the environment of the areas of special ecological interest from pollution. The reedbeds would create a useful additional habitat.

13.3.1.6 *Policy Number: CM2/12*

Summary The Local Planning Authority would have regard to the archaeological merits of the site and where development would affect a site of archaeological interest, provision of adequate time and finance should be made by the developer to enable records to be made before the particular features of the site are lost. Development affecting the site or setting of a scheduled or other monument of national importance would be resisted.

Effect An assessment of the archaeological effect of the scheme has been undertaken by a qualified archaeological consultant who would be retained to offer any necessary advice during the construction period. No known archaeological site would be directly affected by the scheme. There would be some visual impact on some sites but the effect would be limited to a slight

loss of amenity and would not significantly alter their setting. Additional planting proposed would screen the view of the road from these areas.

13.3.2 Chapter 3: The Built Environment

13.3.2.1 Policy Number: CM3/1

Summary A high priority is placed on protecting Listed Buildings and their settings.

Effect The scheme would have no direct effect on any Listed Building. There would be some visual impact on some Listed Buildings. However, the effect would be limited to a slight loss of amenity and would not significantly alter their setting. Additional planting proposed would screen the road.

13.3.2.2 Policy Number: CM3/2

Summary Particular attention is paid to the need to conserve the character and appearance of designated Conservation Areas. Trees and hedgerows should be retained. Where felling or removal is unavoidable, replanting would be required.

Effect The villages of Handcross, Slaugham, Staplefield and Warninglid all contain designated Conservation Areas. None of these areas would be directly affected by the scheme. However, there would be a slight visual impact from small parts of the conservation areas of Slaugham and Staplefield villages. The effect would be limited to a slight loss of amenity and would not significantly alter their setting. Additional planting proposed would screen the road from these villages.

13.3.2.3 Policy Number: CM3/6

Summary Development would not normally be permitted at the expense of trees which have a significant public amenity value. Tree Preservation Orders would be made where trees are at risk and are of special importance in the locality.

Effect No trees which are protected by TPOs are affected. Most of the trees that would be felled are woodland trees whose value is as part of the overall woodland rather than as individual specimens. The mature trees that would be lost from the central reserve are a significant feature of the existing road, and their loss would accentuate the changed character of the route. Several of these trees are over mature, damaged or otherwise in an unhealthy condition.

13.3.3 Chapter 6: Community and Recreational Facilities

13.3.3.1 Policy Number: CM6/3

Summary There is a presumption against development which would involve the loss, or significant reduction of a public or private community or recreation facility.

Effect The scheme would not have any affect on any community or recreational facility.

13.3.3.2 Policy Number: CM6/7

Summary Development that would result in the loss of existing allotments would be resisted.

Effect There would be no affect on the allotments at Handcross Village.

13.3.3.3 Policy Number: CM6/12

Summary Development would not be permitted unless it can be adequately drained.

Effect The drainage proposals have been developed after consultation with the National Rivers Authority. The culverts for the River Ouse and Anne's Wood Stream crossings would both be replaccd. A new drainage system would be provided. The existing pattern of land and groundwater drainage would be maintained to avoid disturbing the hydrology of the area. All carriageway drainage would be piped through bypass interceptors to bunded reedbeds before discharge into the surrounding watercourses. This system would provide treatment of the highway drainage during normal conditions, allow containment of pollutants in the event of a spillage of toxic material, and attenuate flows to reduce the likelihood of flooding during storm conditions. The foul sewer would be diverted between Brighton Road, Handcross and the Sewage Works.

13.3.4 Chapter 7: Countryside Recreation & Tourism

13.3.4.1 Policy Number: CM7/1

Summary The District Council would seek to ensure that existing countryside recreation facilities and opportunities are retained and where appropriate improved.

Effect The scheme would not affect any recreational facilities except footpaths and cycleways as described in CM7/5 and CM7/6 below.

13.3.4.2 *Policy Number: CM7/5*

Summary The Local Planning Authority would seek to safeguard the footpath and bridleway network and would support appropriate proposals for its revision and extension.

Effect A continuous safety fence would be provided in the central reserve. No provision would be made for pedestrians to cross the A23 other than by the existing bridges at Handcross, Slaugham and Warninglid. Footpath S4 at Handcross would be closed, and footpath S15 would be diverted in the Stanbridge area to Slaugham Junction sharing use of the new private means of access.

13.3.4.3 *Policy Number: CM7/6*

Summary The Local Planning Authority would encourage the development of safe and attractive cycle facilities, including the establishment of a cycleway network within Mid Sussex District, incorporating non-segregated cycle routes.

Effect A new cycleway would be provided beside the northbound carriageway between Warninglid and Slaugham Junctions as part of the planned Brighton to Crawley cycle route. Continuation northwards would be by Slaugham or Staplefield villages using the local road network.

13.3.5 Chapter 8: Mobility and Car Parking

13.3.5.1 *Policy Number: CM8/1*

Summary Support is given in principle for the proposed improvement of the A23 between Handcross and Warninglid, subject to the selection of a satisfactory alignment and subject to appropriate measures being taken to reduce its environmental impact.

Effect The alignment of the preferred route was selected and the design of the scheme and mitigation measures have been developed to reduce the environmental impact of the proposals.

13.3.6 Chapter 13: Handcross

13.3.6.1 Policy Number: CM10/2

Summary A site on the western side of the Old Brighton Road (Handcross Southbound Slip Road) has been allocated for car parking.

Effect The scheme would not affect this proposal.

13.3.7 Chapter 16: The Smaller Settlements

13.3.7.1 Policy Number: CM16/1

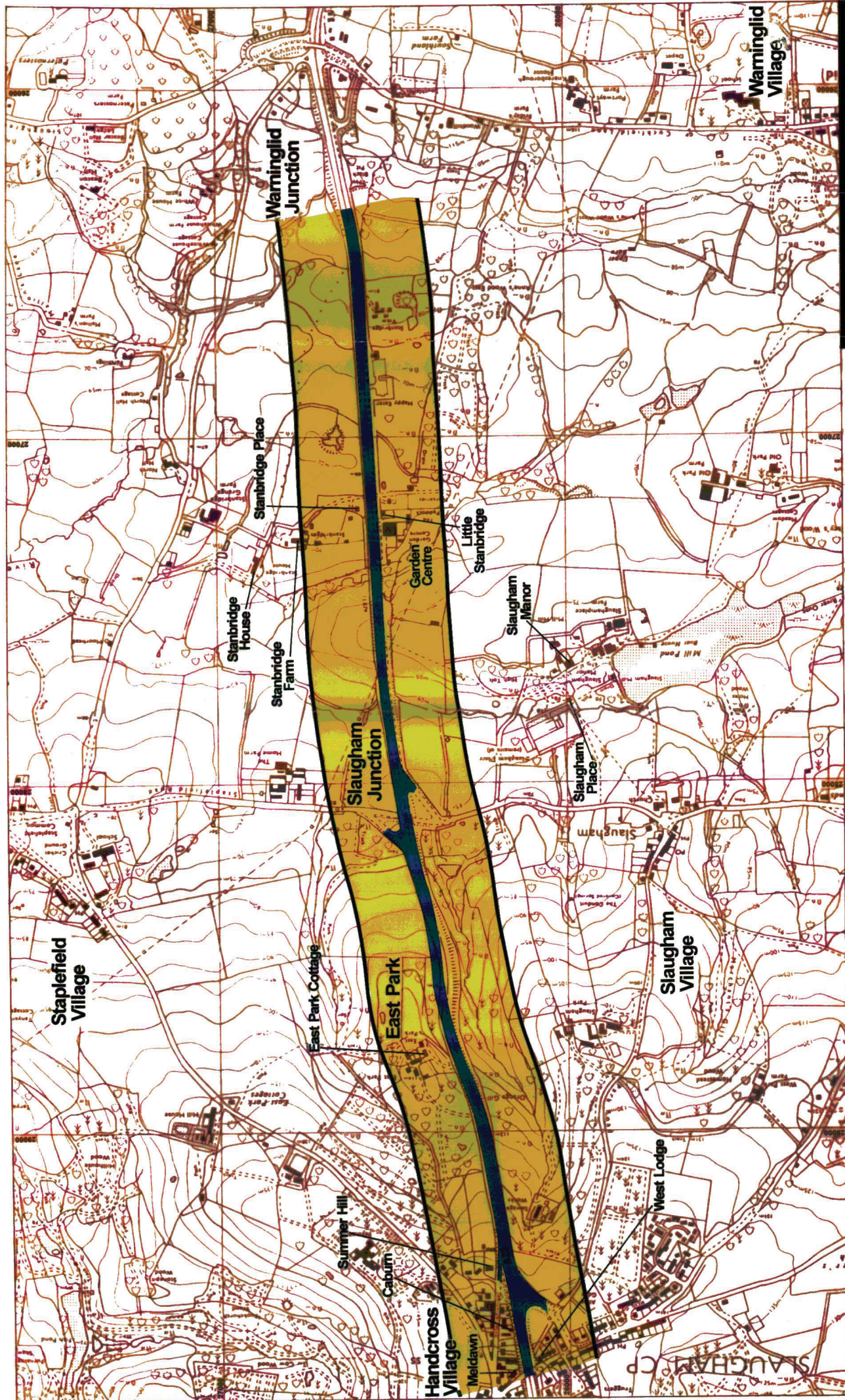
Summary The villages of Slaugham and Staplefield are expressly excluded from the built up area definition. Countryside policies and where appropriate policies relating to Conservation Areas and AONBs are applicable.

Effect The effect of the scheme would be limited to a slight visual impact from a small area of the villages.

13.4 SUMMARY

13.4.1 Both West Sussex County Council and Mid Sussex District Council support the planned improvement of the A23 between Handcross and Warninglid in principle, but subject to the proposals having an acceptable affect on the environment.

13.4.2 The alignment of the preferred route was selected, and the design of the scheme and mitigation measures have been developed to reduce the environmental impact on the area. The overall effect would be only slight, and the proposals are therefore generally in accordance with the policies of the local authorities concerned.



AIR QUALITY ASSESSMENT PLAN

Figure 2.1







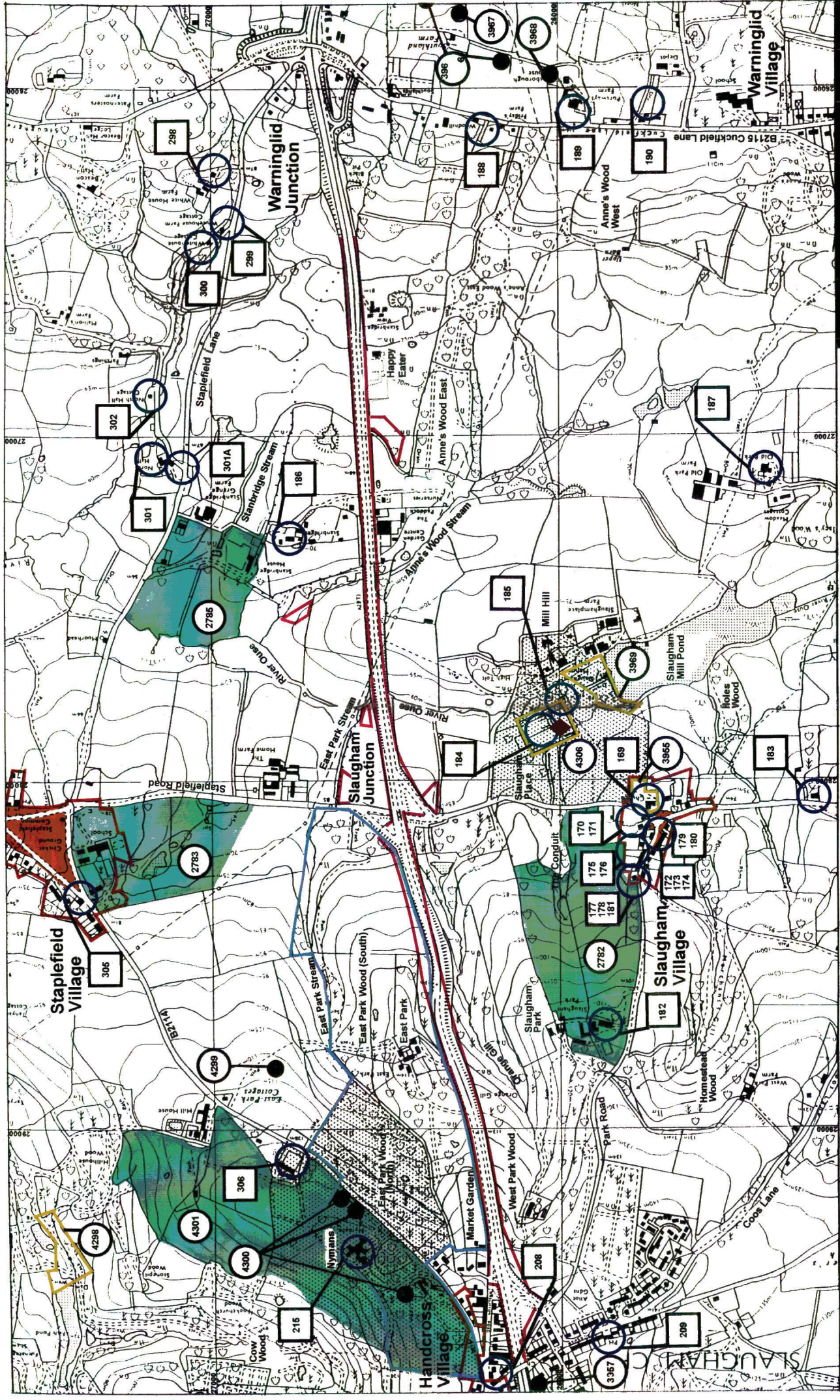
1000 metres



SCALE 1/10000

LEGEND

-  Scheme
-  Air Quality Assessment Area
-  Individual Property Assessed for Localised Air Quality
-  200 metre Limit of Assessment



CULTURAL HERITAGE CONSTRAINTS

Figure 3.1

Base map reproduced from Ordnance Survey Map © Crown Copyright.

LEGEND

	Listed Buildings		Archaeological Sensitive Area
	Scheduled Ancient Monument		Historic Parkscape
	Listed Park or Garden		National Trust Property
	Archaeological Site or Find		Conservation Area

SCALE 1 / 10,000

0 100 200 300 400 500 1000 metres

NORTH

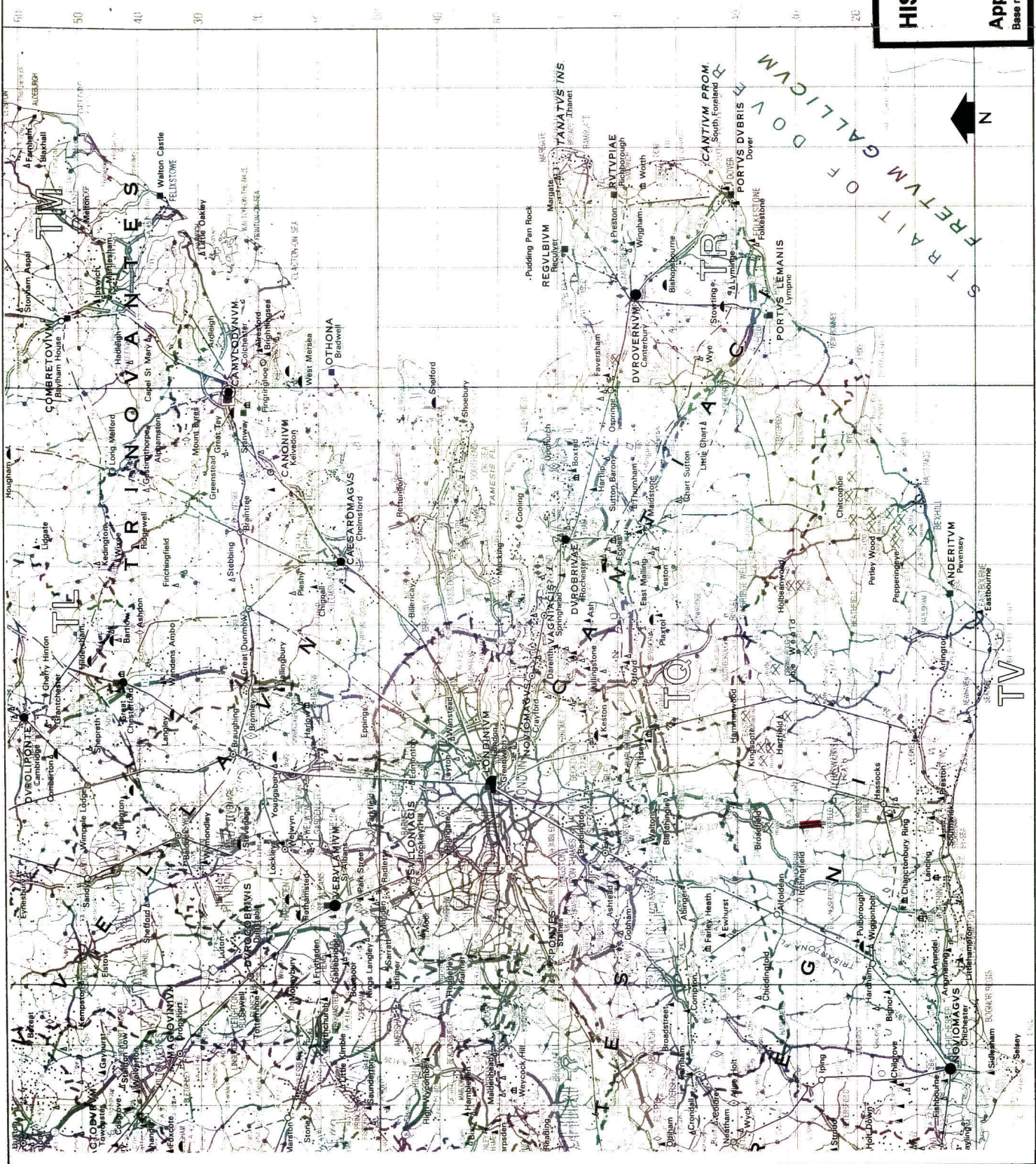
	Site No (West Sussex County Planning Department Records)
	Listed Building No (West Sussex Planning Department Records)
	Staplefield Common Ref. CL 315
	Slaughtam Village Green Ref. VG 68
	Limit of Proposed Earthworks

ROMAN BRITAIN

Ordnance Survey
Map of Roman Britain
Published 1991

Scale : 1 to 625 000

Line of A23 between Handcross
and Warringild



HISTORICAL MAPS

Appendix 3/A : Sheet 1

Base map reproduced from Ordnance Survey Map © Crown Copyright.

1795

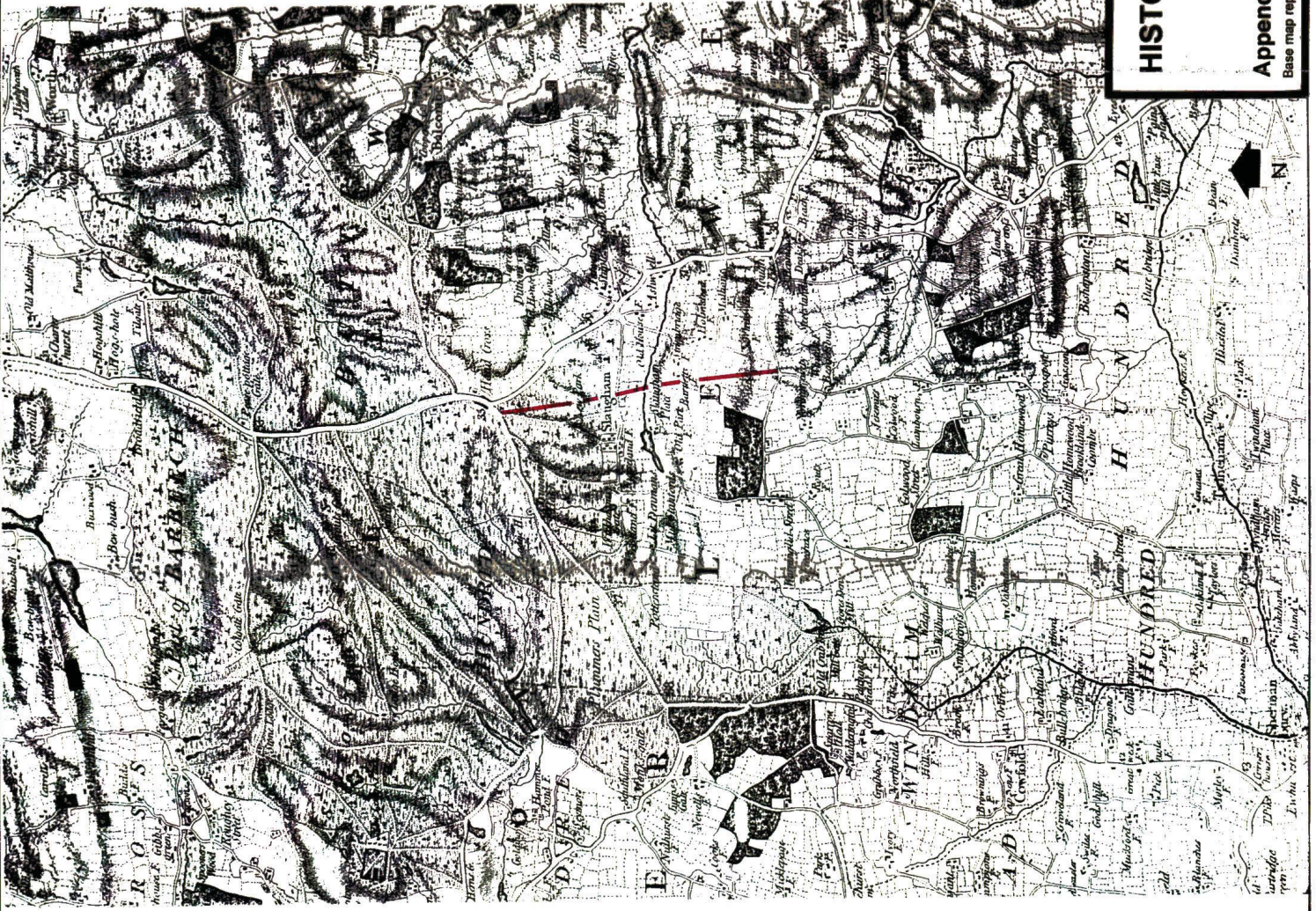
Gardner & Gream
1" Survey of Sussex
Published 1795

Scale : 1" to 1 mile

Observations:

- London to Brighton road passes through Handcross then Staplefield and Cuckfield.
- Whole of Slaughtam Park (shown as New Park) shown wooded.

Line of A23 between Handcross and Warringlid



HISTORICAL MAPS

Appendix 3/A : Sheet 2

Base map reproduced from Ordnance Survey Map © Crown Copyright.

1813

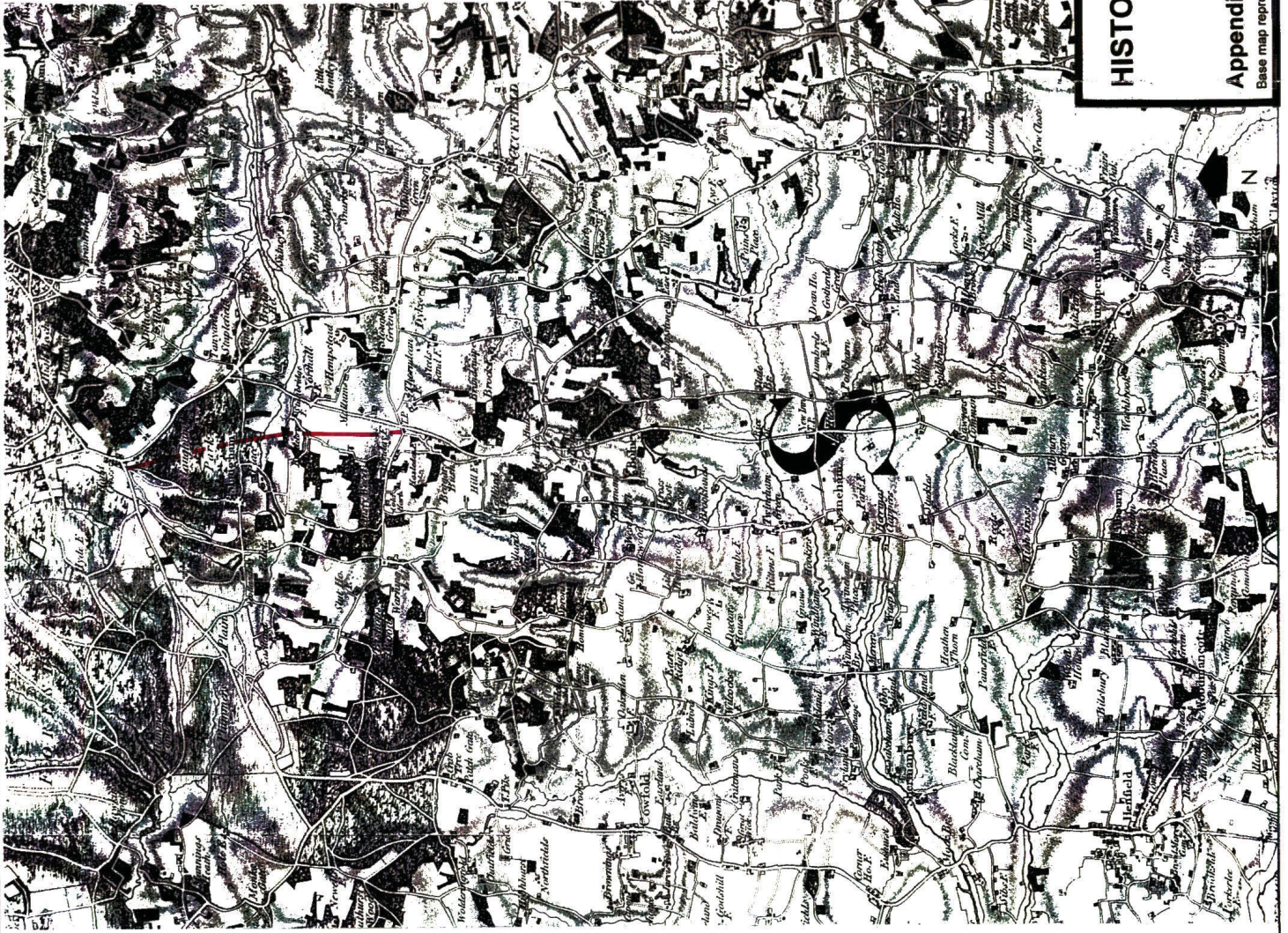
Ordnance Survey
1st Edition
Published 1813

Scale : 1" to 1 mile

Observations:

- London to Brighton road passes through Handcross and Staplefield, then takes line of existing Warringild - Staplefield road to join with new road from south at junction with present B2115.
- Slaugham Park all wooded.
- Anne's Wood approximately as present (called Ansty Wood).
- Road shown through Stanbridge Farm.

 Line of A23 between Handcross and Warringild



HISTORICAL MAPS

Appendix 3/A : Sheet 3

Base map reproduced from Ordnance Survey Map © Crown Copyright.

1825

Christopher & Greenwood
1" Survey of Sussex
Published 1825

Scale : 1" to 1 mile

Observations:

- London to Brighton route as 1813.
- Large areas of Slaugham Park Wood cleared.

Line of A23 between Handcross and Warringlight



HISTORICAL MAPS

Appendix 3/A : Sheet 4

Base map reproduced from Ordnance Survey Map © Crown Copyright.

1912/13 (North)

Ordnance Survey
Sheet XIV
3rd Edition - Published 1912

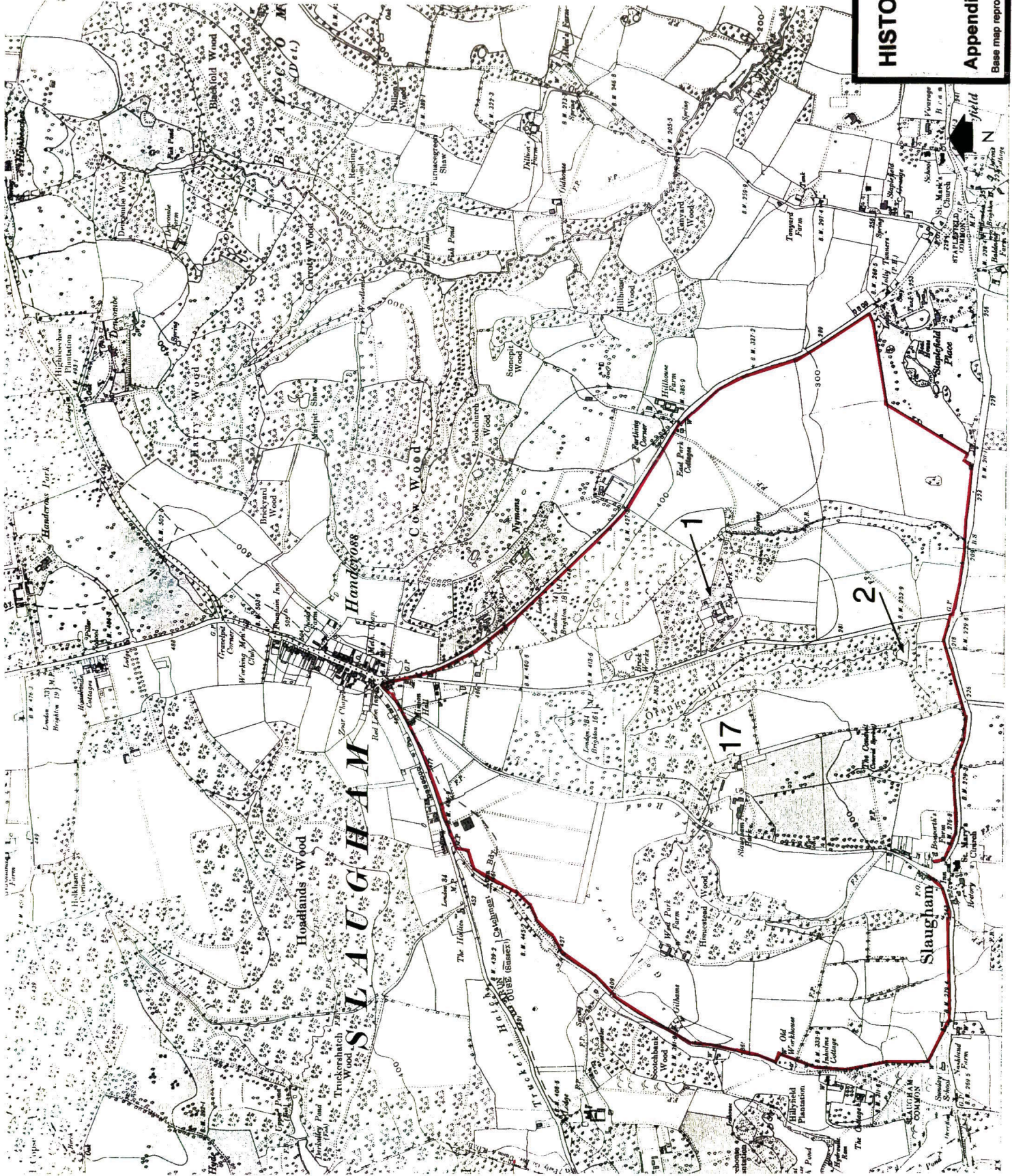
Scale : 6" to 1 mile

Observations:

- Areas between East Park and Nymans replanted.
- Brick Works reopened.

Showing details of Burgens 1724
Estate Maps Overlaid onto o/s
1912/13 6" : 1 mile

17 : Slaugham - 1. East Park not shown
2. Pond not shown



HISTORICAL MAPS

Appendix 3/A : Sheet 9

Base map reproduced from Ordnance Survey Map © Crown Copyright.

1912/13 (South)

Ordnance Survey

Sheet XXV

3rd Edition - Published 1913

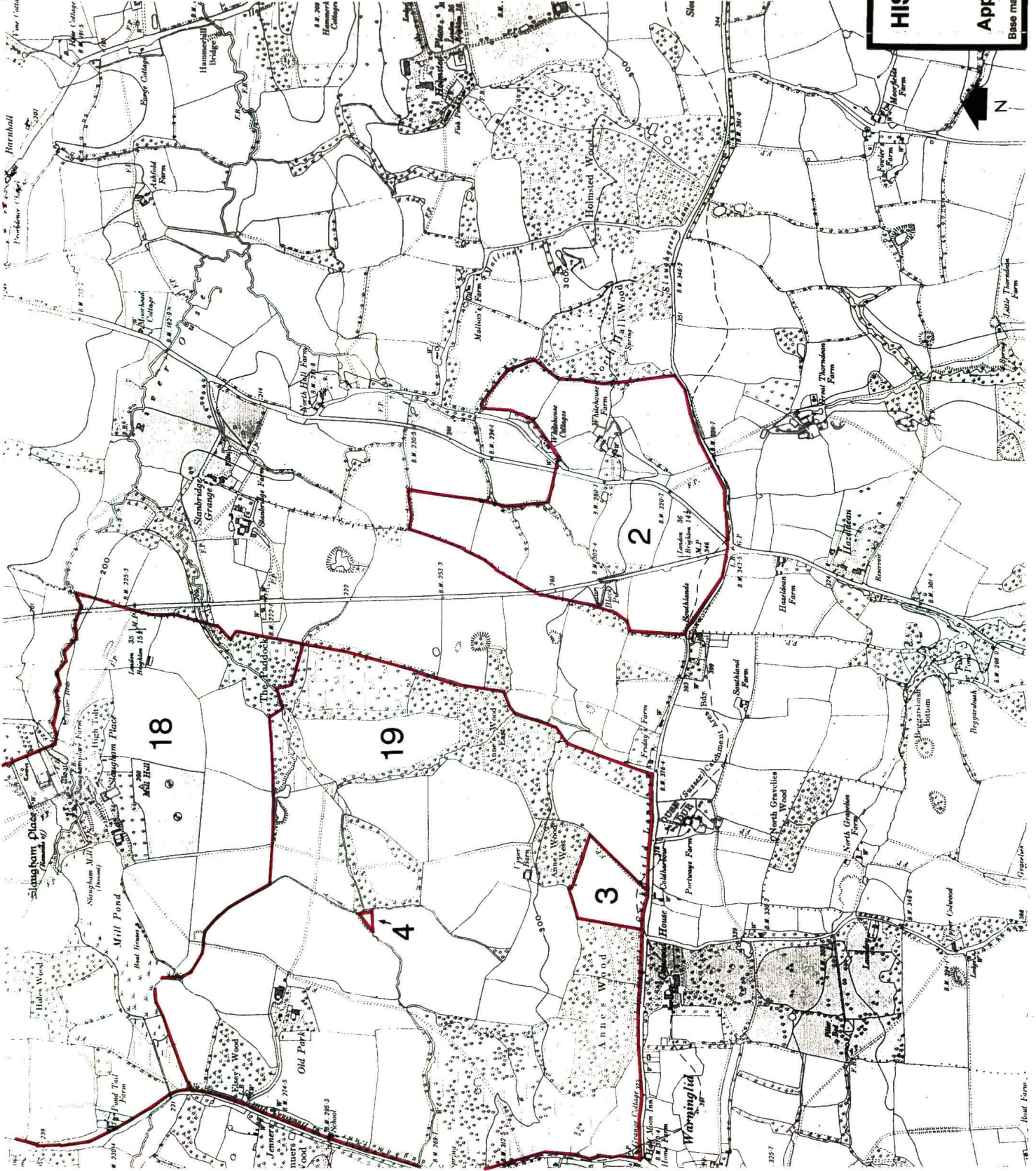
Scale : 6" to 1 mile

Observations:

- Clearings in Anne's Wood replanted.
- New Slaughtam Place (Slaughtam Manor) built.

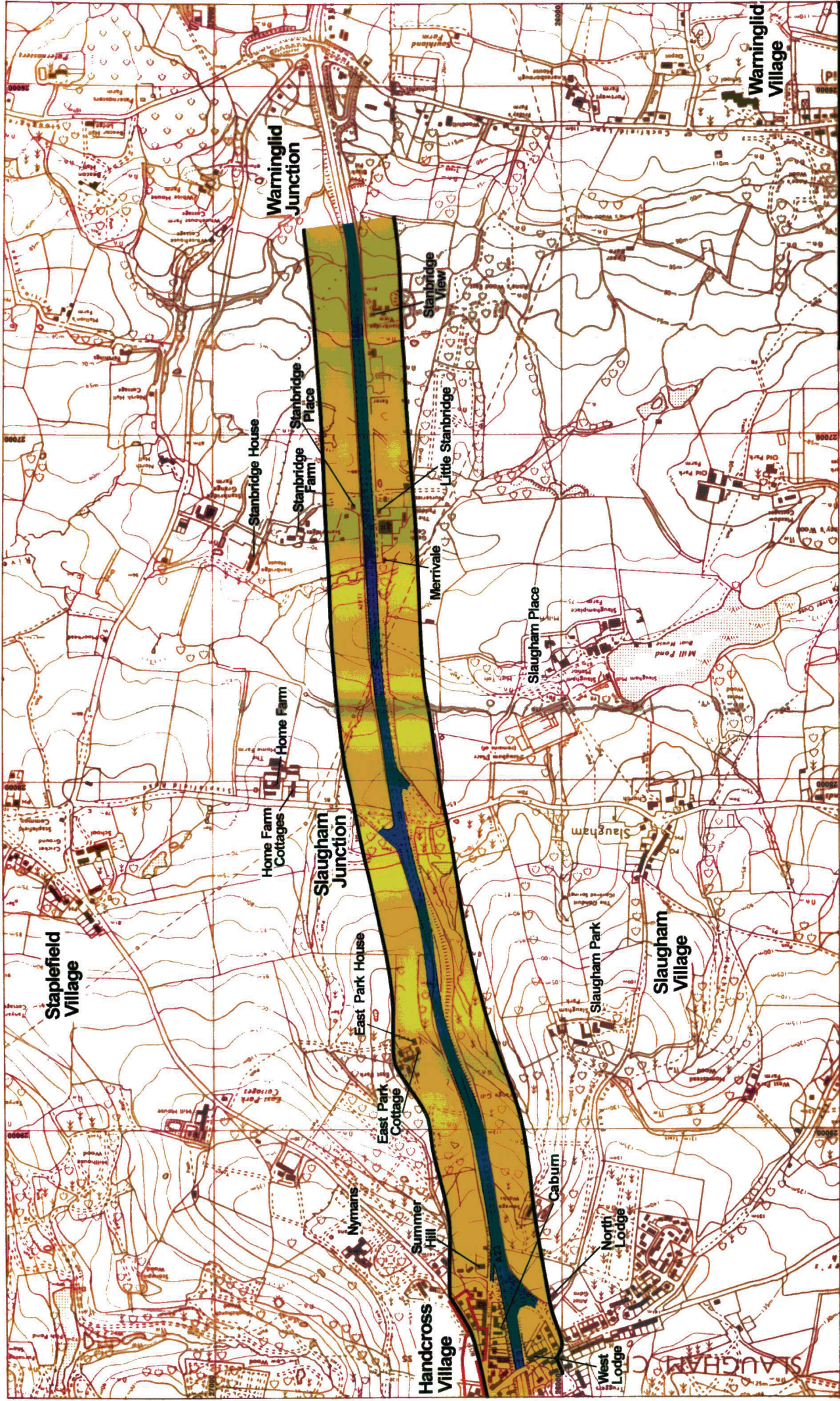
Showing details of Burgens's 1724 Estate Maps. Overlaid onto o/s 1912/13 6" : 1 mile

- 2: White House Farm
- 3: Anne's Wood completely wooded
- 4: Pond is shown that does not appear on current maps
- 18: Mill Hill, Old Land and Holeswood
- 19: Old Park Farm



HISTORICAL MAPS

Appendix 3/A : Sheet 10



DISRUPTION DUE TO CONSTRUCTION ASSESSMENT

Figure 4.1






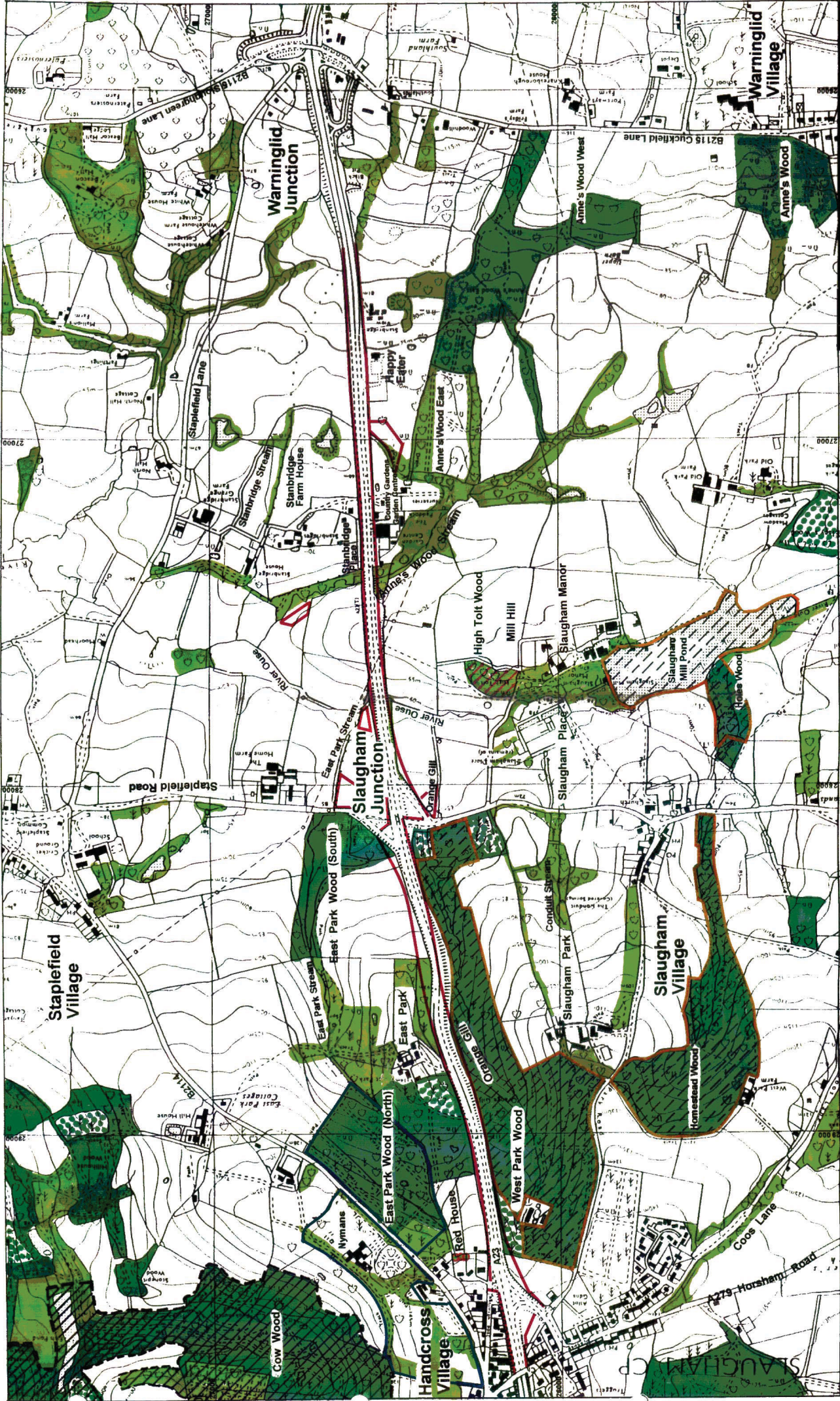
metres



SCALE 1/10000

LEGEND

-  Scheme
-  Assessment Area
-  Conservation Area
-  100m Limit of Assessment



LEGEND

	Ancient Semi-Natural Woodland
	Ancient Replanted Woodland
	Other Old Woodland not Designated
	Tree Preservation Order (Group)
	Tree Preservation Order (Individual)
	Site of Special Scientific Interest
	National Trust Areas Open to Public
	Site of Nature Conservation Importance
	Limit of Proposed Earthworks

SCALE 1 / 10,000

0 100 200 300 400 500 1000 metres

NORTH

NATURE CONSERVATION STATUS

Figure 5.1

Base map reproduced from Ordnance Survey Map © Crown Copyright.

Woodland & Scrub

- Mature Semi-Natural Broadleaved
- Mature Semi-Natural Mixed (Predominantly Broadleaved)
- Felled Mature Semi-Natural Broadleaved
- Mature Coniferous Plantation
- Mature Mixed Plantation (Predominantly Coniferous)
- Felled Mature Coniferous Plantation
- Semi-Mature Broadleaved Trees & Shrubs (Highway Verge)
- Mature Individual/Parkland Trees (Broadleaved)
- Mature Individual/Parkland Trees (Coniferous)
- Mature Garden Woodland
- New Planting
- Dense/Continuous Scrub
- Scattered Scrub
- Boundary of Designated Ancient Semi-Natural Woodland
- Boundary of Listed Site of Nature Conservation Importance

Hedgrows & Boundaries

- Intact Hedge (Species Poor)
- Defunct Hedge (Species Poor)
- Intact Hedge - With Trees
- Hedgerow - Species Rich
- Wall
- Close Board Screen Fence

Grassland & Other Landuse

- Semi-Improved Grassland
- Improved Grassland Pasture
- Cultivated Land
- Scattered Bracken
- Garden (Ornamental)
- Allotment Garden
- Industrial/Commercial Land
- Nursery Garden

Water & Wetland

- Standing Water
- Running Water
- Dry Stream/Ditch
- Swamp
- Marsh (In Area of Semi-Improved Grassland)
- Marsh (In Semi-Natural Broadleaved Woodland)

Scheme Overlay

- Centre Line of Road
- Outside Verge of Road
- Limit of Earthworks
- New Access Track
- Cycleway
- Retaining Wall
- Reedbed
- Fenceline

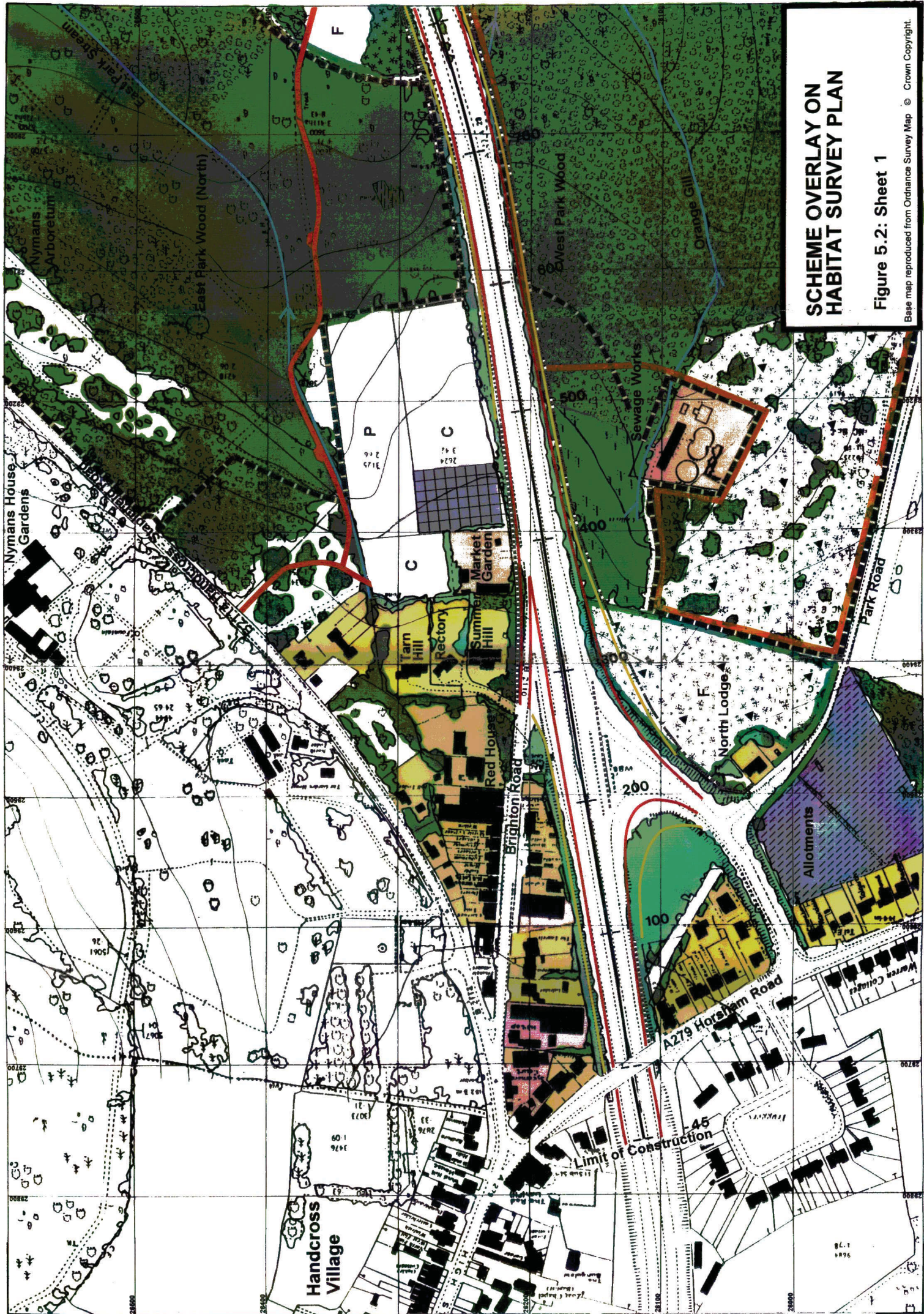
LEGEND

SCALE 1 / 2,500



SCHEME OVERLAY ON HABITAT SURVEY PLAN

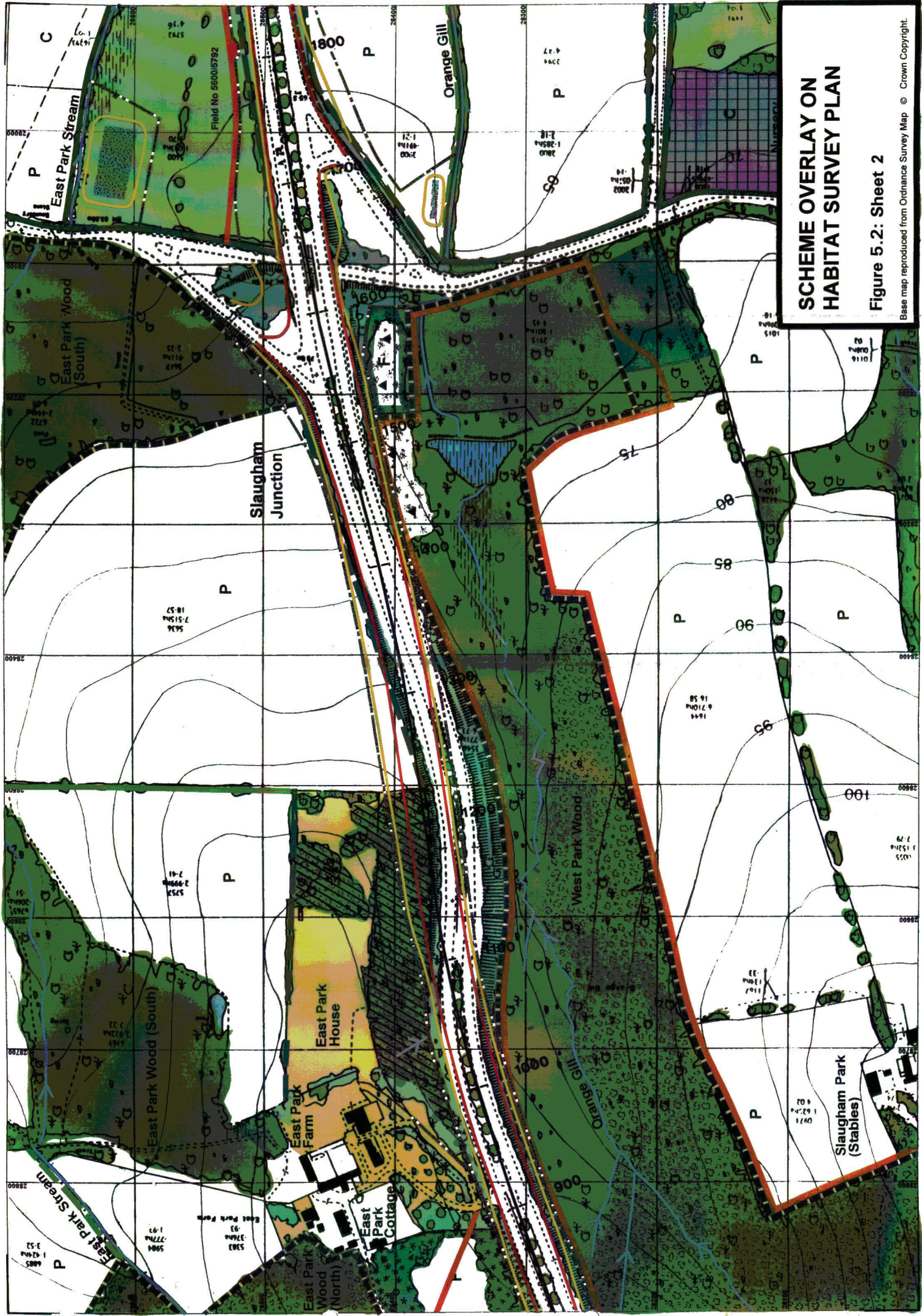
Figure 5.2 : Key Sheet



SCHEME OVERLAY ON HABITAT SURVEY PLAN

Figure 5.2: Sheet 1

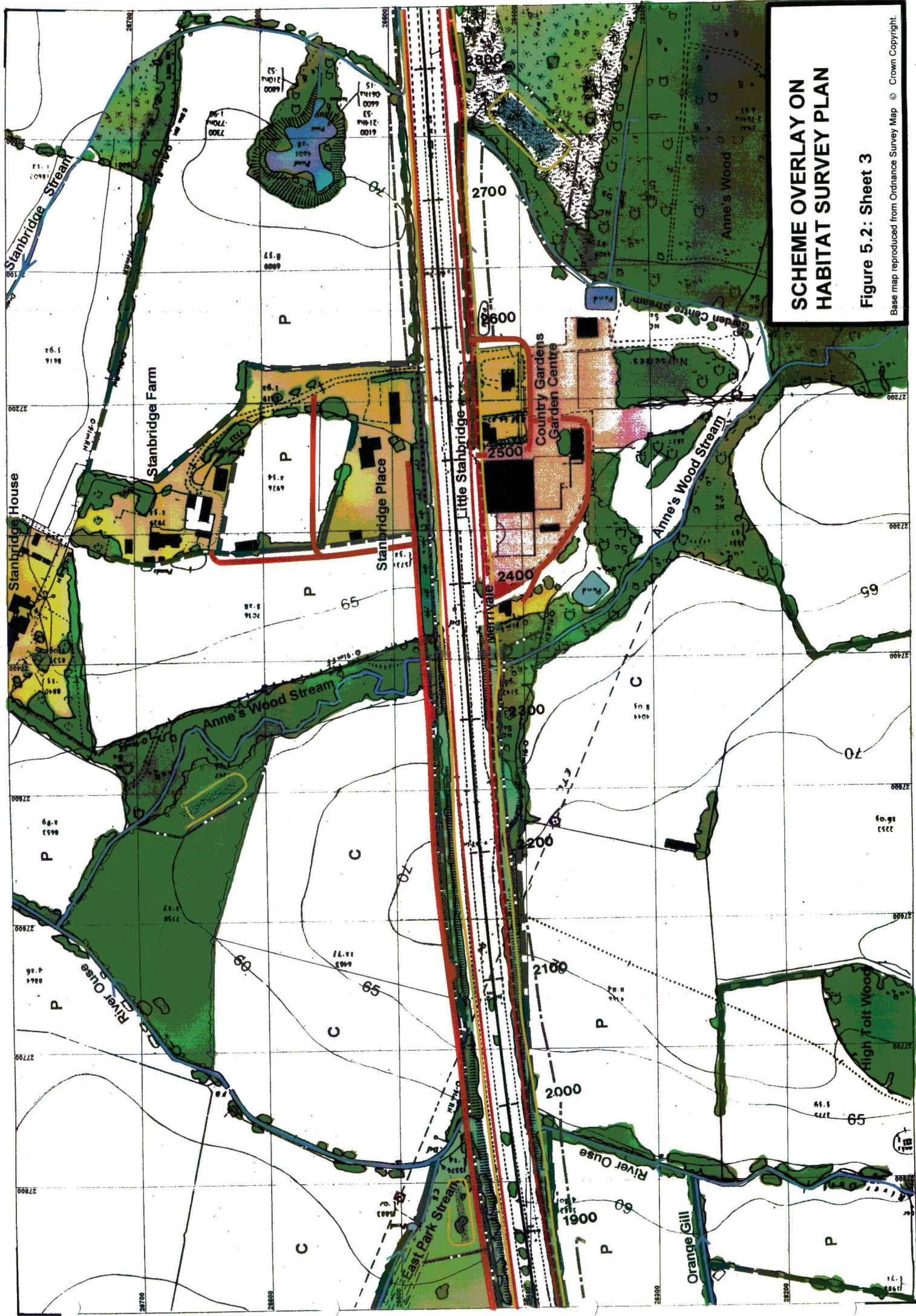
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**SCHEME OVERLAY ON
HABITAT SURVEY PLAN**

Figure 5.2: Sheet 2

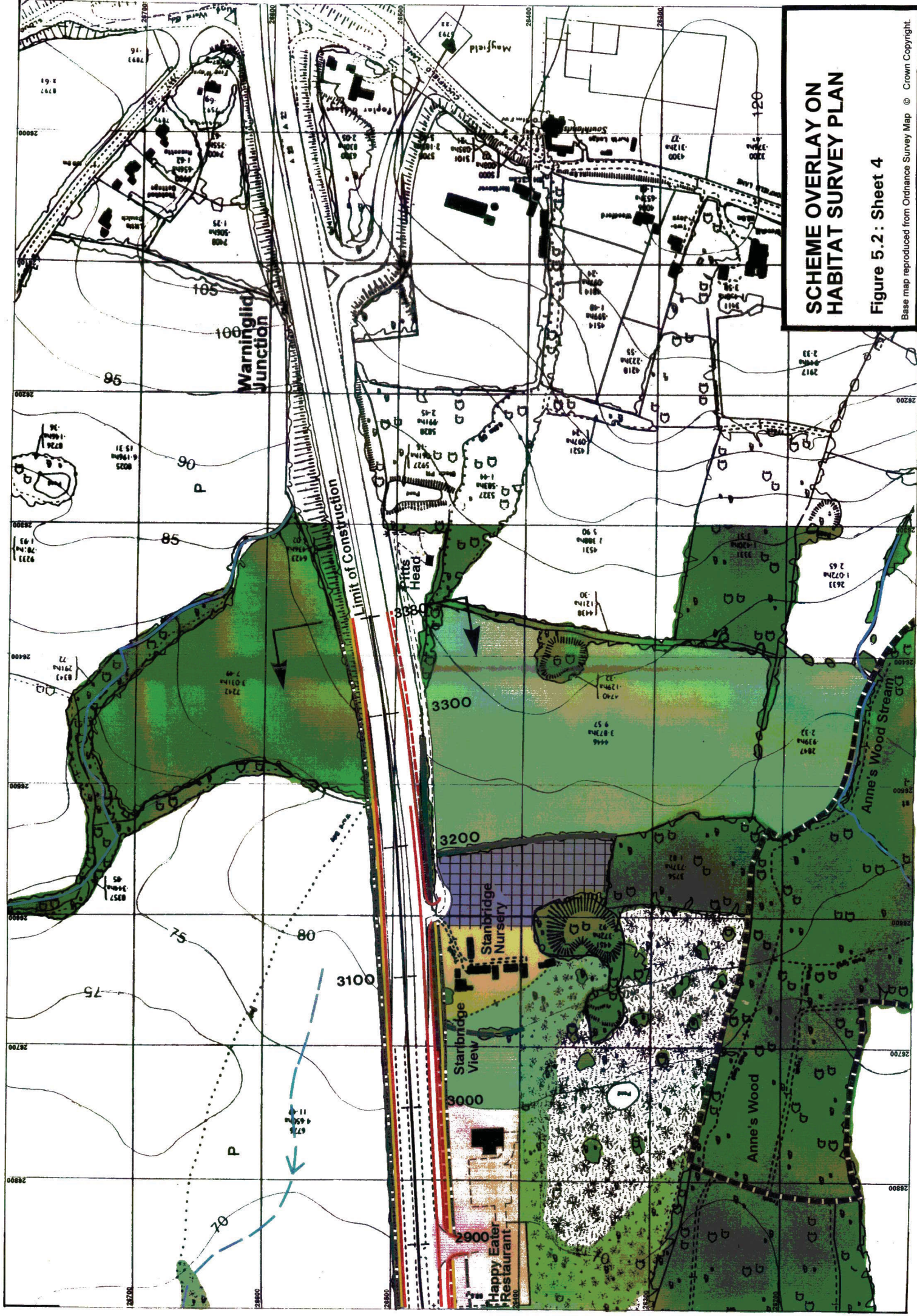
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**SCHEME OVERLAY ON
HABITAT SURVEY PLAN**

Figure 5.2: Sheet 3

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**SCHEME OVERLAY ON
HABITAT SURVEY PLAN**

Figure 5.2 : Sheet 4

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A23 HANDCROSS - WARNINGLID

An Ecological Survey of the Area Adjacent to the
A23 Between Handcross - Warninglid

August 1993



L. E. Cranston, E. J. Darby, C. B. Joyce & L. C. de Waal

International Centre of Landscape Ecology

Loughborough University

Tel. 0509 223012

Fax 0509 260753

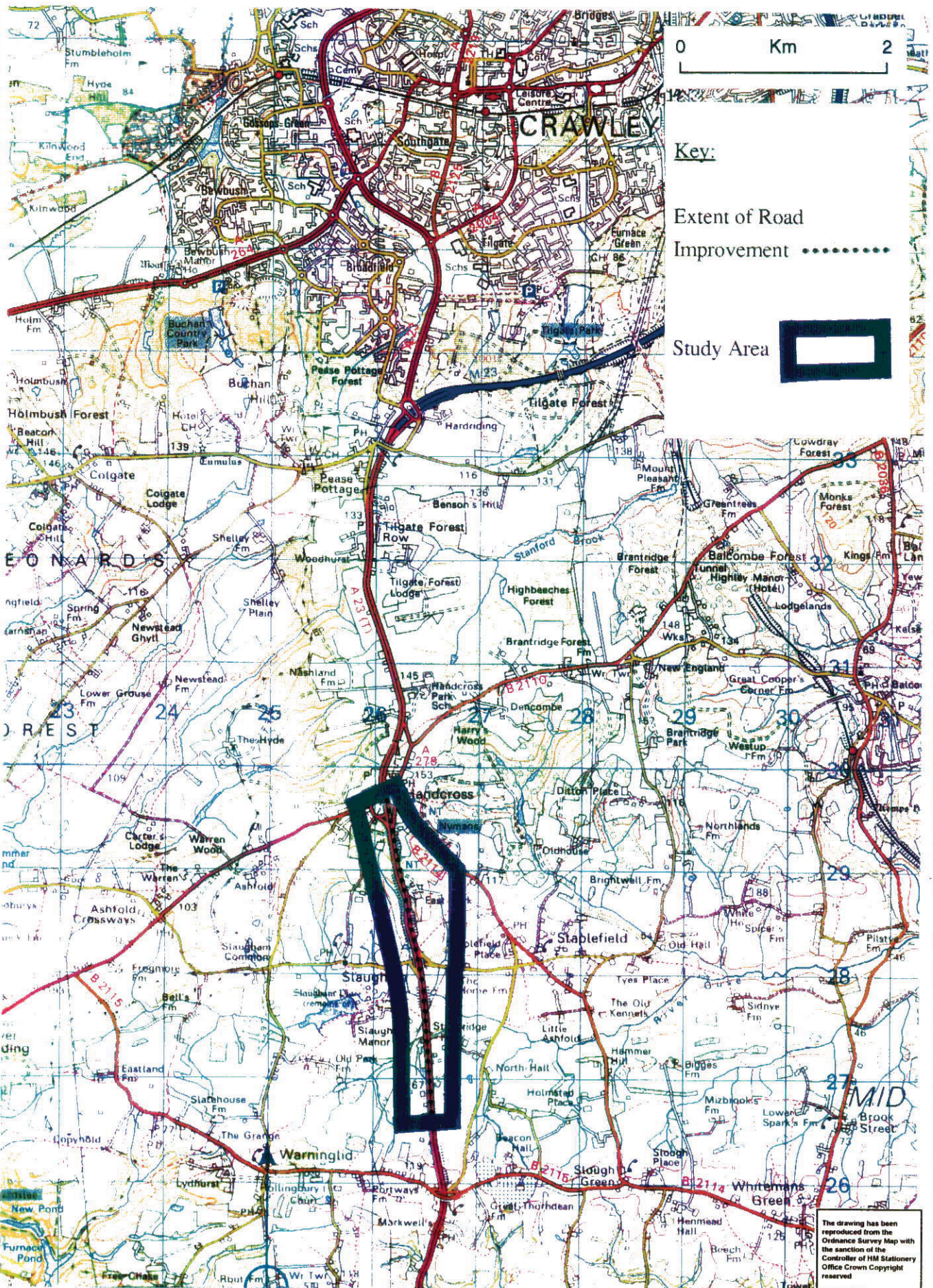
A23: Handcross-Warninglid, Extent of Road Improvement and Study Area.

Date 27th August 1993

Drawn by APA

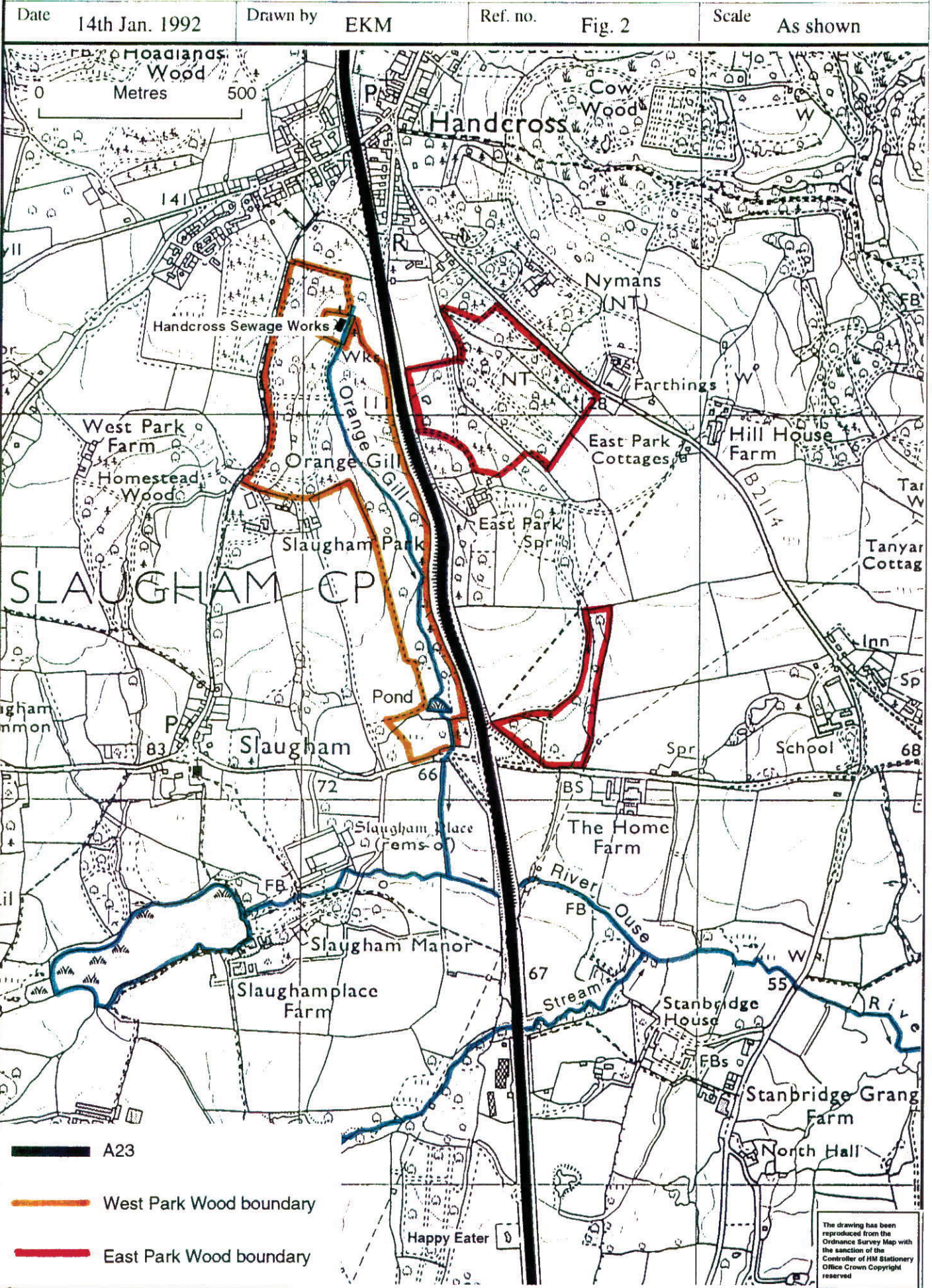
Ref. no. Fig.1

Scale 1:50 000



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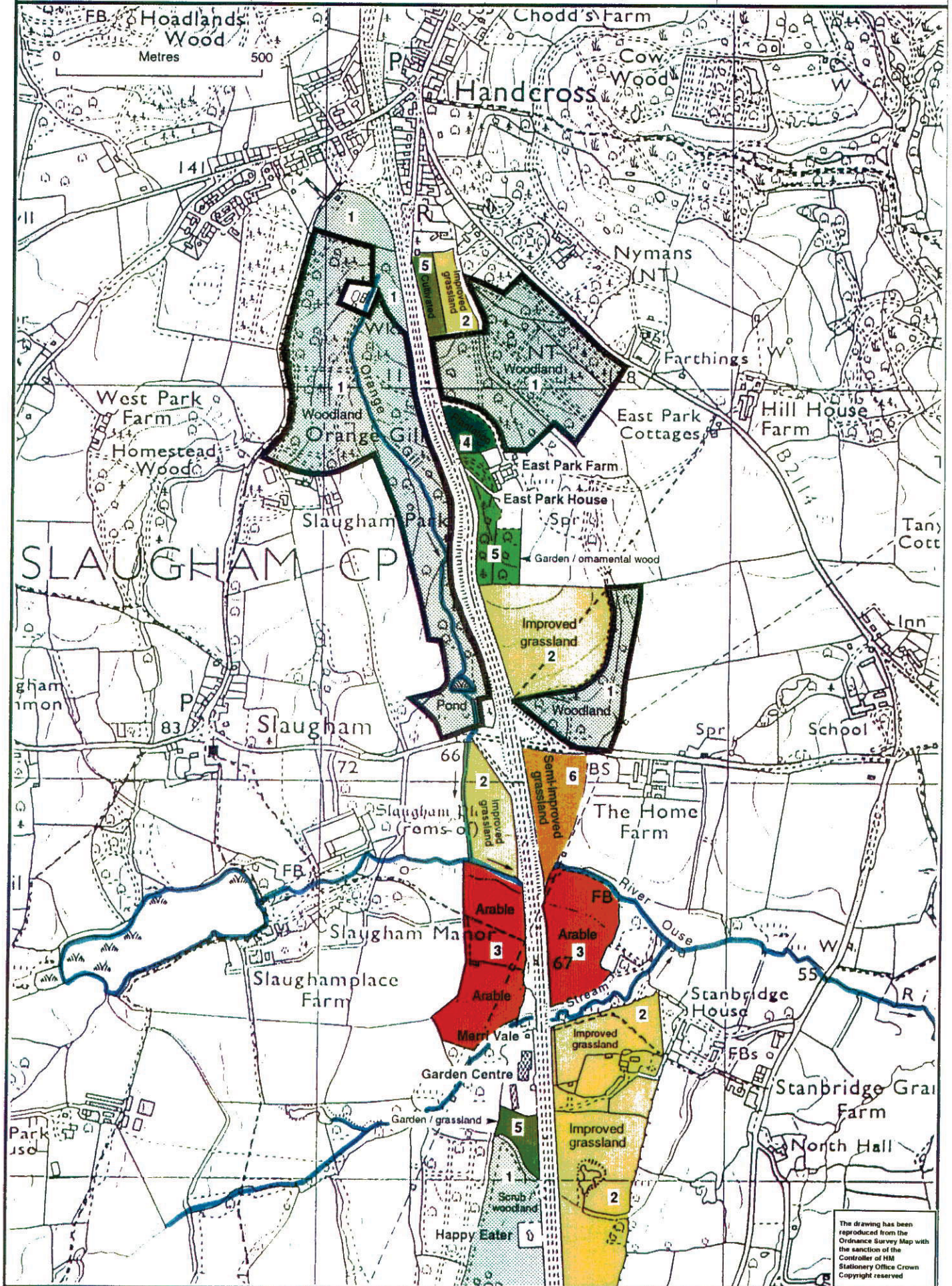
A23: Location of Ancient Semi-natural Woodlands



Source: West Sussex Inventory of Ancient Woodland (Provisional): NCC (1989)

A23: Current Land Use

Date 14th Jan. 1992 Drawn by EKM Ref. no. Fig. 3 Scale As shown

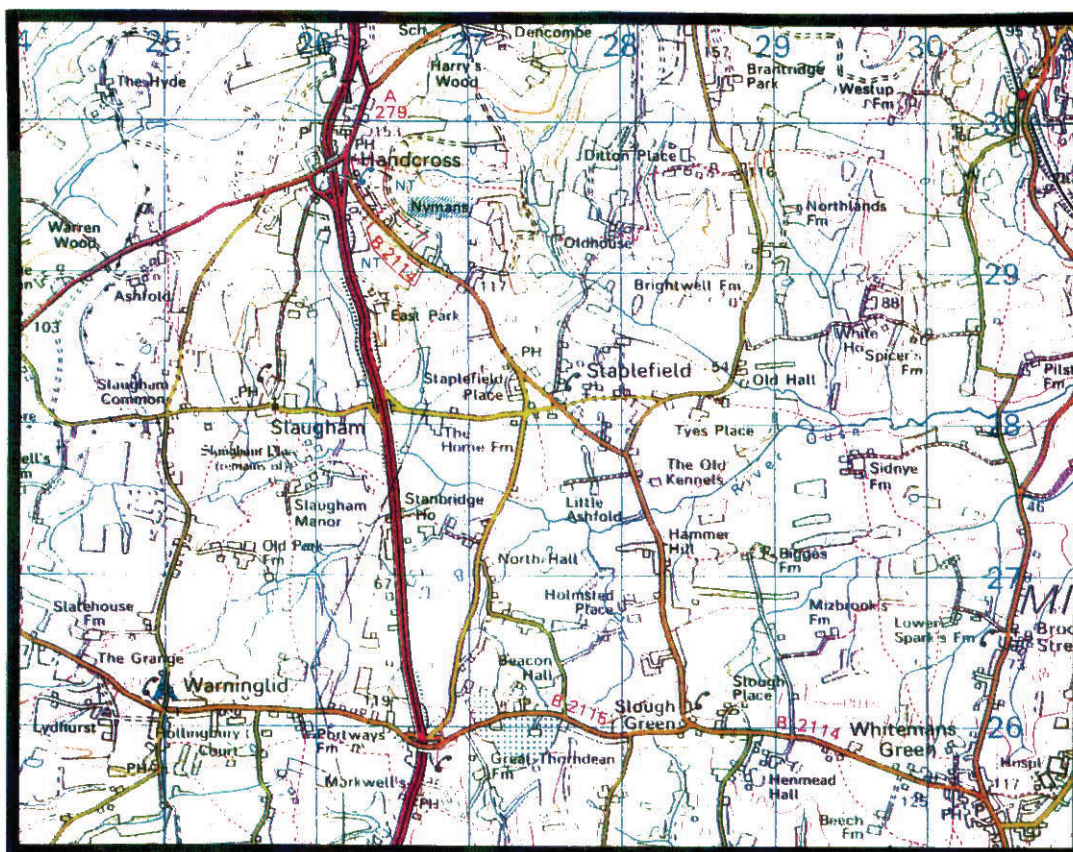


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A23 HANDCROSS - WARNINGLID

WINTER BIRD SURVEY OF LAND ADJACENT TO THE
A23 HANDCROSS TO WARNINGLID, WEST SUSSEX

MARCH 1994

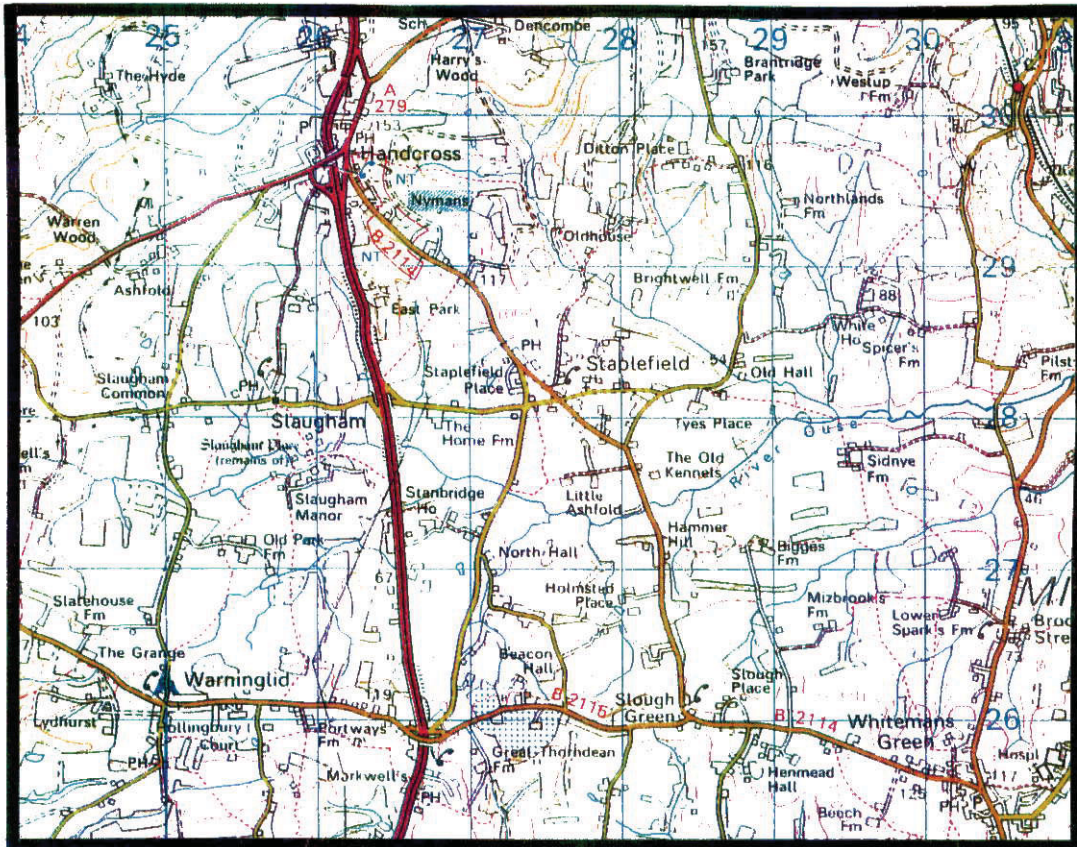


E J Darby
International Centre of Landscape Ecology
Geography Department
Loughborough University of Technology
Loughborough LE11 3TU

A23 HANDCROSS - WARNINGLID

CHEMICAL AND BIOLOGICAL ASSESSMENT OF THE
WATER QUALITY OF WATER COURSES ADJACENT TO THE
A23 HANDCROSS TO WARNINGLID, WEST SUSSEX.

MARCH 1994



E J Darby
International Centre of Landscape Ecology
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Loughborough University of Technology
Loughborough LE11 3TU



REGIONAL CONTEXT

Figure 6.1

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LEGEND

- Boundary of High Weald Area AONB
- Handcross - Warminglid Section of A23

SCALE 1 : 250,000

0 5000 10000 15000 20000 25000 metres

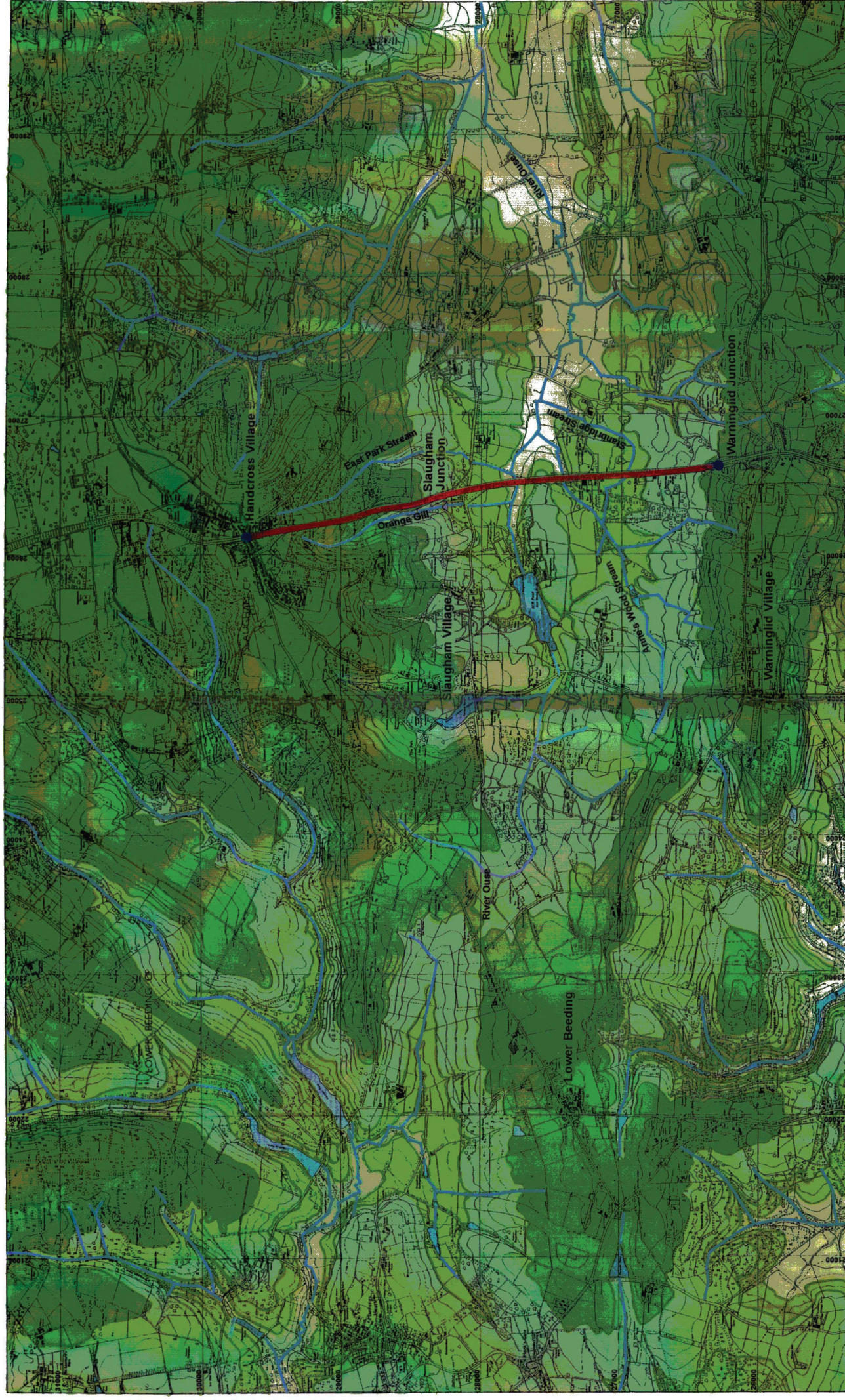
NORTH

REACTIVITY HEAD

NEWHAVEN to East Dover
Droptie 4 hrs

WORTHING

LITTLEHAMPTON



LANDFORM

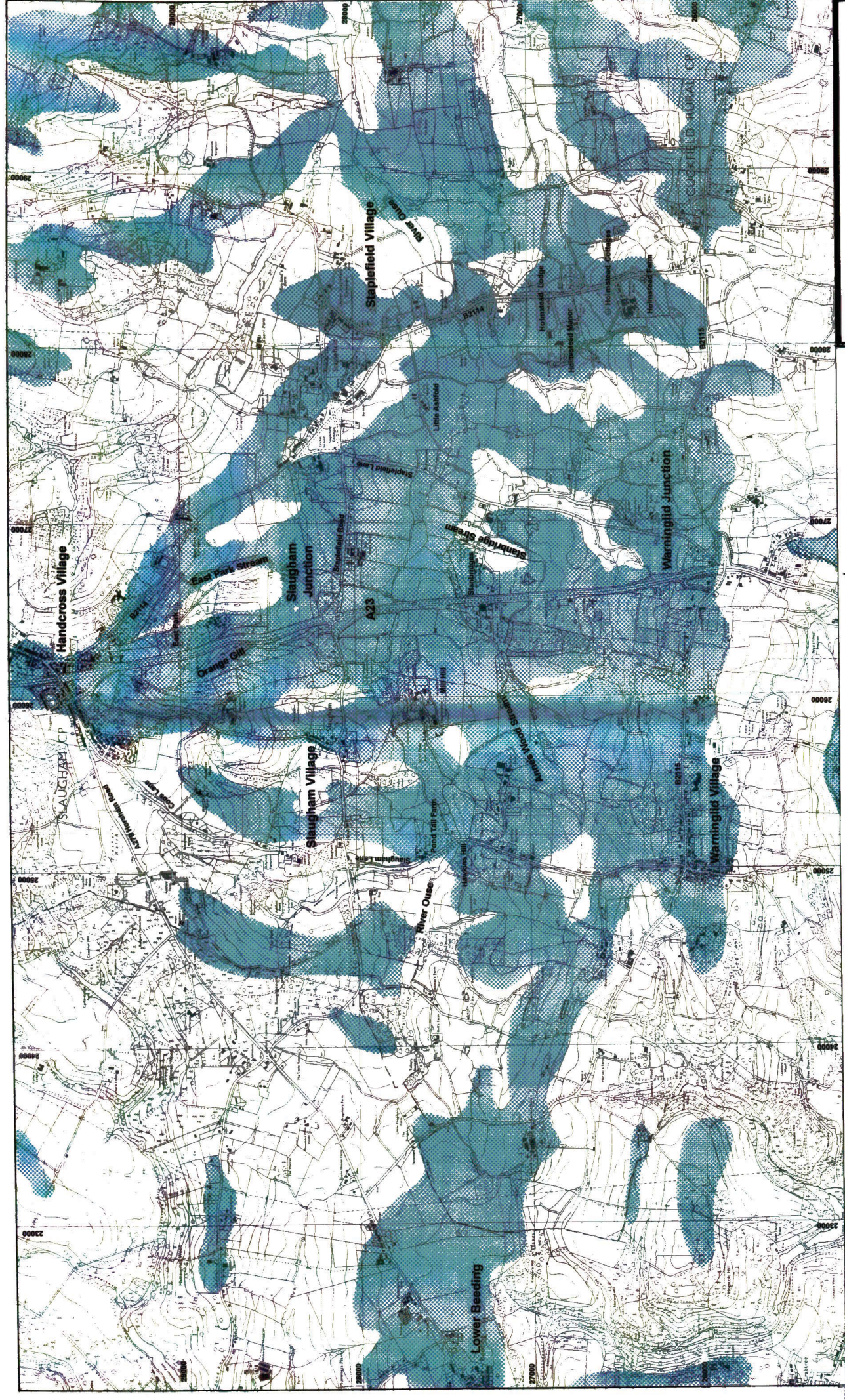


SCALE 1 / 25,000

- LEGEND**
- Land below 60m
 - Land between 60-70m
 - Land between 70-90m
 - Land between 90-110m
 - Land between 110-130m
 - Land between 130-150m
 - Land above 150m
 - Length of Road under study

Figure 6.2

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VISUAL ENVELOPE OF EXISTING ROAD (ROAD/TRAFFIC)
Figure 6.3

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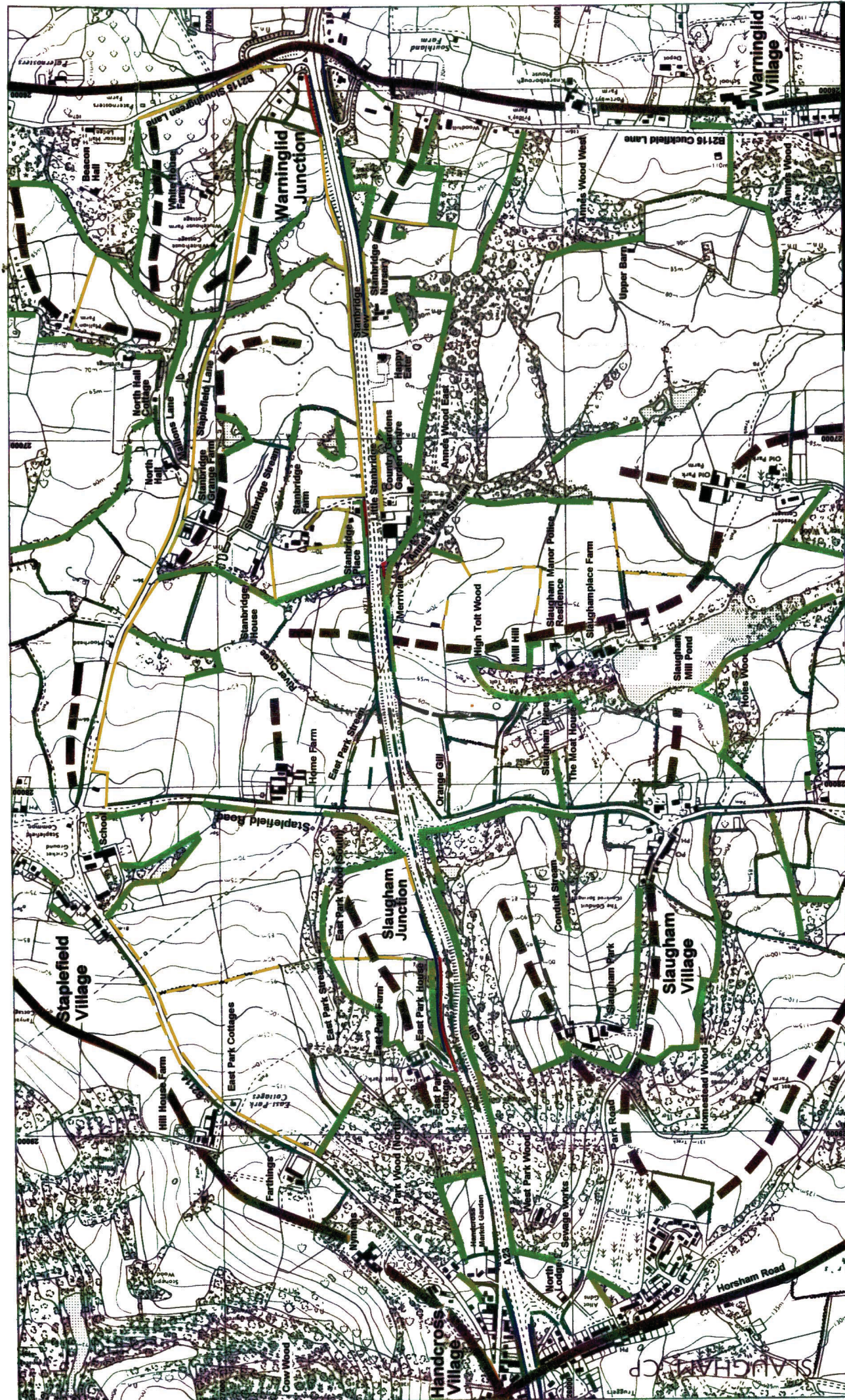
2000 metres



SCALE 1/20,000

LEGEND

 Area of Potential Intervisibility



LANDSCAPE ASSESSMENT OF EXISTING ROAD

Figure 6.4

Base map reproduced from Ordnance Survey Map © Crown Copyright.

NORTH

1000 metres

0 100 200 300 400 500

SCALE 1 / 10,000

LEGEND

-  Visual Barrier Mature Hedgerow (Continuous)
-  Mature Hedgerow (Intermittant)
-  Visual Barrier Mature Woodland Edge
-  Visual Envelope Landform
-  Intermediate Landform Barrier
-  Mature Woodland
-  Road in Cutting
-  Screen Wall / Fence
-  Clipped Hedge



LANDSCAPE QUALITY / CHARACTER
 (Extract from 'Landscape Appraisal of West Sussex, WSSC 1970 / 71')
Figure 6.5
 Base map reproduced from Ordnance Survey Map © Crown Copyright.

SCALE 1 / 20,000

0 200 400 600 800 1000 2000 metres

LEGEND

Landscape Quality

-1	0	1	2	3
Low	Medium	High	Very High	10+

Landscape Character

C	D
Central Weald Plateau (South)	Weald - Intermediate Zone
Steep, narrow valleys, with few streams largely wooded, especially in valleys but some hilltop rough grazing. Lightly settled.	Complex undulating topography. Some flat land in valley floors near main watercourses. Much woodland especially on slopes. Main land use arable and pasture well settled on main lines of communication.

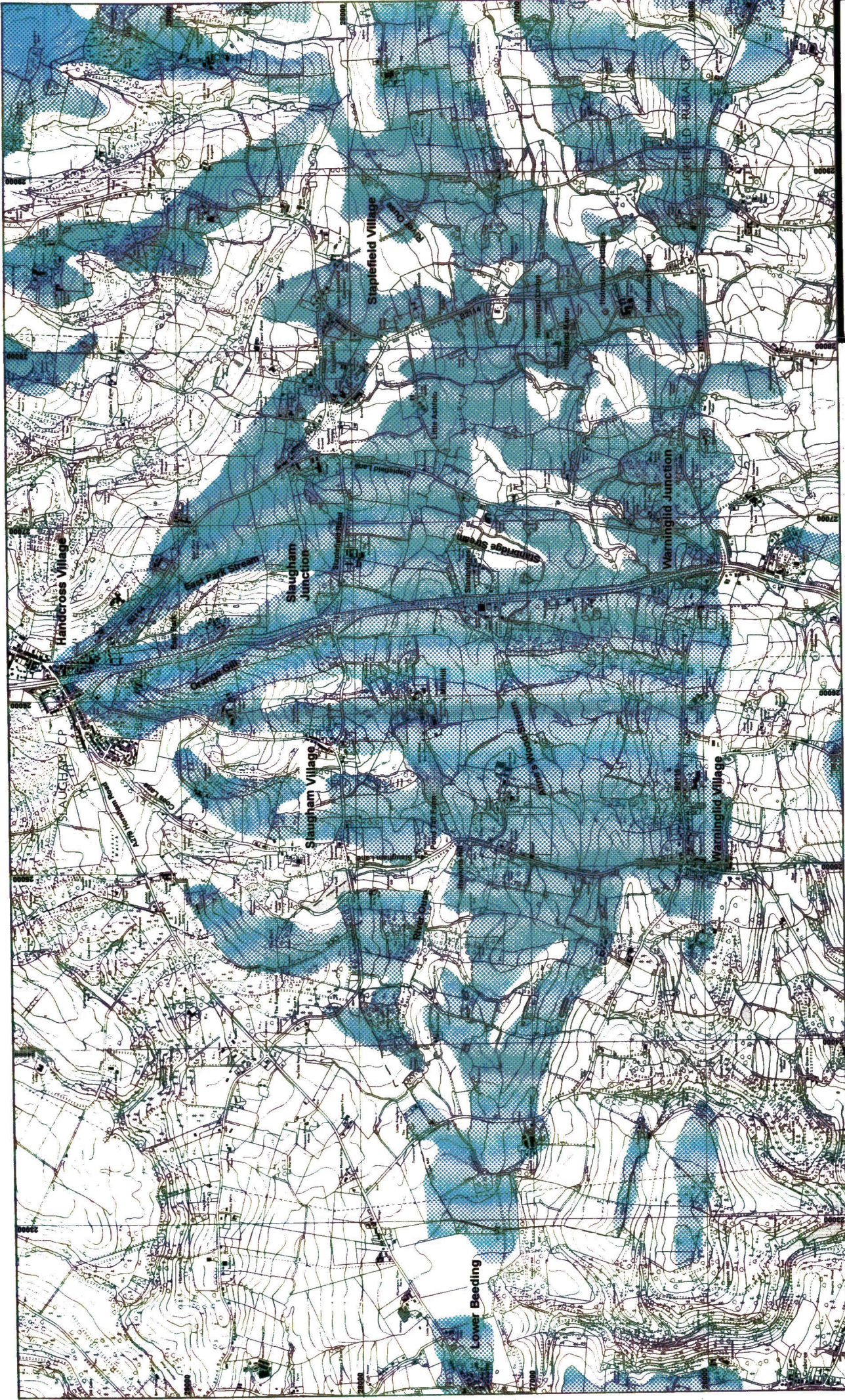
WSSCC 1994 Score

4	5	6	7	8	9
Fairly High	High	Very High	High	Very High	10+

WSSCC 1994 Score

6	(4)
High	Very High

NORTH



**VISUAL ENVELOPE OF
PROPOSED SCHEME
(ROAD/TRAFFIC)**
Figure 6.6

Base map reproduced from Ordnance Survey Map © Crown Copyright.



2000 metres



SCALE 1/20,000

LEGEND

 Area of Potential Intervisibility



LANDSCAPE ASSESSMENT OF SCHEME

Figure 6.7

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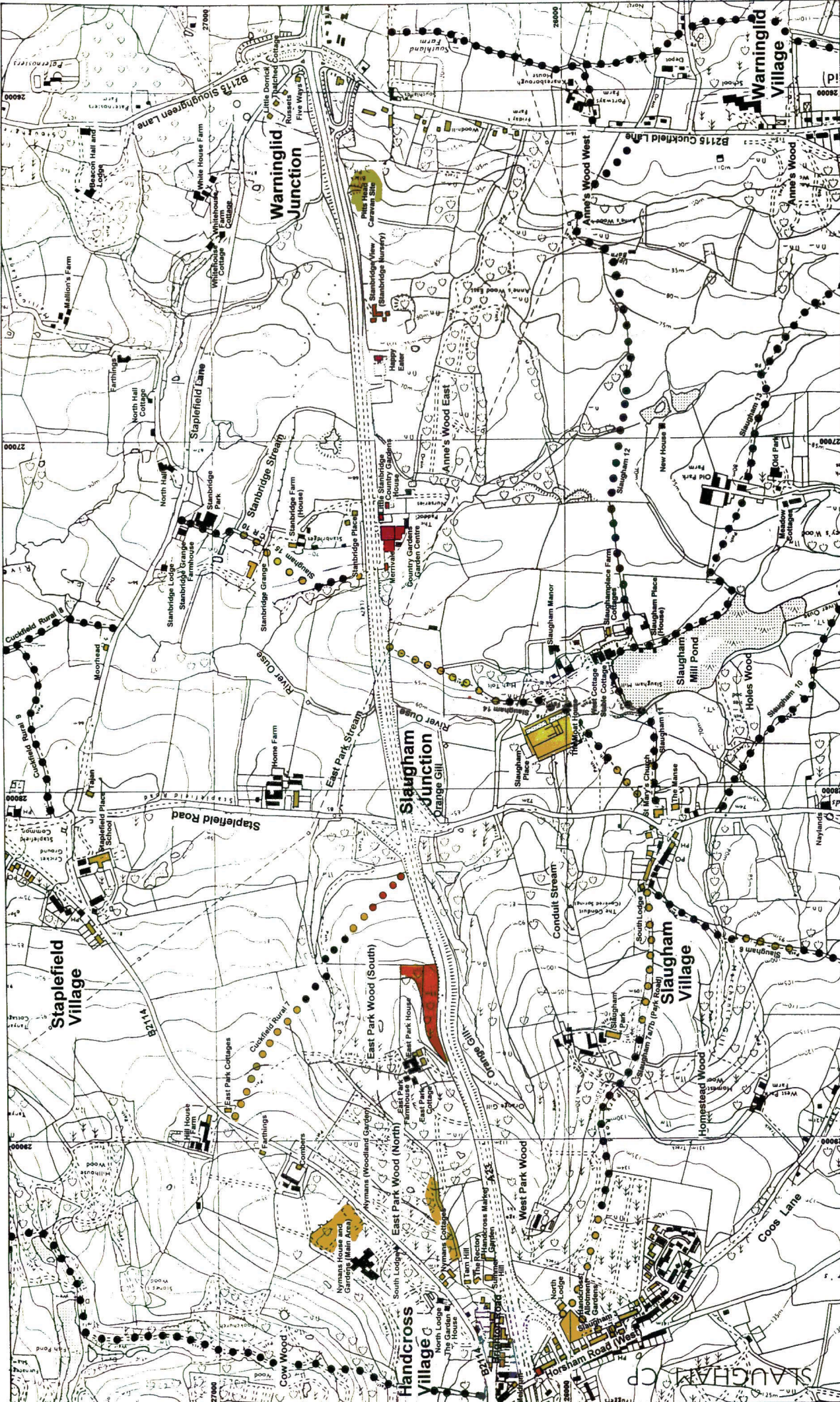
LEGEND

	Visual Barrier Mature Hedgerow (Continuous)
	Mature Hedgerow (Intermittant)
	Visual Barrier Mature Woodland Edge
	Visual Envelope Landform
	Visual Barrier Mature Woodland
	Road in Cutting
	Screen Wall / Fence
	Intermediate Landform Barrier
	Proposed Scheme Alignment
	Clipped Hedge

SCALE 1 / 10,000

0 100 200 300 400 500 1000 metres

NORTH



VISUAL IMPACT ASSESSMENT Existing

Figure 6.8 : Sheet 1

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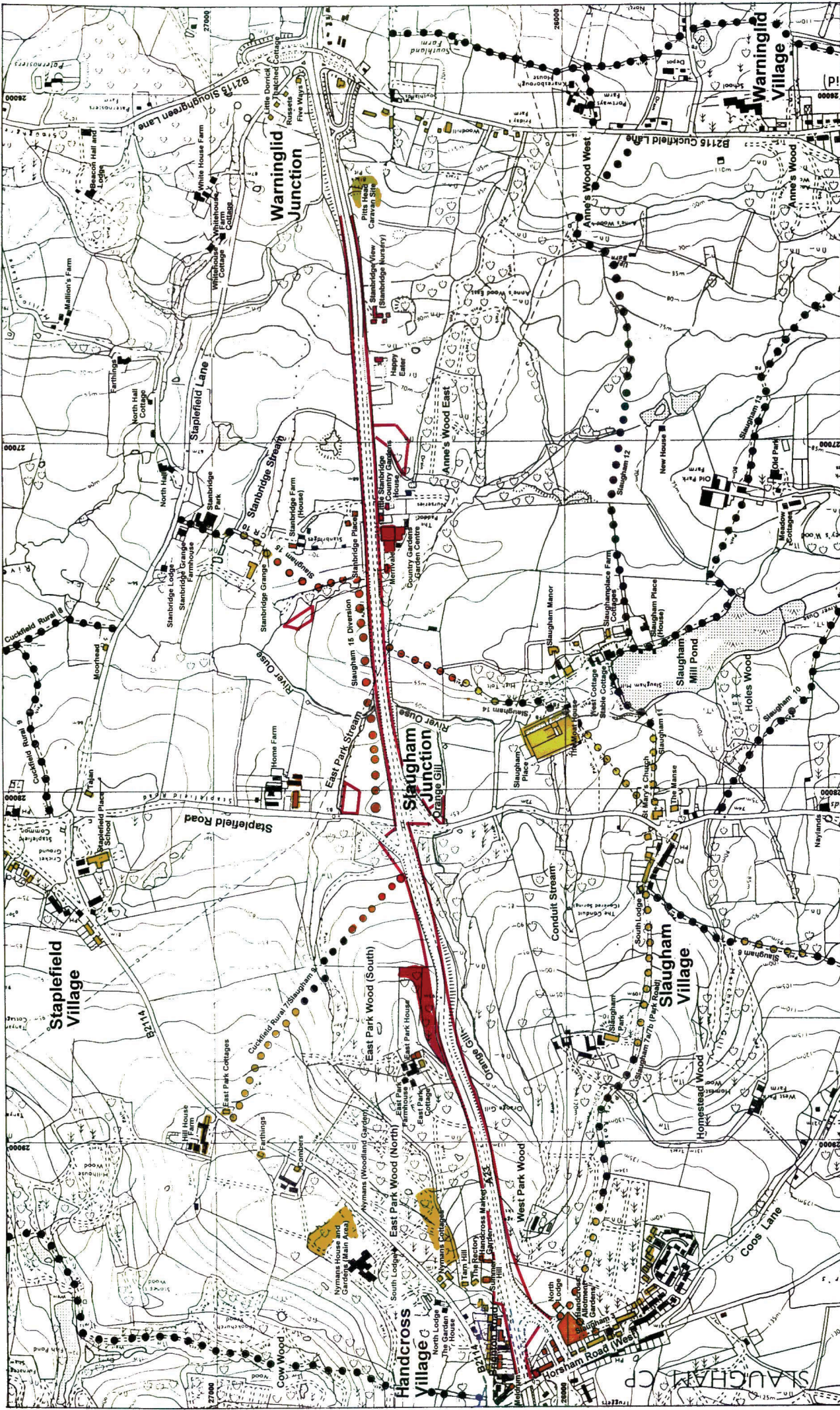


1000 metres



SCALE 1 / 10,000

- LEGEND**
- Properties Experiencing Substantial Visual Intrusion
 - Properties Experiencing Moderate Visual Intrusion
 - Properties Experiencing Slight Visual Intrusion
 - Properties Experiencing No Visual Intrusion
 - Rights of Way Experiencing Substantial Visual Intrusion
 - Rights of Way Experiencing Moderate Visual Intrusion
 - Rights of Way Experiencing Slight Visual Intrusion
 - Rights of Way Experiencing No Visual Intrusion



VISUAL IMPACT ASSESSMENT
Year of Opening (Winter)
Figure 6.8 : Sheet 2
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LEGEND

	Properties Experiencing Substantial Visual Intrusion		Properties Experiencing No Visual Intrusion
	Properties Experiencing Moderate Visual Intrusion		Rights of Way Experiencing No Visual Intrusion
	Properties Experiencing Slight Visual Intrusion		Limit of Proposed Earthworks

SCALE 1 / 10,000

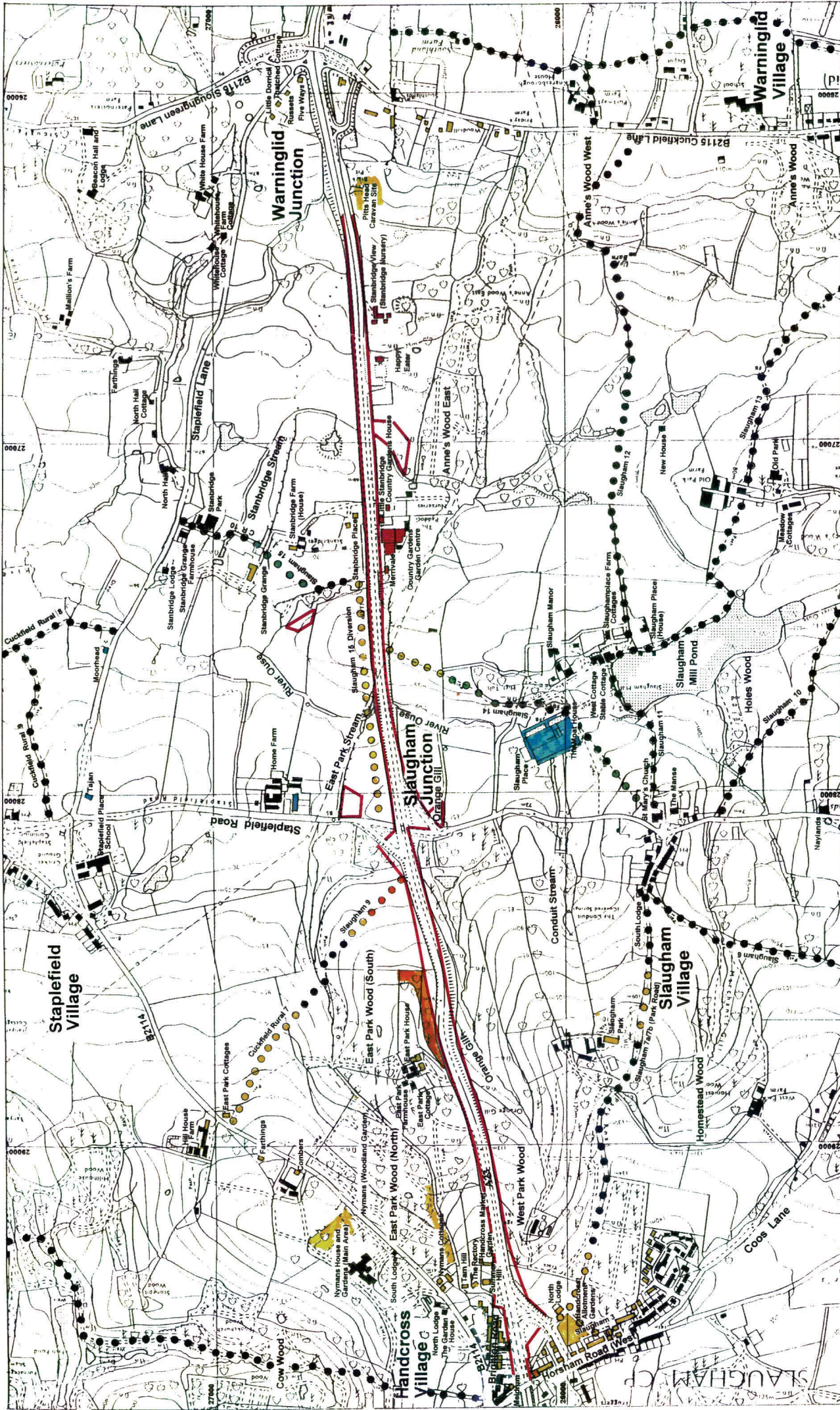
0 100 200 300 400 500 1000 metres

NORTH

Rights of Way Experiencing Substantial Visual Intrusion

Rights of Way Experiencing Moderate Visual Intrusion

Rights of Way Experiencing Slight Visual Intrusion



VISUAL IMPACT ASSESSMENT

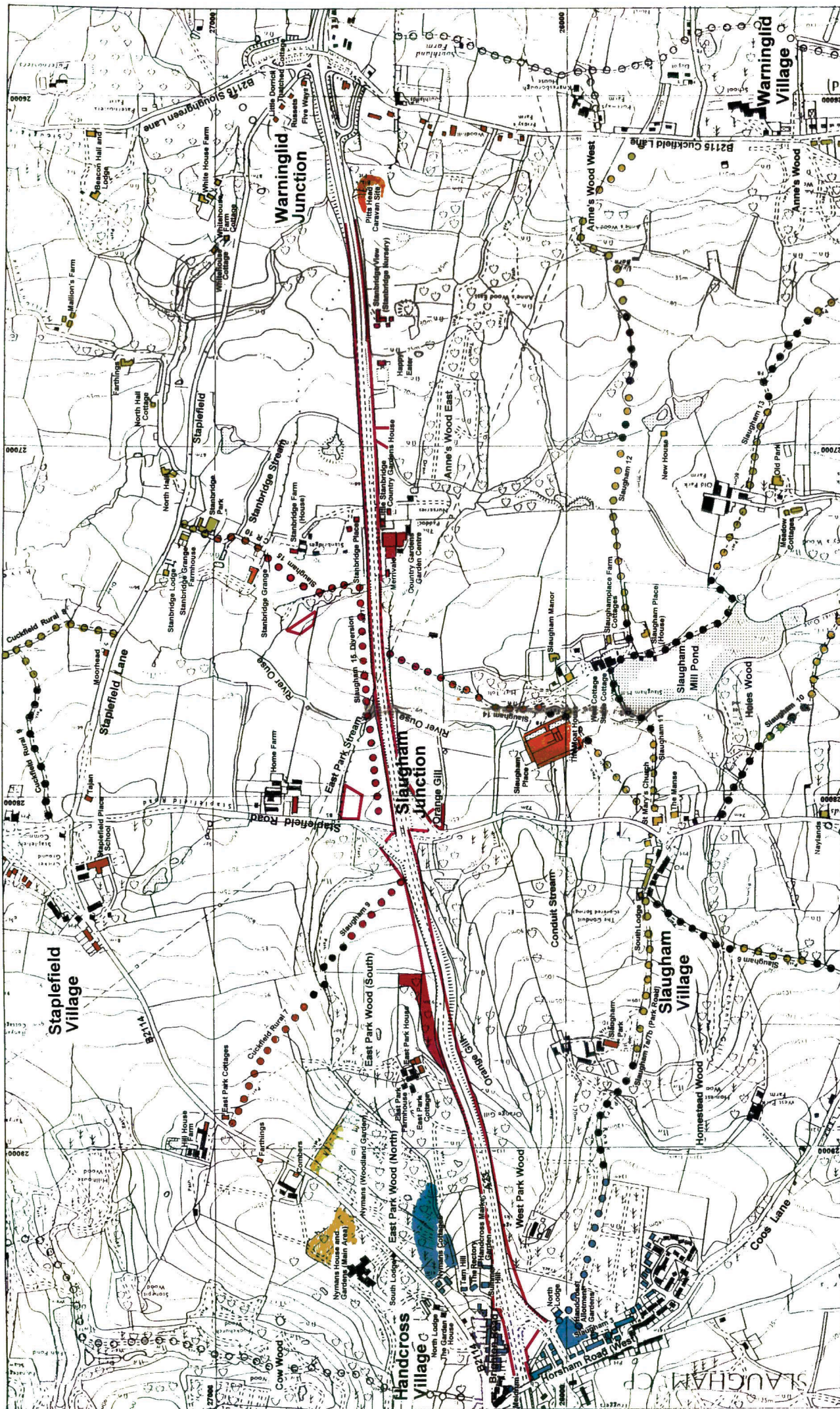
Year 15 (Summer)

Figure 6.8 : Sheet 3

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LEGEND

	Properties Experiencing Substantial Visual Intrusion		Rights of Way Experiencing Substantial Visual Intrusion		Properties Experiencing No Visual Intrusion
	Properties Experiencing Moderate Visual Intrusion		Rights of Way Experiencing Moderate Visual Intrusion		Rights of Way Experiencing No Visual Intrusion
	Properties Experiencing Slight Visual Intrusion		Rights of Way Experiencing Slight Visual Intrusion		Limit of Proposed Earthworks
	Properties Experiencing Slight Visual Benefit		Rights of Way Experiencing Slight Visual Benefit		



VISUAL IMPACT ASSESSMENT Lighting (Night)
Figure 6.8 : Sheet 4
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LEGEND

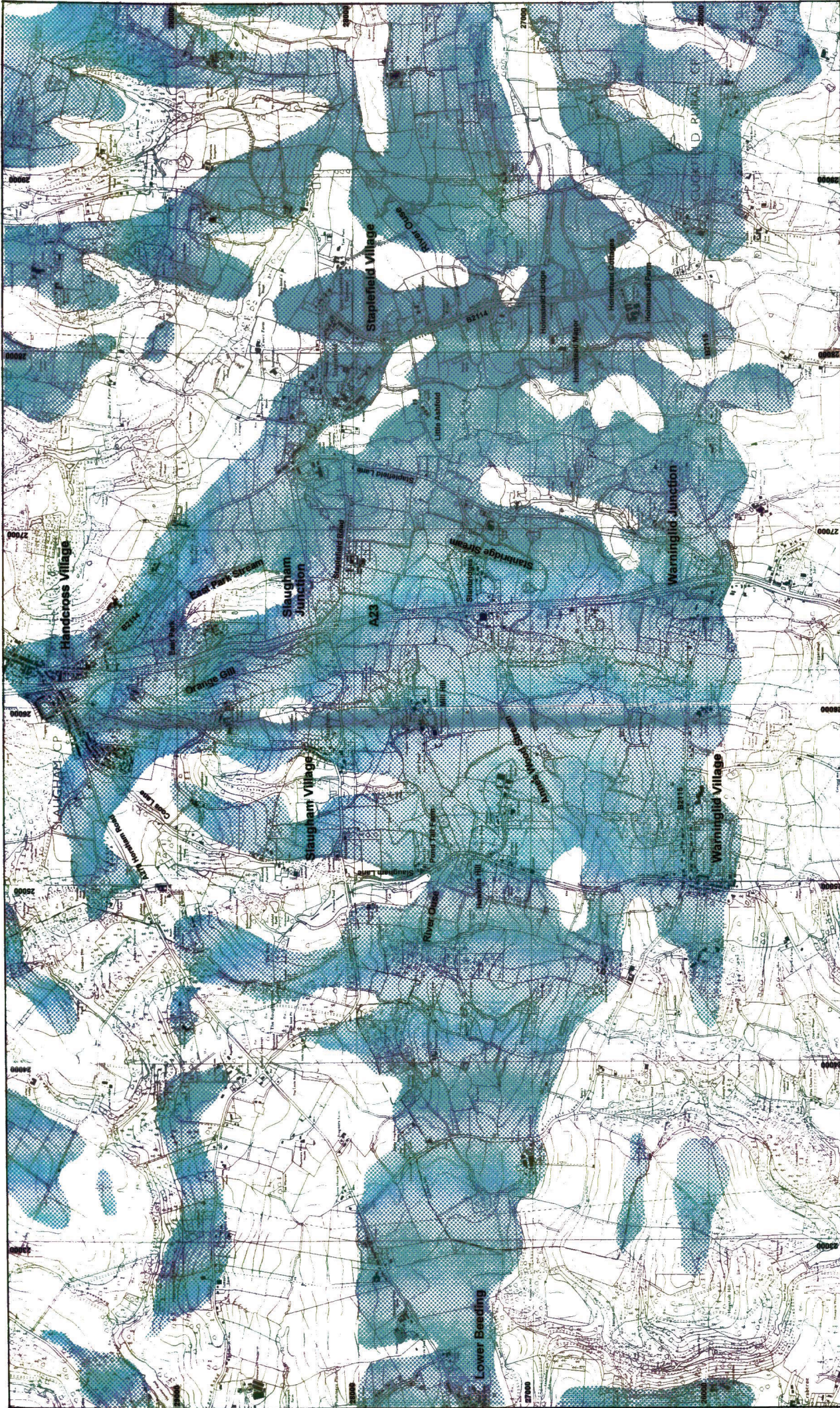
	Properties Experiencing Substantial Visual Intrusion		Properties Experiencing No Visual Intrusion
	Properties Experiencing Moderate Visual Intrusion		Rights of Way Experiencing No Visual Intrusion
	Properties Experiencing Slight Visual Intrusion		Limit of Proposed Earthworks
	Properties Experiencing Slight Visual Benefit		

SCALE 1 / 10,000

0 100 200 300 400 500 1000 metres

NORTH

	Rights of Way Experiencing Substantial Visual Intrusion
	Rights of Way Experiencing Moderate Visual Intrusion
	Rights of Way Experiencing Slight Visual Intrusion
	Rights of Way Experiencing Slight Visual Benefit



LEGEND

SCALE 1/20,000

200 400 600 800 1000 2000 metres

N NORTH

 Area of Potential Intervisibility

VISUAL ENVELOPE OF PROPOSED SCHEME (LIGHTING)

Figure 6.9

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LEGEND

Existing Landscape Features

- Trees / Woodland
- Hedges
- Fences

Planting Proposals

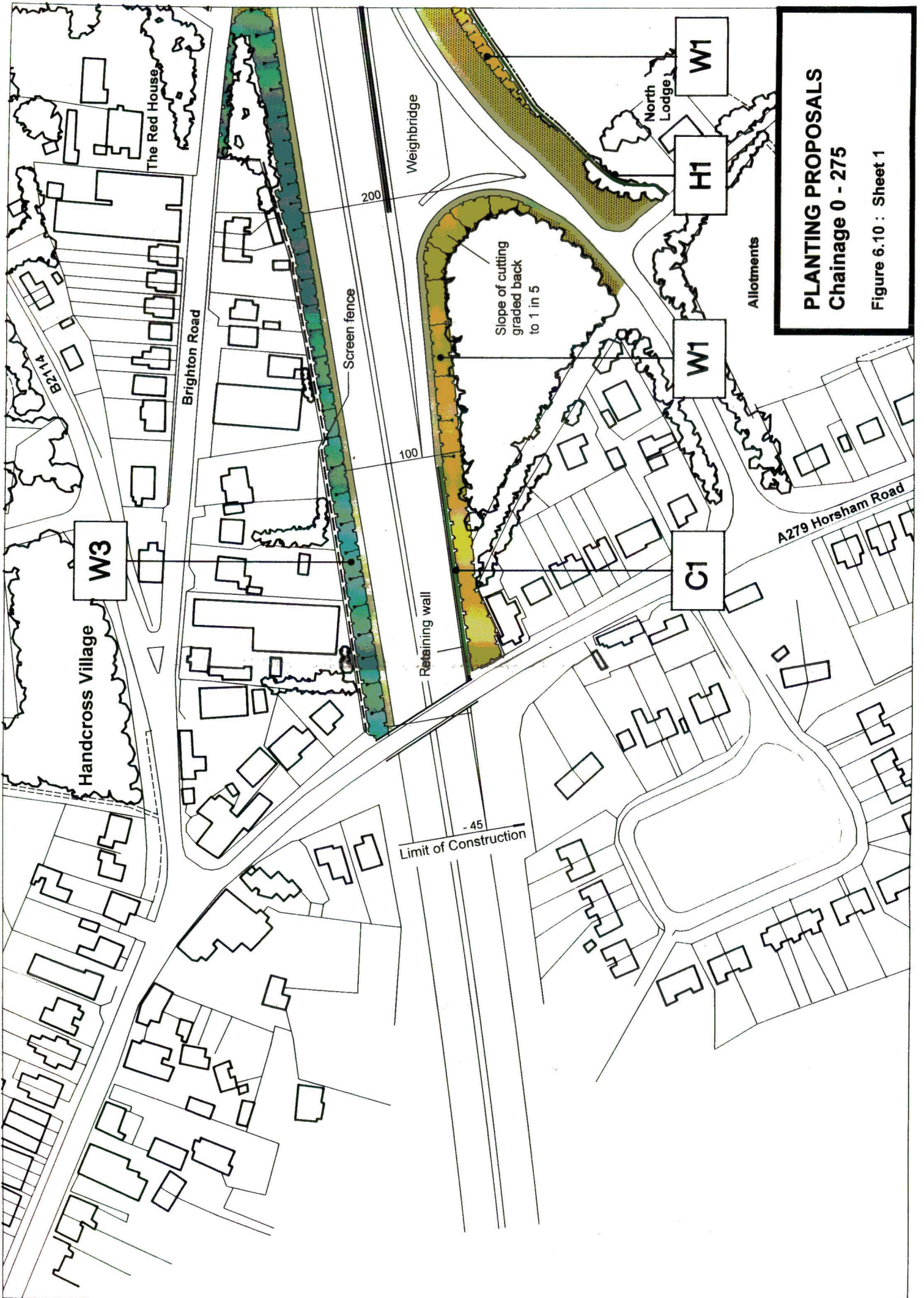
- W1 Woodland Planting Mix 1
- W2 Woodland Planting Mix 2
- W3 Woodland Planting Mix 3
- W4 Woodland Planting Mix 4
- H1 Hedge Planting
- C1 Climber Planting Type 1
- C2 Climber Planting Type 2
- C3 Climber Planting Type 3
- Species rich meadow grass
- Mown grass road verge



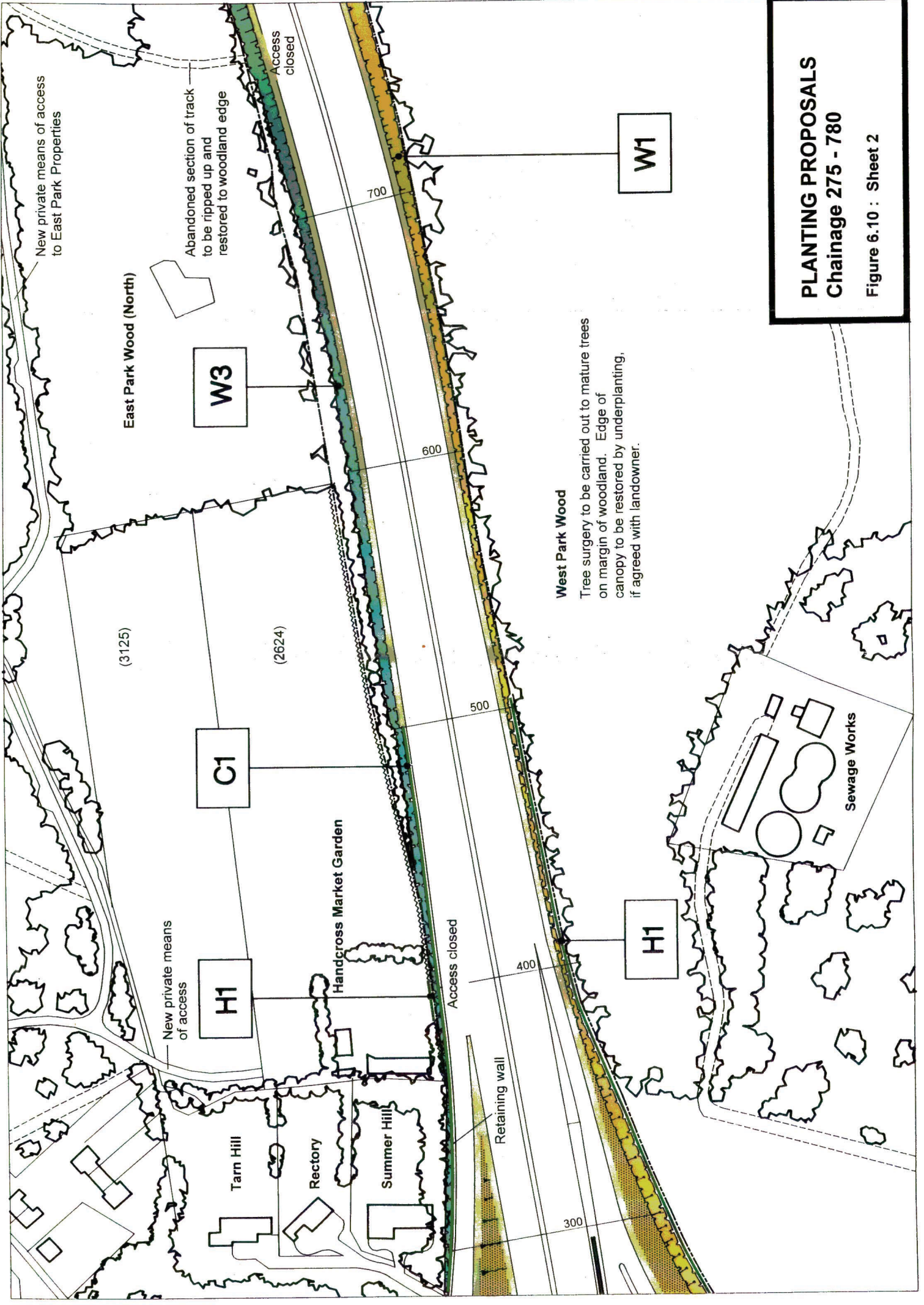
SCALE 1:1250

PLANTING PROPOSALS

Figure 6.10 : Key Sheet



PLANTING PROPOSALS
Chainage 0 - 275
 Figure 6.10 : Sheet 1



New private means of access to East Park Properties

East Park Wood (North)

Abandoned section of track to be ripped up and restored to woodland edge

Access closed

W3

700

W1

600

West Park Wood

Tree surgery to be carried out to mature trees on margin of woodland. Edge of canopy to be restored by underplanting, if agreed with landowner.

(3125)

(2624)

C1

500

Handcross Market Garden

Sewage Works

New private means of access

H1

400

H1

Access closed

Tarn Hill

Rectory

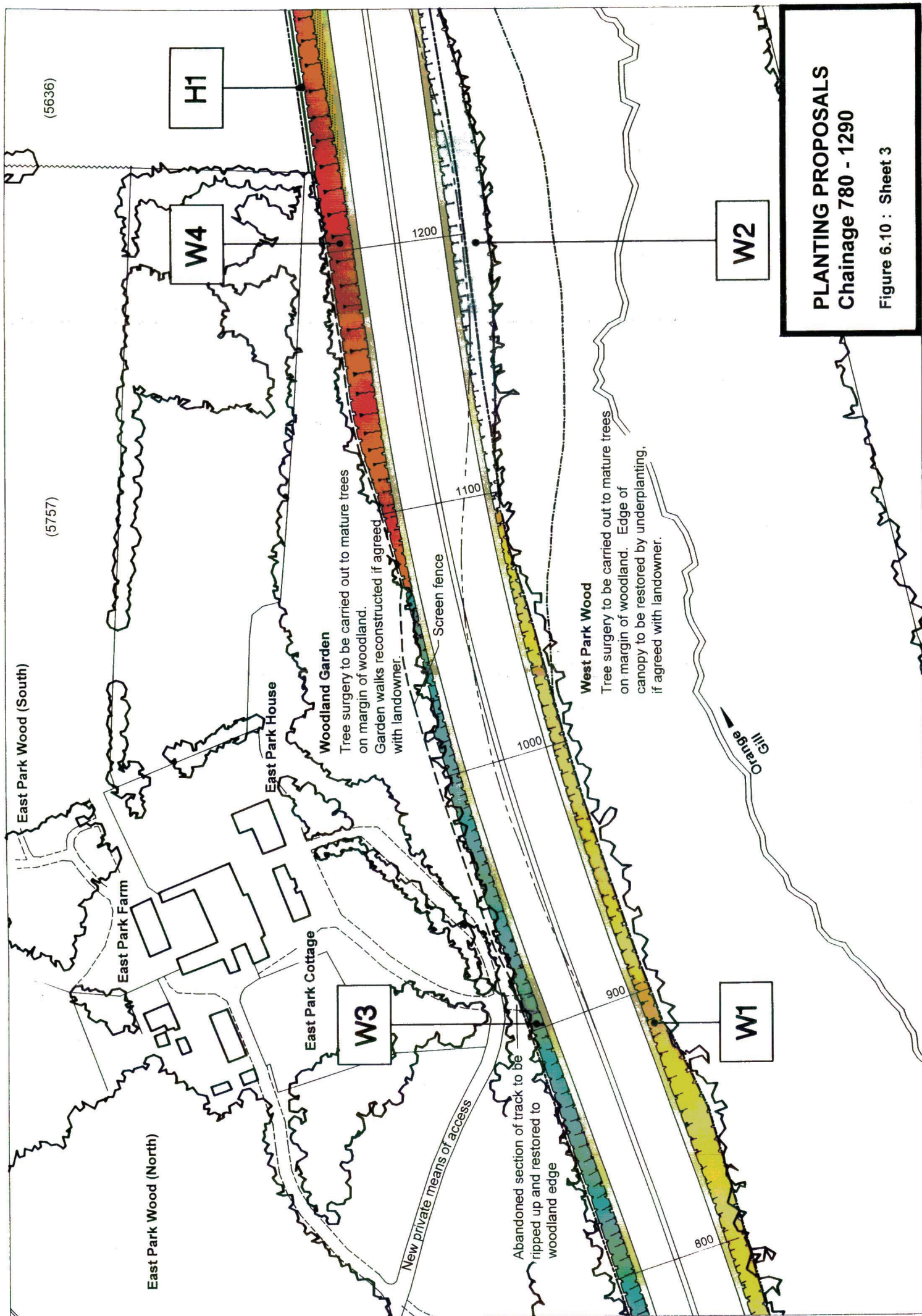
Summer Hill

Retaining wall

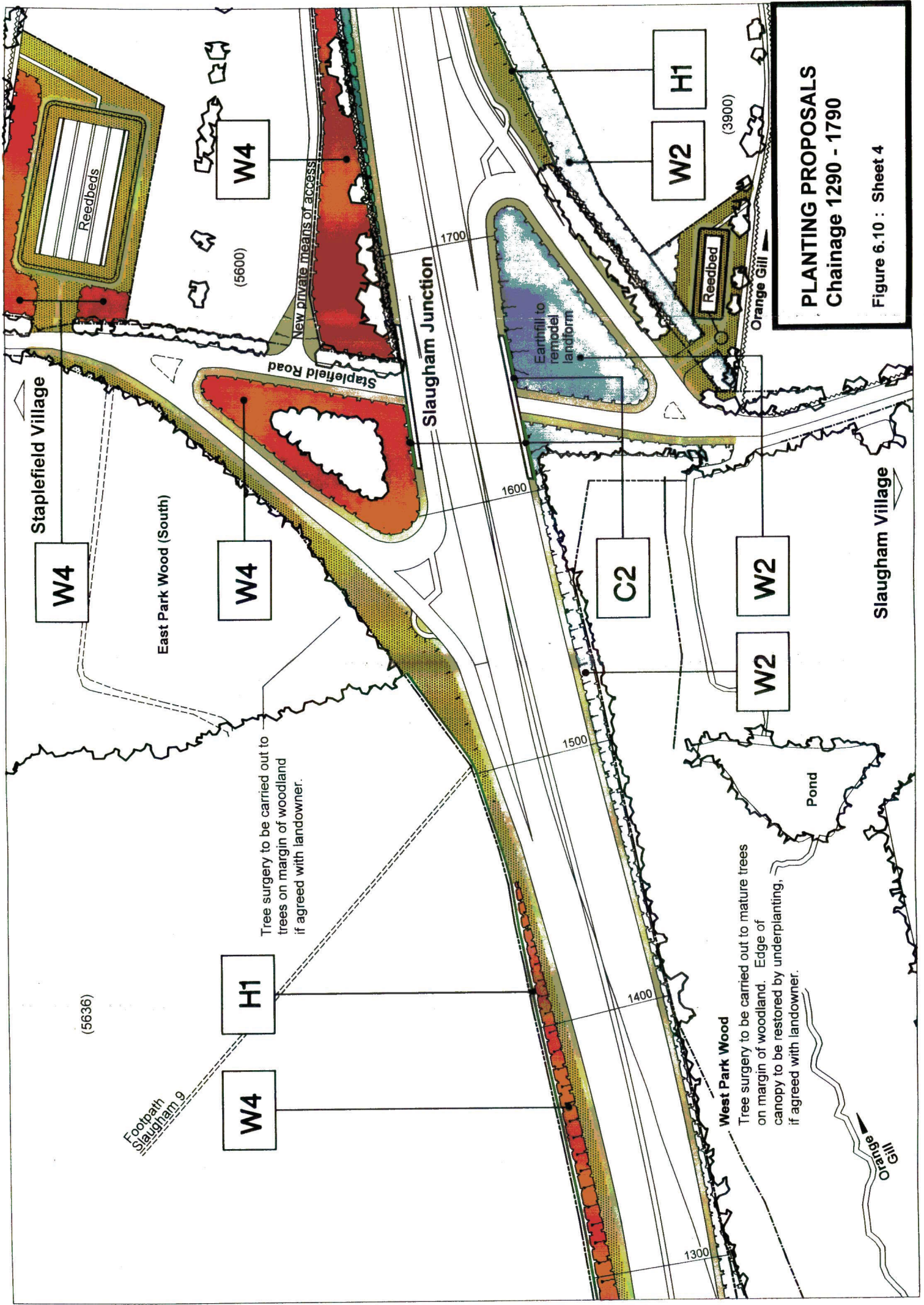
300

PLANTING PROPOSALS
Chainage 275 - 780

Figure 6.10 : Sheet 2



PLANTING PROPOSALS
Chainage 780 - 1290
 Figure 6.10 : Sheet 3



PLANTING PROPOSALS
Chainage 1290 - 1790
 Figure 6.10 : Sheet 4

Staplefield Village

Slaugham Village

East Park Wood (South)

West Park Wood

Tree surgery to be carried out to trees on margin of woodland if agreed with landowner.

Tree surgery to be carried out to mature trees on margin of woodland. Edge of canopy to be restored by underplanting, if agreed with landowner.

(5636)

H1

W4

W4

W4

W4

C2

W2

W2

H1

W2

1300

1400

1500

1600

1700

(3900)

(5600)

Footpath (Slaugham) 9

New private means of access

Staplefield Road

Slaugham Junction

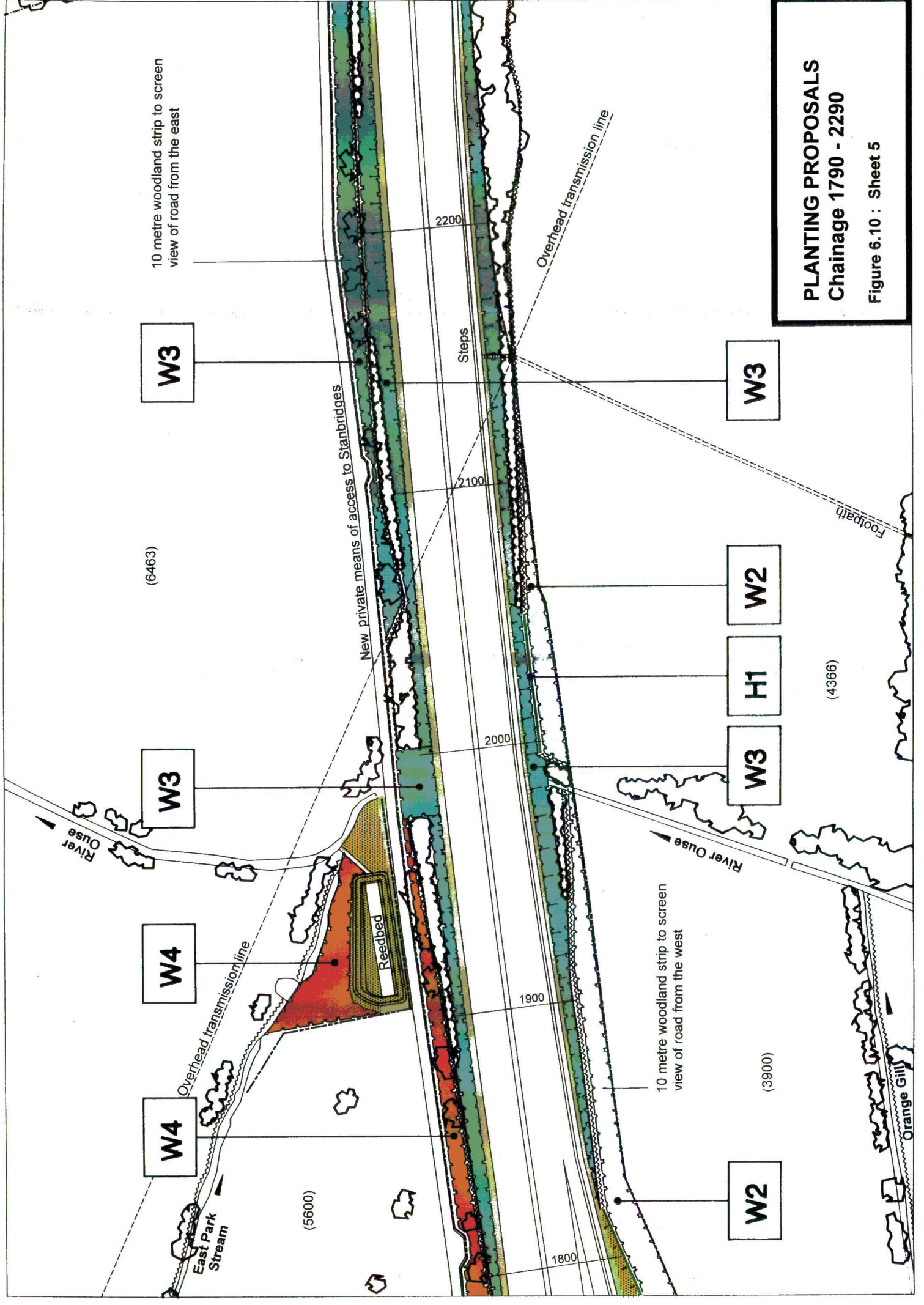
Earthfill to remodel landform

Reedbeds

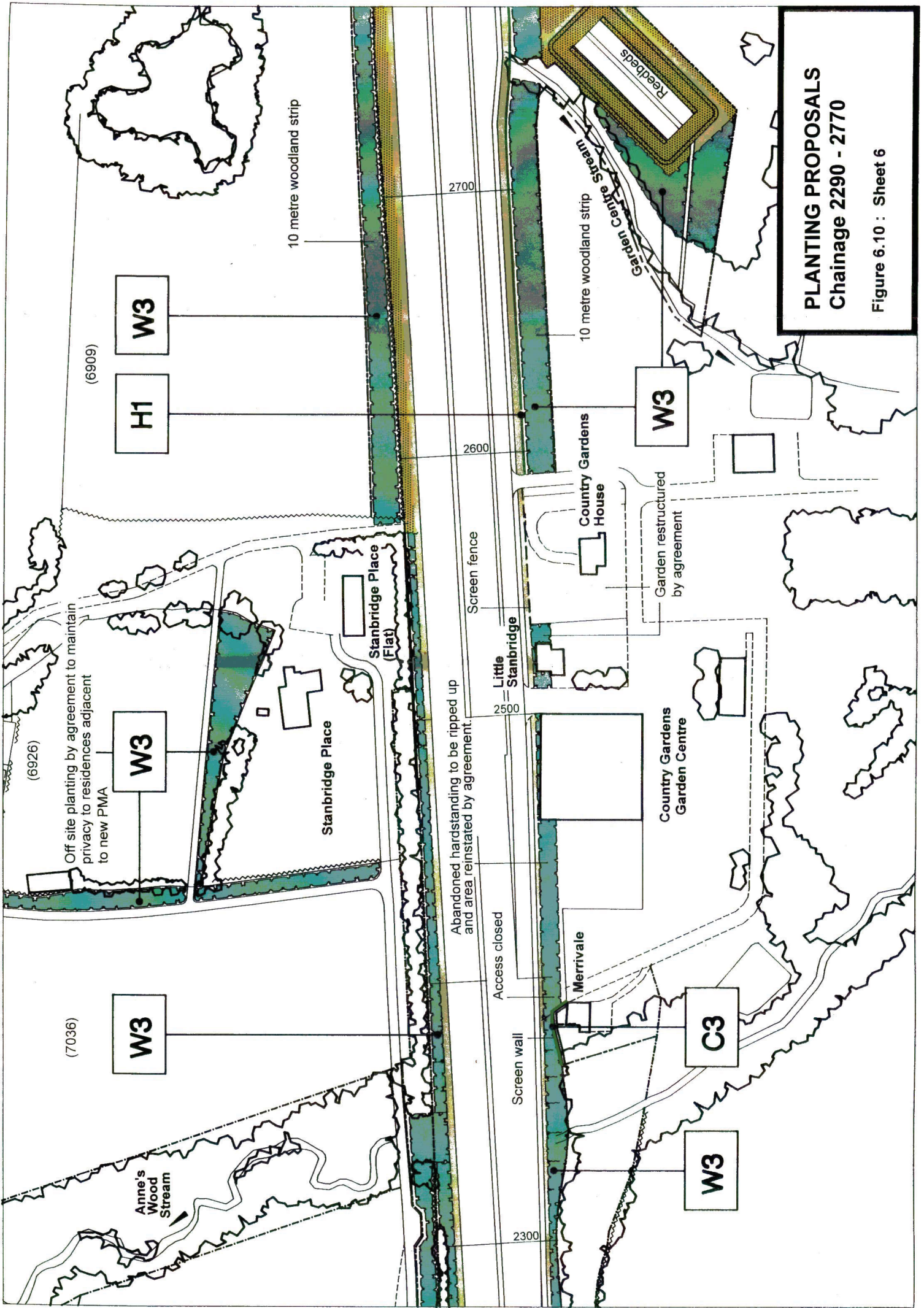
Reedbed

Pond

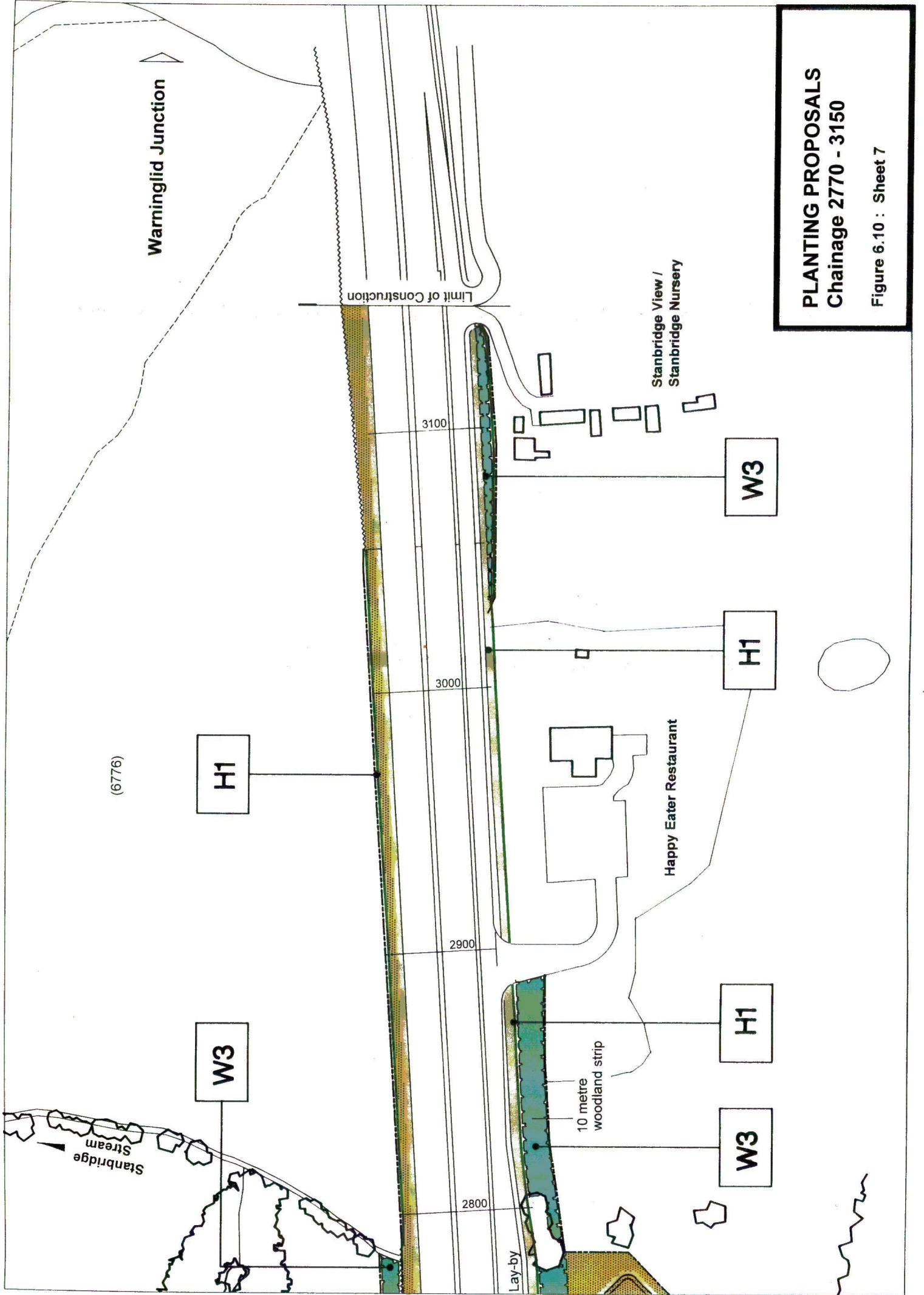
Orange Gill



PLANTING PROPOSALS
Chainage 1790 - 2290
 Figure 6.10 : Sheet 5



PLANTING PROPOSALS
Chainage 2290 - 2770
 Figure 6.10 : Sheet 6



PLANTING PROPOSALS
Chainage 2770 - 3150

Figure 6.10 : Sheet 7

Warringlid Junction

Limit of Construction

Stanbridge View /
Stanbridge Nursery

Happy Eater Restaurant

10 metre
woodland strip

Lay-by

(6776)

H1

W3

W3

H1

H1

W3

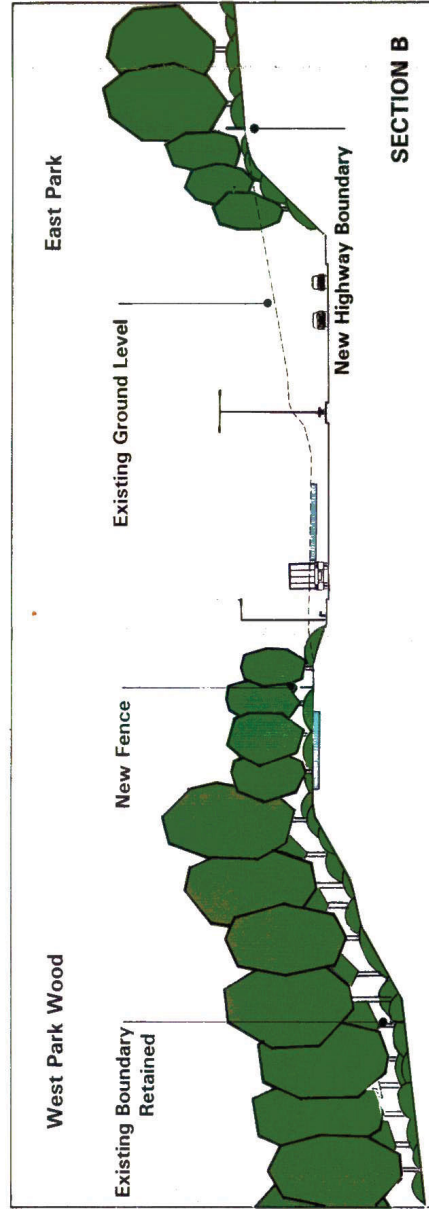
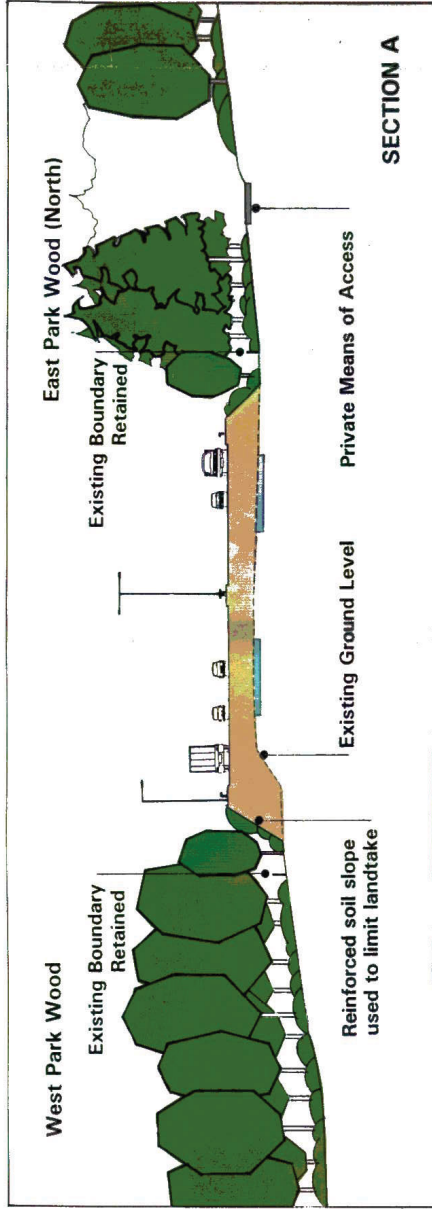
3100

3000

2900

2800

Stanbridge
Stream

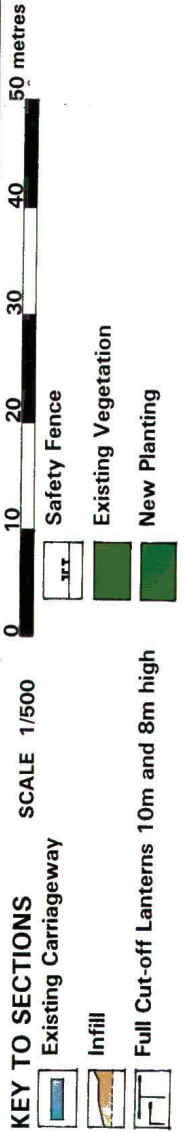
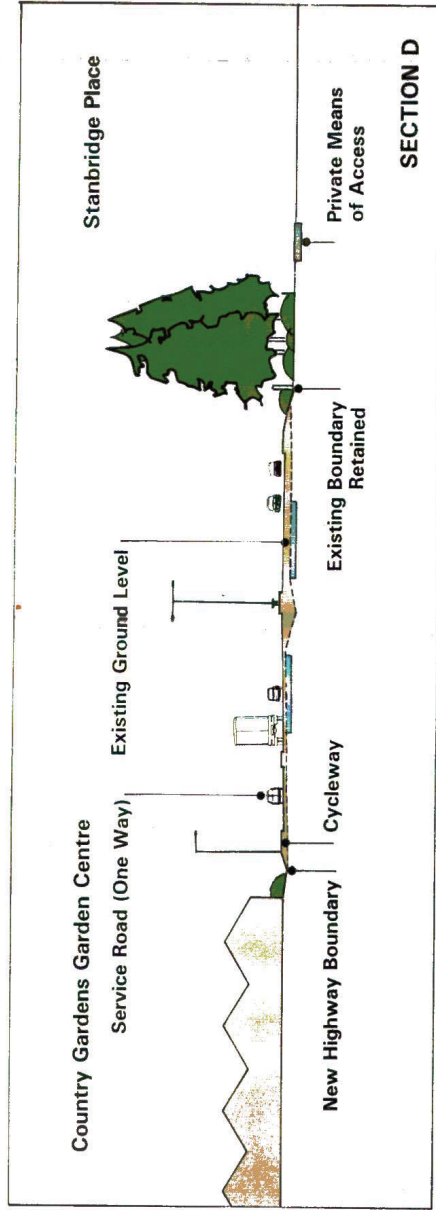
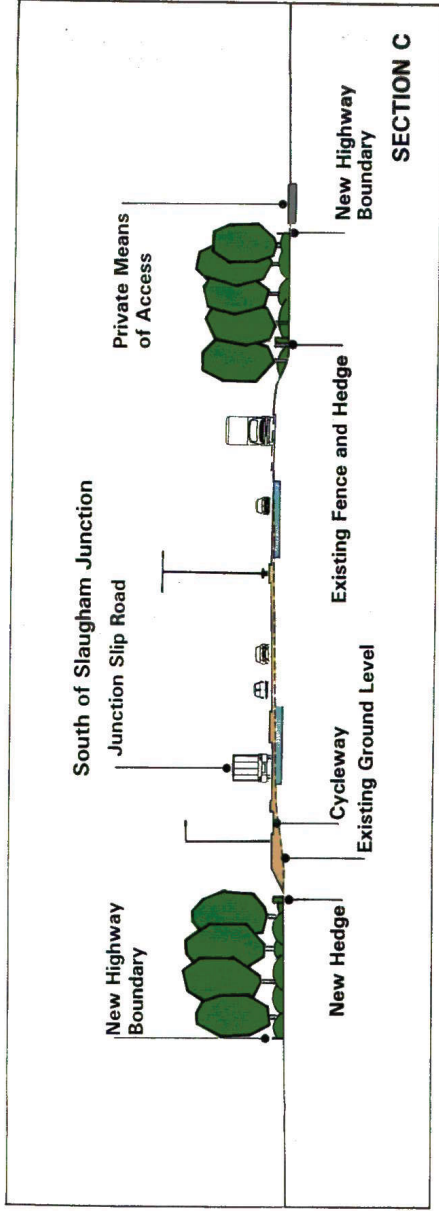


KEY TO SECTIONS SCALE 1/500

	Existing Carriageway
	Infill
	Full cut-off Lanterns 10m and 8m high
	Safety Fence
	Existing Vegetation
	New Planting















0 10 20 30 40 50 metres

DETAILED CROSS SECTIONS
Sections A and B
Figure 6.11 : Sheet 2



DETAILED CROSS SECTIONS
Sections C and D
Figure 6.11 : Sheet 3

LEGEND

-  Built up Area
-  Commercial Property
-  Rural Residence / Gardens
-  Allotments
-  Nursery Garden
-  Caravan (Gypsy) Site
-  Woodland
-  Farmland - Grade 3
-  Farmland - Grade 4
-  S15 Public Right of Way
-  Field Number Reference
-  Land Ownership Boundary with Reference
-  Land Occupancy with Reference
-  Boundary of National Trust Property of Heritage Interest



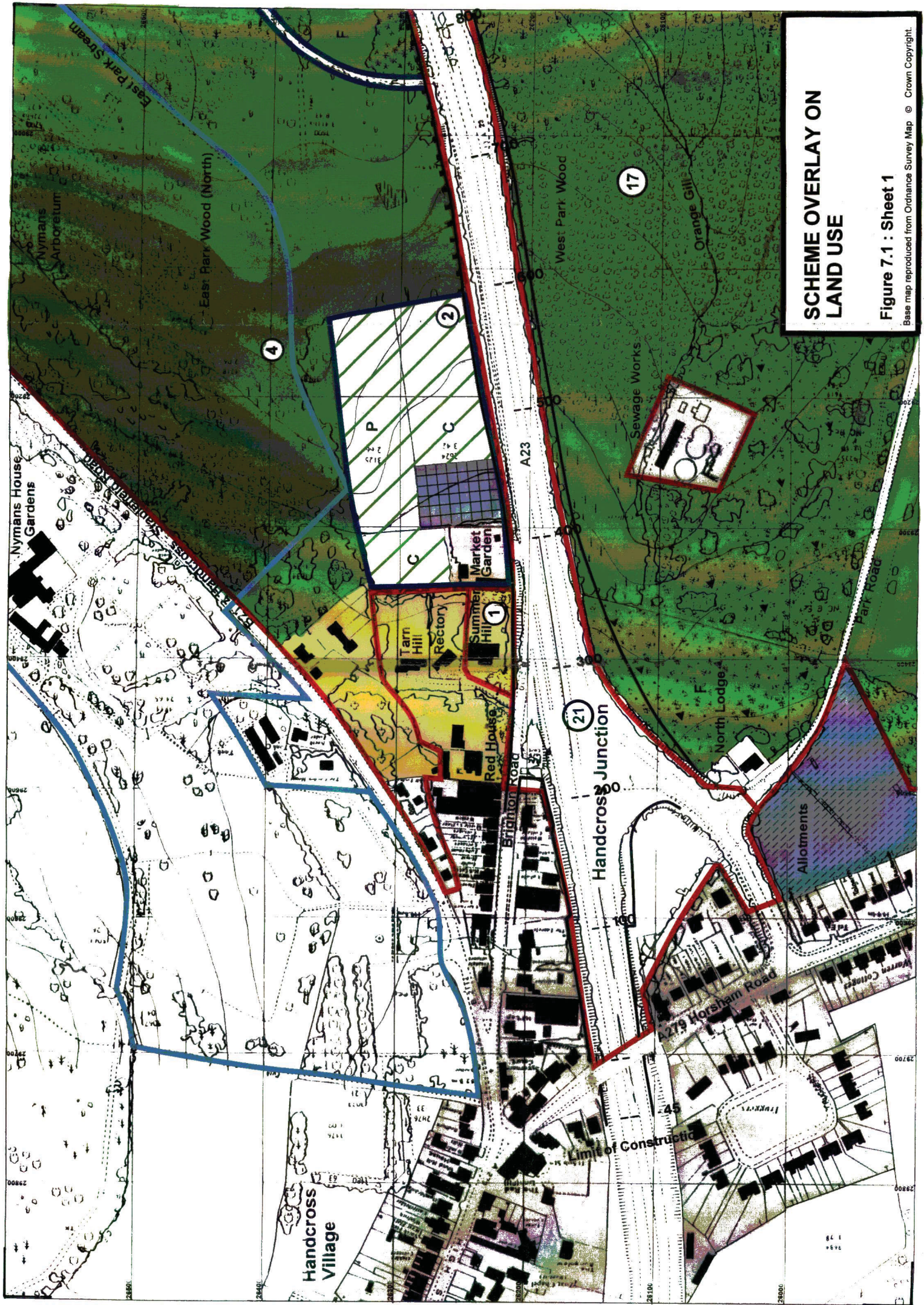
NORTH



SCALE 1 / 2,500

**SCHEME OVERLAY ON
LAND USE**

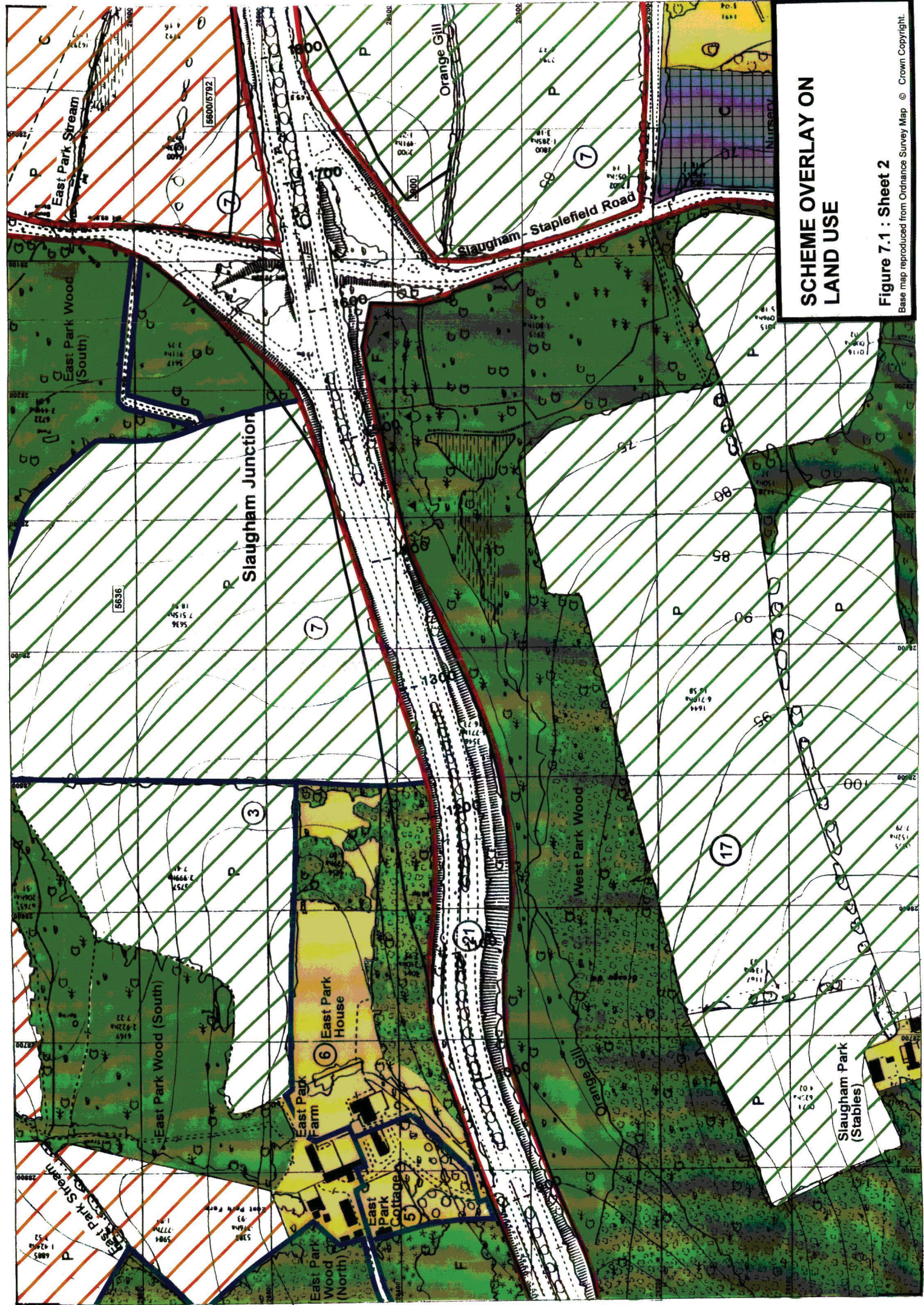
Figure 7.1 : Key Sheet



**SCHEME OVERLAY ON
LAND USE**

Figure 7.1 : Sheet 1

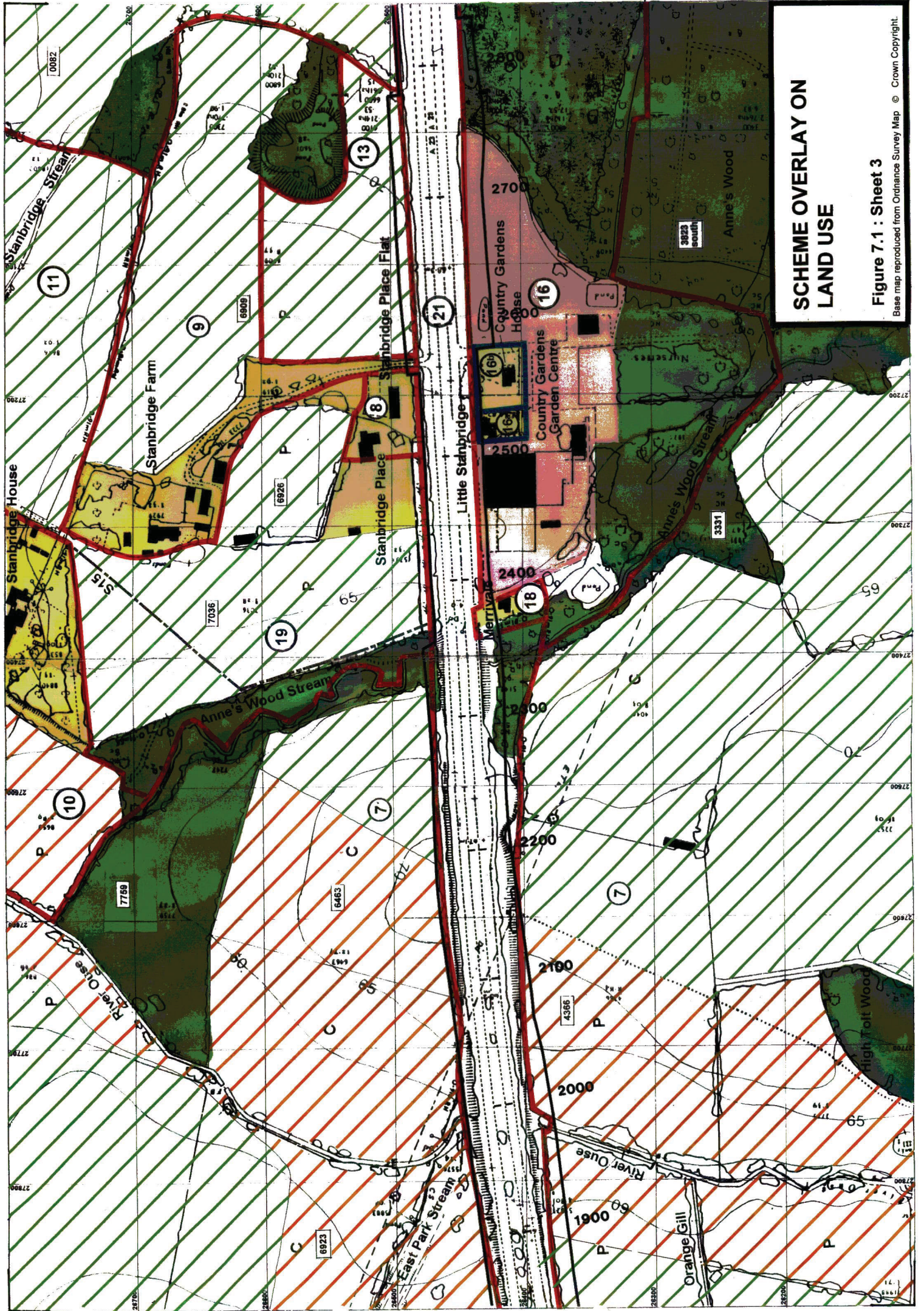
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**SCHEME OVERLAY ON
LAND USE**

Figure 7.1 : Sheet 2

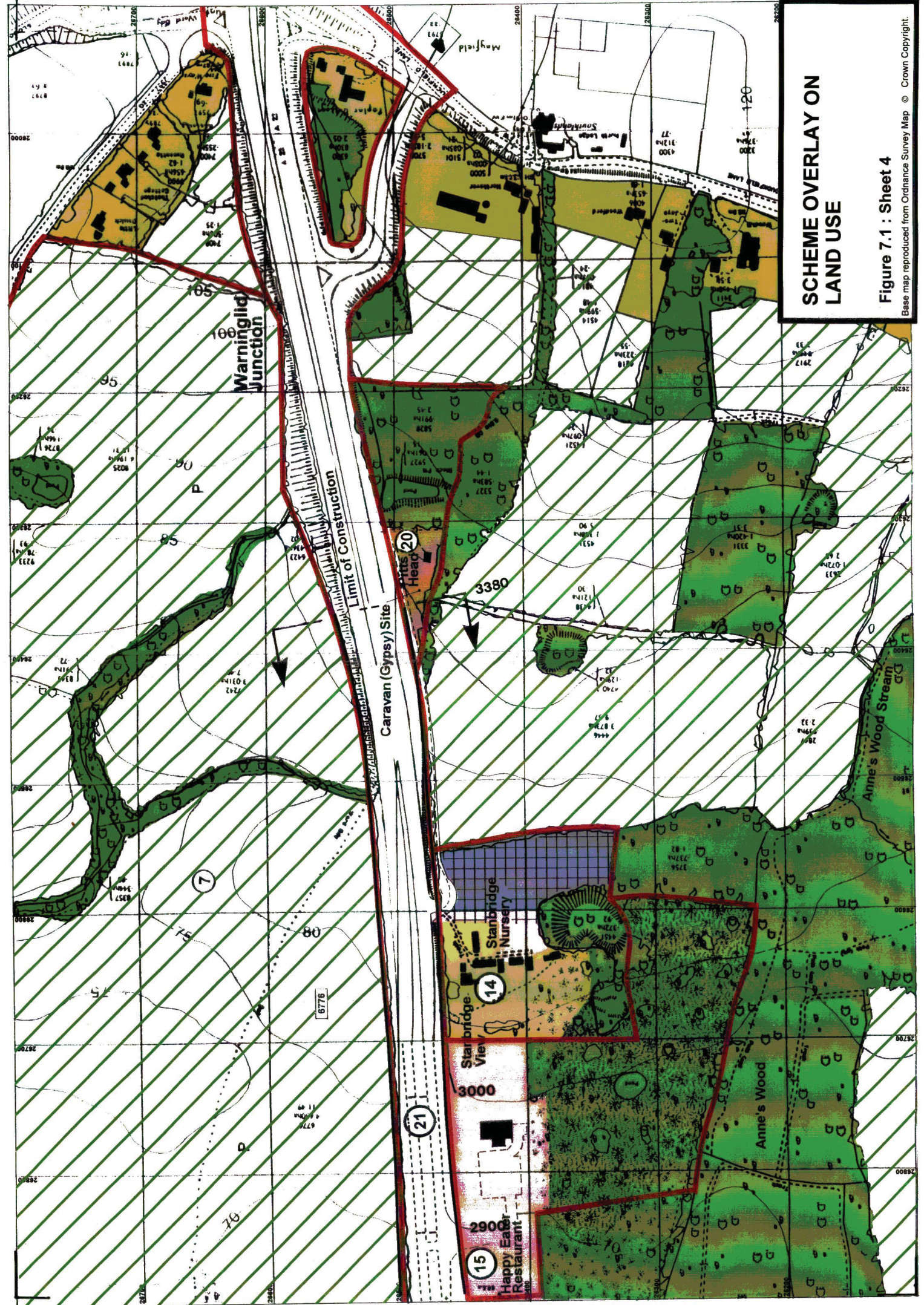
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SCHEME OVERLAY ON LAND USE

Figure 7.1 : Sheet 3

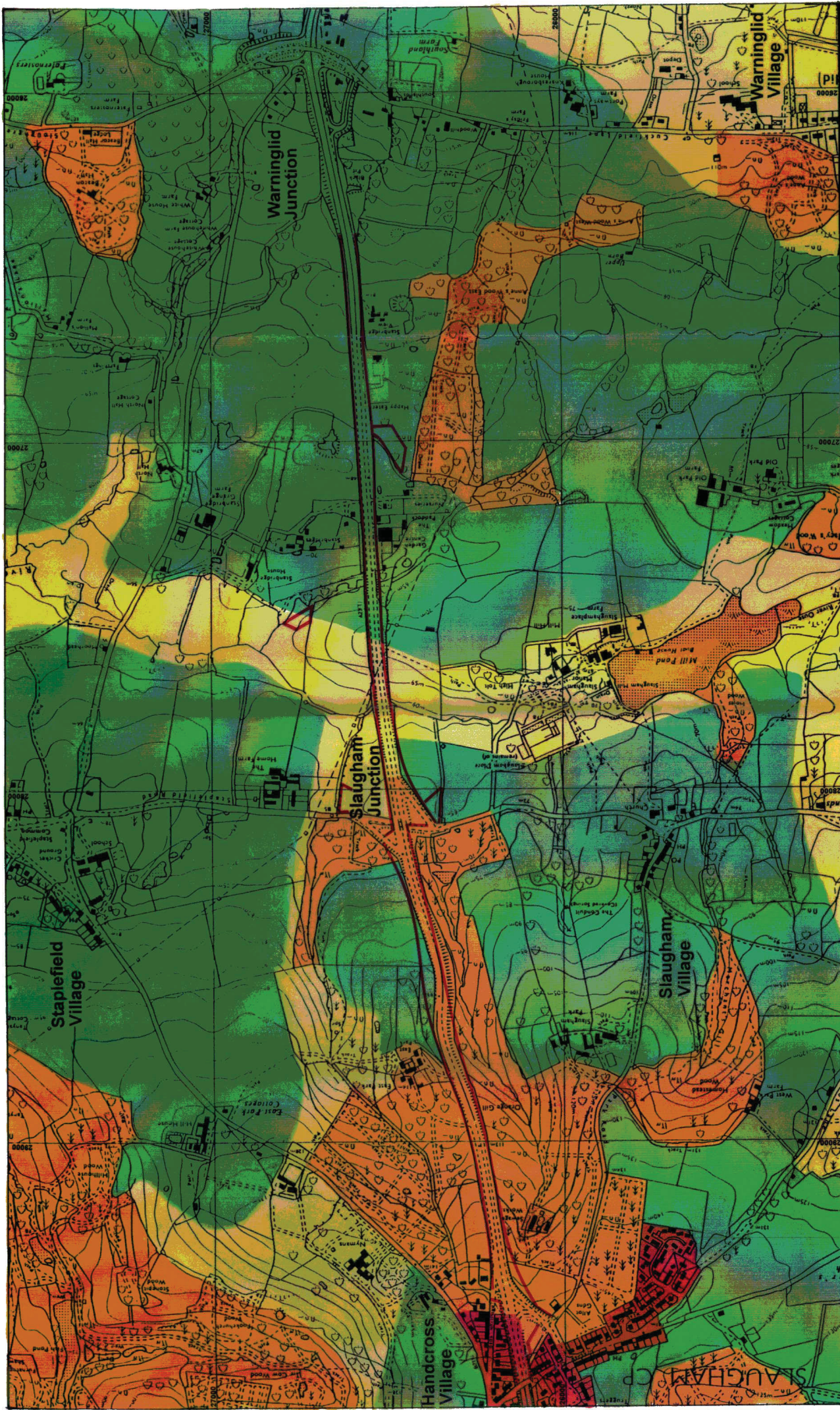
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**SCHEME OVERLAY ON
LAND USE**

Figure 7.1 : Sheet 4

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LEGEND

- Land predominantly in urban use
- Other land primarily in non-agricultural use
- Agricultural land Grade 3
- Agricultural land Grade 4

SCALE 1 / 10,000

0 100 200 300 400 500 1000 metres

Limit of Proposed Earthworks

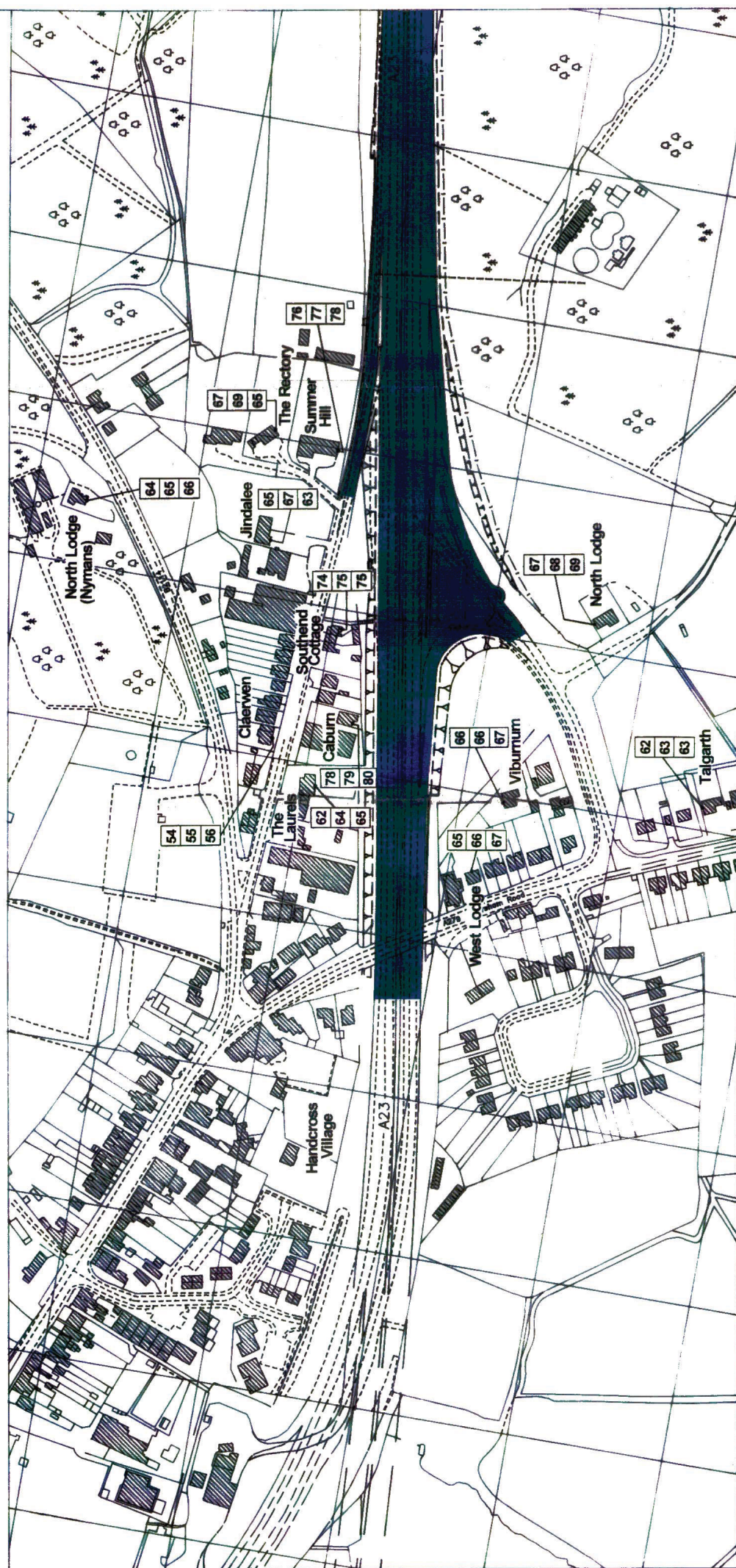


AGRICULTURAL LAND CLASSIFICATION

Figure 7.2

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(Information taken from Agricultural Land Classification of England and Wales Sheet 182, Brighton and Worthing 1972)






LEGEND

-  Scheme
-  Caburn Property Assessed

SCALE 1 : 2500



-  65 Ambient Noise Level in 1994 *
-  66 Predicted Existing Noise Level in 2012 *
-  67 Predicted Scheme Noise Level in 2012 *
- * Rounded to Nearest Whole Number [dB(A)]

**TRAFFIC NOISE LEVELS :
HANDCROSS**

Figure 8.1



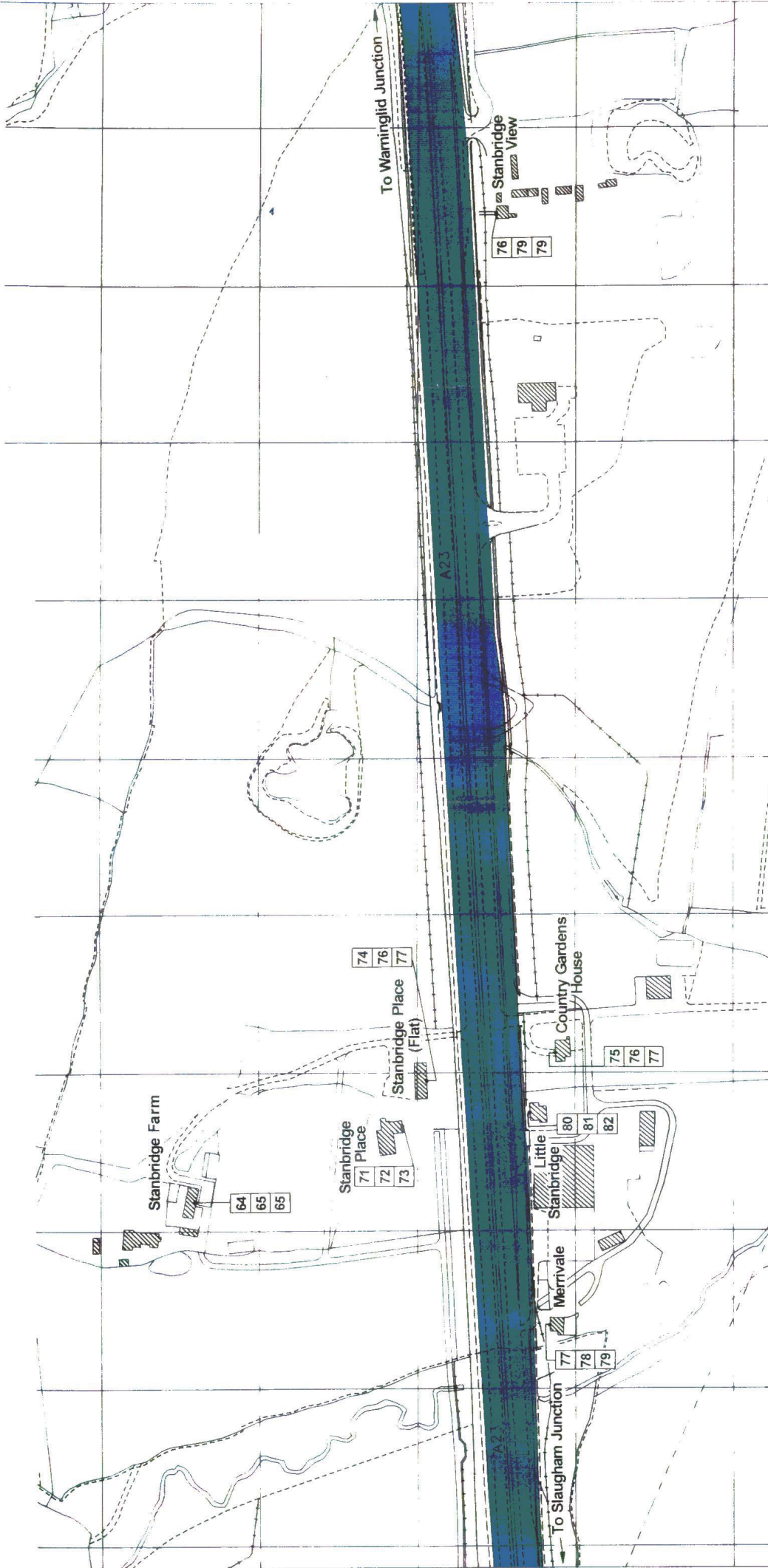
**TRAFFIC NOISE LEVELS :
EAST PARK TO
HOME FARM**
Figure 8.2



SCALE 1 : 2500

- 65 Ambient Noise Level in 1994 *
- 66 Predicted Existing Noise Level in 2012 *
- 67 Predicted Scheme Noise Level in 2012 *
- * Rounded to Nearest Whole Number [dB(A)]

-  Scheme
-  300m Limit of Assessment



**TRAFFIC NOISE LEVELS :
MERRIVALE TO
STANBRIDGE VIEW**
Figure 8.3

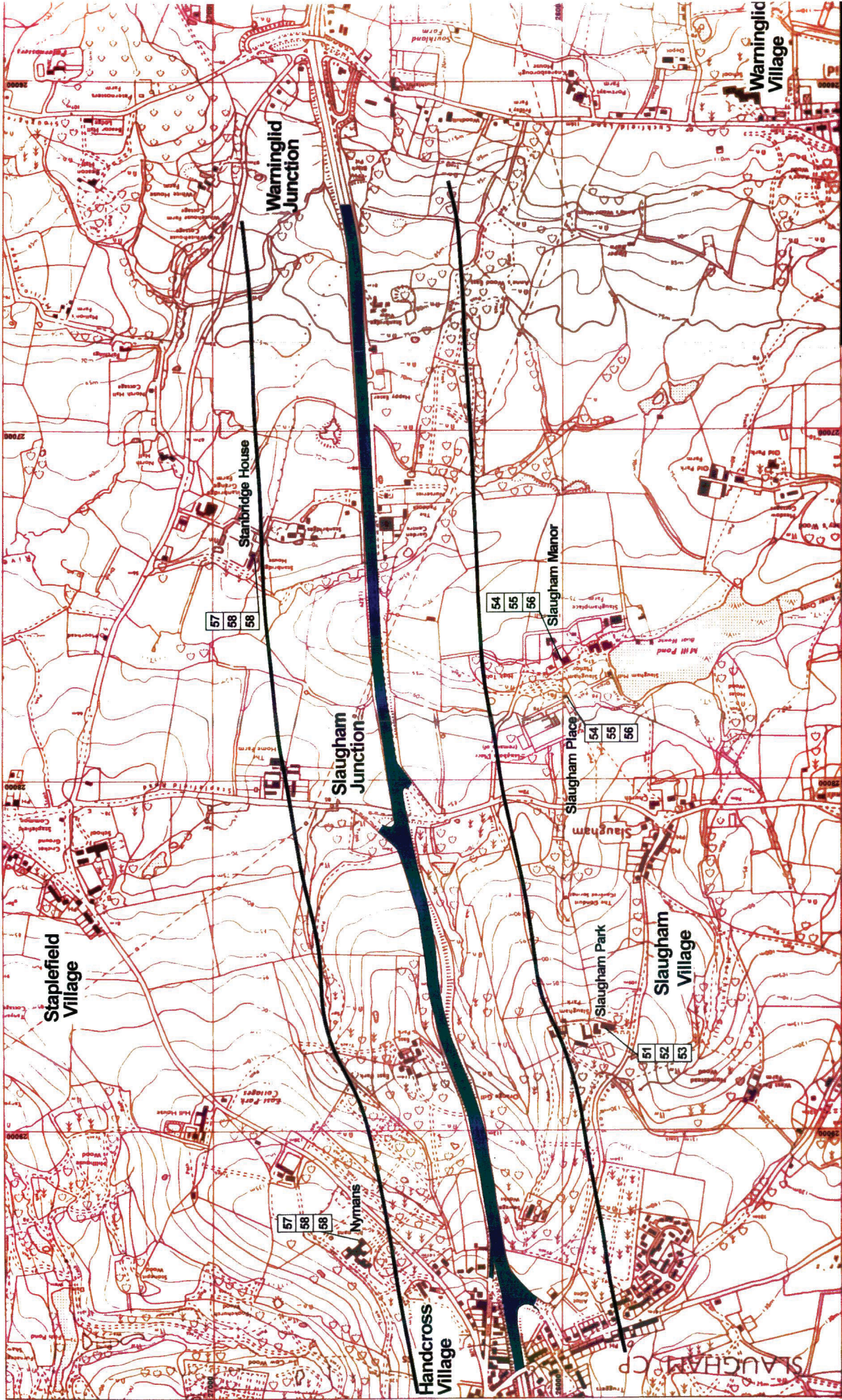


SCALE 1 : 2500

- 65 Ambient Noise Level in 1994 *
 - 66 Predicted Existing Noise Level in 2012 *
 - 67 Predicted Scheme Noise Level in 2012 *
- * Rounded to Nearest Whole Number [dB(A)]

Scheme





**TRAFFIC NOISE LEVELS:
PROPERTIES ASSESSED
OVER 300m FROM SCHEME**

Figure 8.4



metres



SCALE 1/10000

LEGEND

Scheme

300m Limit of Assessment

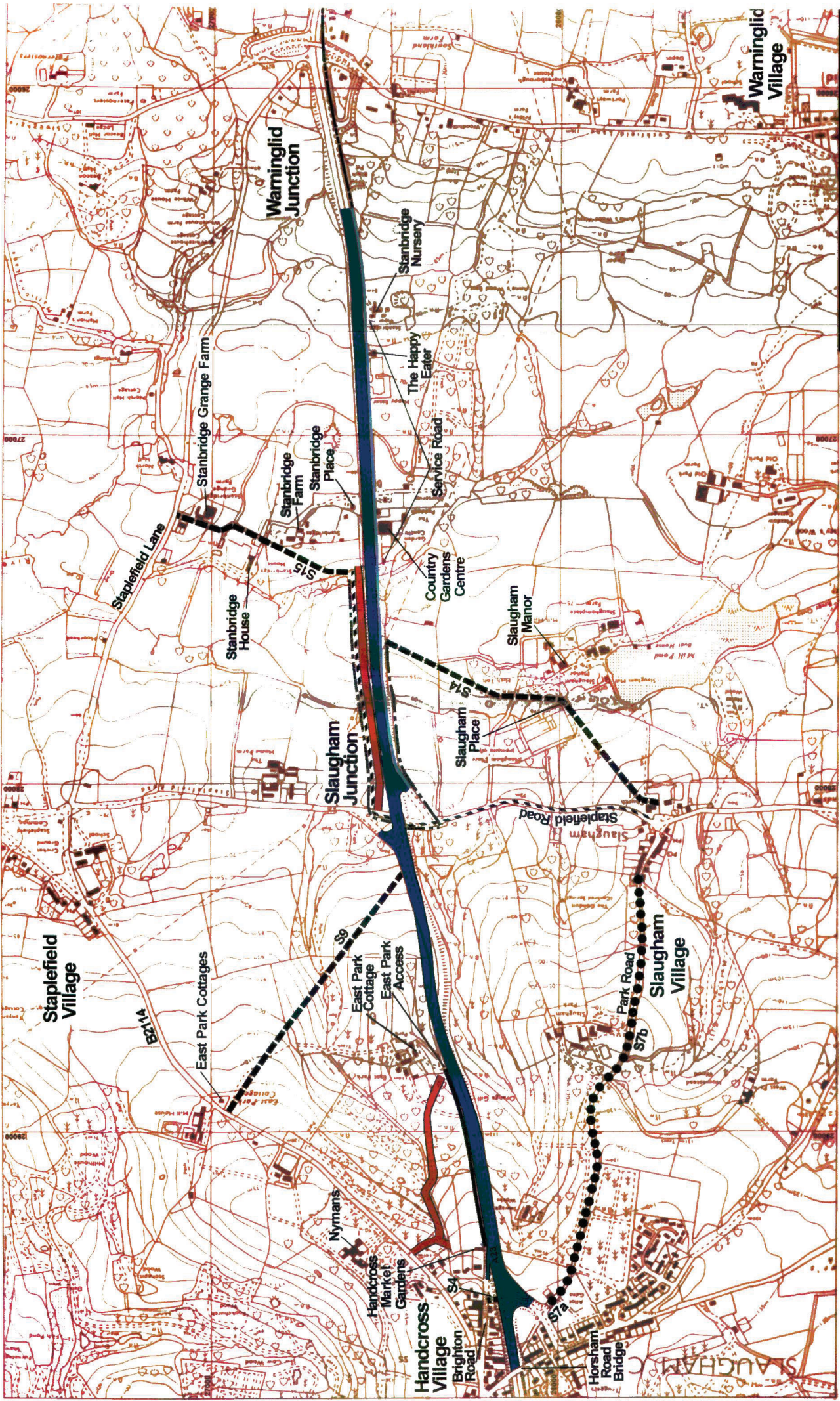
Nymans Individual Property Assessed

51 Ambient Noise Level in 1994 *

52 Predicted Existing Noise Level in 2012 *

53 Predicted Scheme Noise Level in 2012 *

* Rounded to nearest Whole Number [dB(A)]



**PEDESTRIANS,
EQUESTRIANS AND
CYCLISTS PLAN**

Figure 9.1

Base map reproduced from Ordnance Survey Map © Crown Copyright

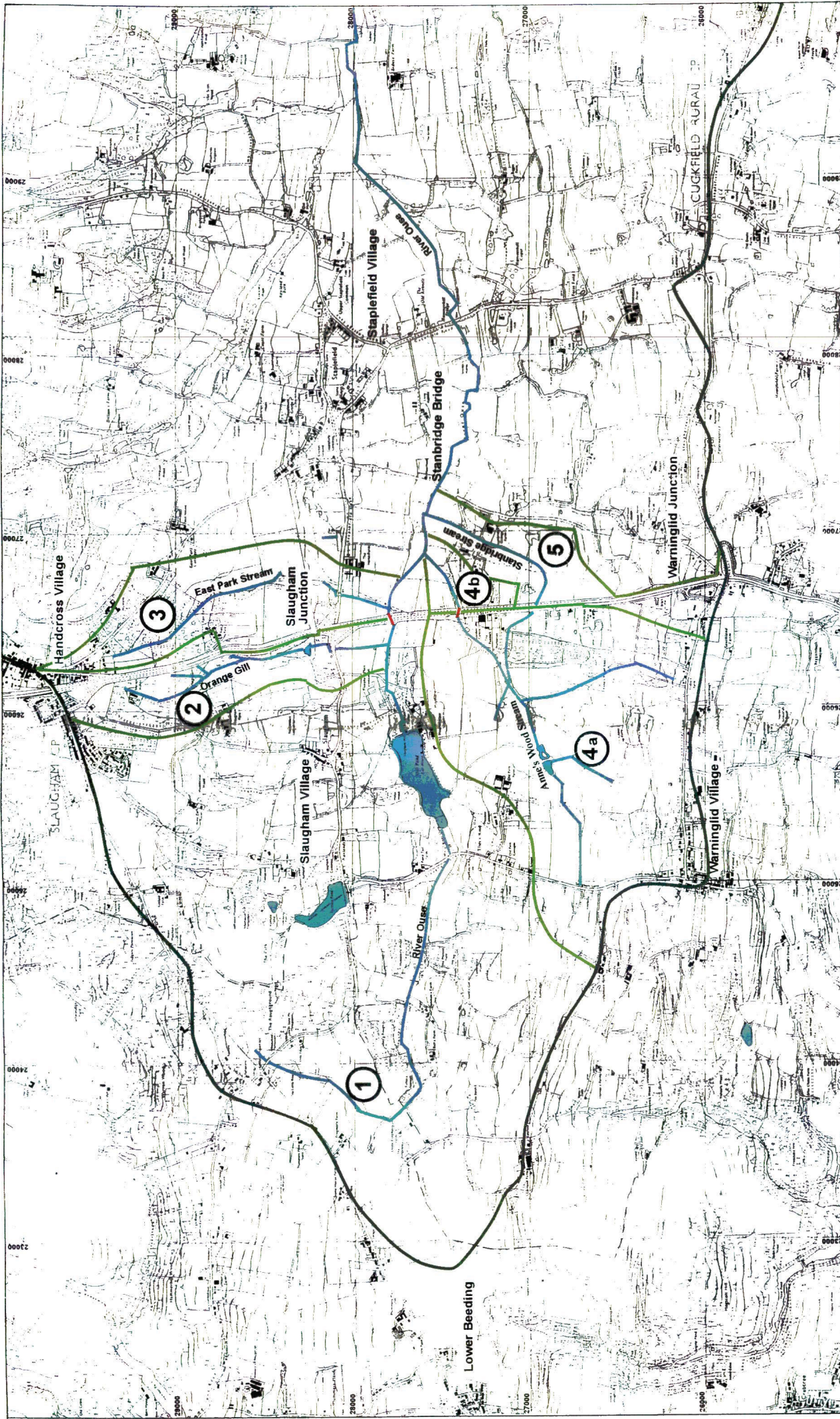
LEGEND

	Scheme		Public Right of Way : Footpath (No. in accordance with Slaughtham Parish)
	Proposed Combined Cycleway/Footpath		Public Right of Way : Bridleway (No. in accordance with Slaughtham Parish)
	Pedestrian Access		Footpath Diversion from S14 to S15
	Existing Combined Cycleway/ Footpath		Route from Slaughtham Village to S15 via Staplefield Lane
	Existing Footway		

SCALE 1/10000

0 100 200 300 400 500 1000 metres

NORTH



DRAINAGE CATCHMENT (EXISTING)











Figure 11.1



2000 metres

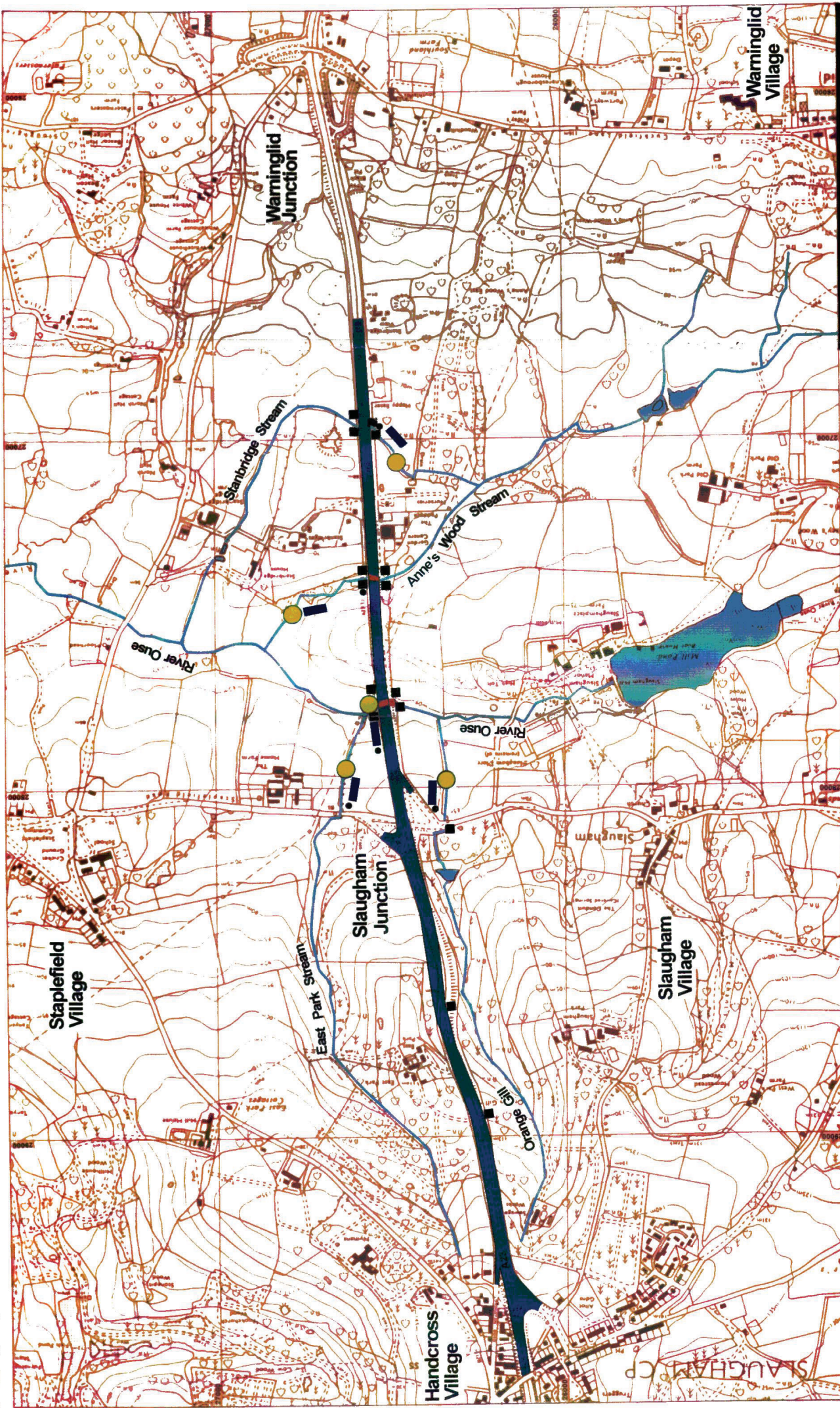


LEGEND SCALE 1 / 20,000

-  Boundary of Ouse Catchment
-  Sub Catchment Boundary
-  River Ouse Catchment upstream of Tributaries affected by A23 Drainage
-  Orange Gill Catchment
-  1
-  2
-  3
-  4a
-  4b
-  5



-  Existing Culvert
-  Anne's Wood Stream Catchment upstream of A23
-  Anne's Wood Stream Catchment downstream of A23
-  Stanbridge Stream Catchment



INTERCEPTOR, REEDBED AND OUTFALL LOCATION PLAN

Figure 11.2

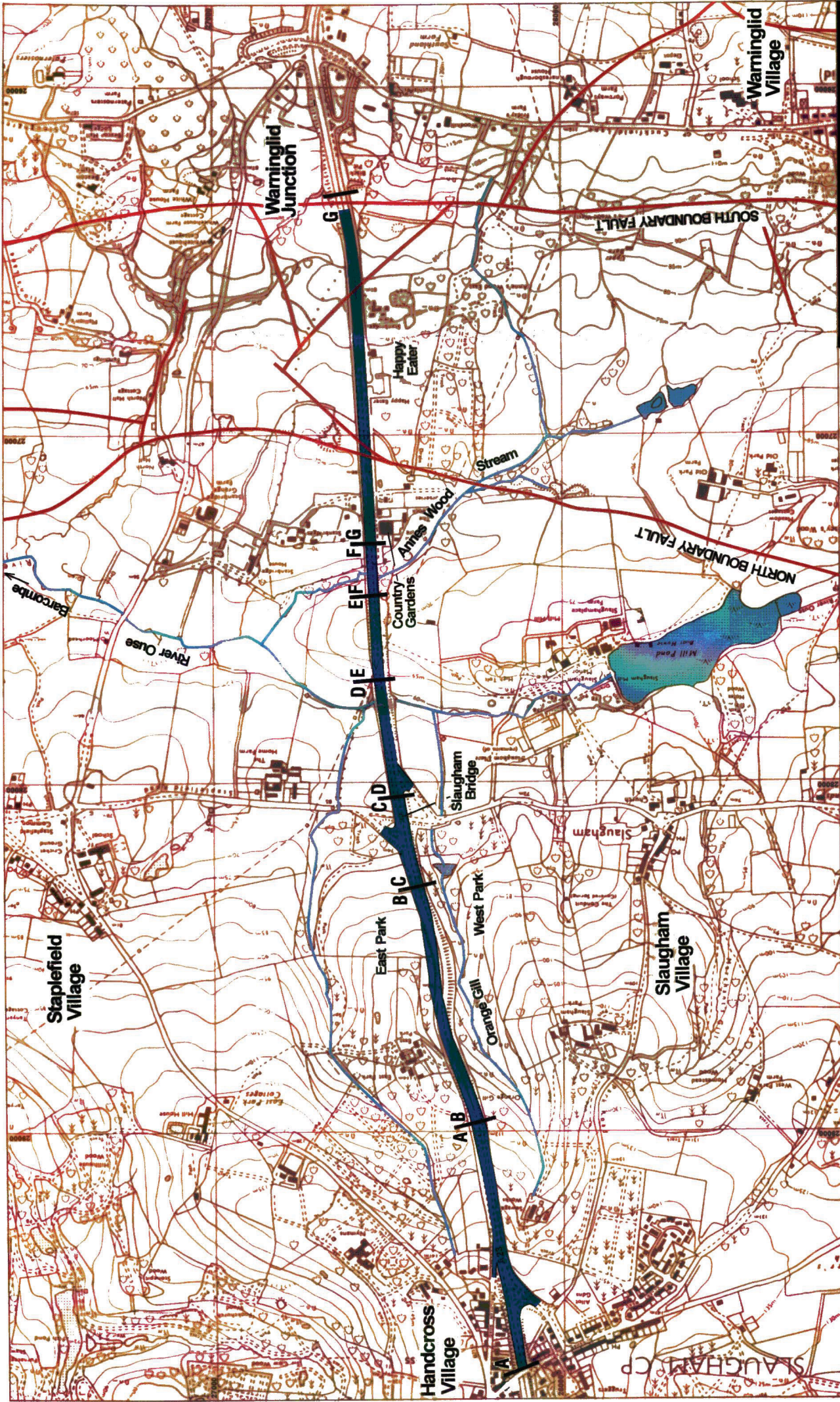


metres



SCALE 1/10000

- LEGEND**
- Scheme
 - Watercourse
 - Proposed Bypass Interceptors
 - Proposed Carriageway Runoff Outfall
 - New Culvert
 - Ground and Surface Water Outfall
 - Proposed Reedbed



LEGEND

- Scheme
- Fault Line
- Watercourses

SCALE 1/10000

0 100 200 300 400 500 1000 metres

NORTH

**GEOLOGY AND SOILS
STUDY AREA**

Figure 12.2



LEGEND SCALE 1 / 10,000

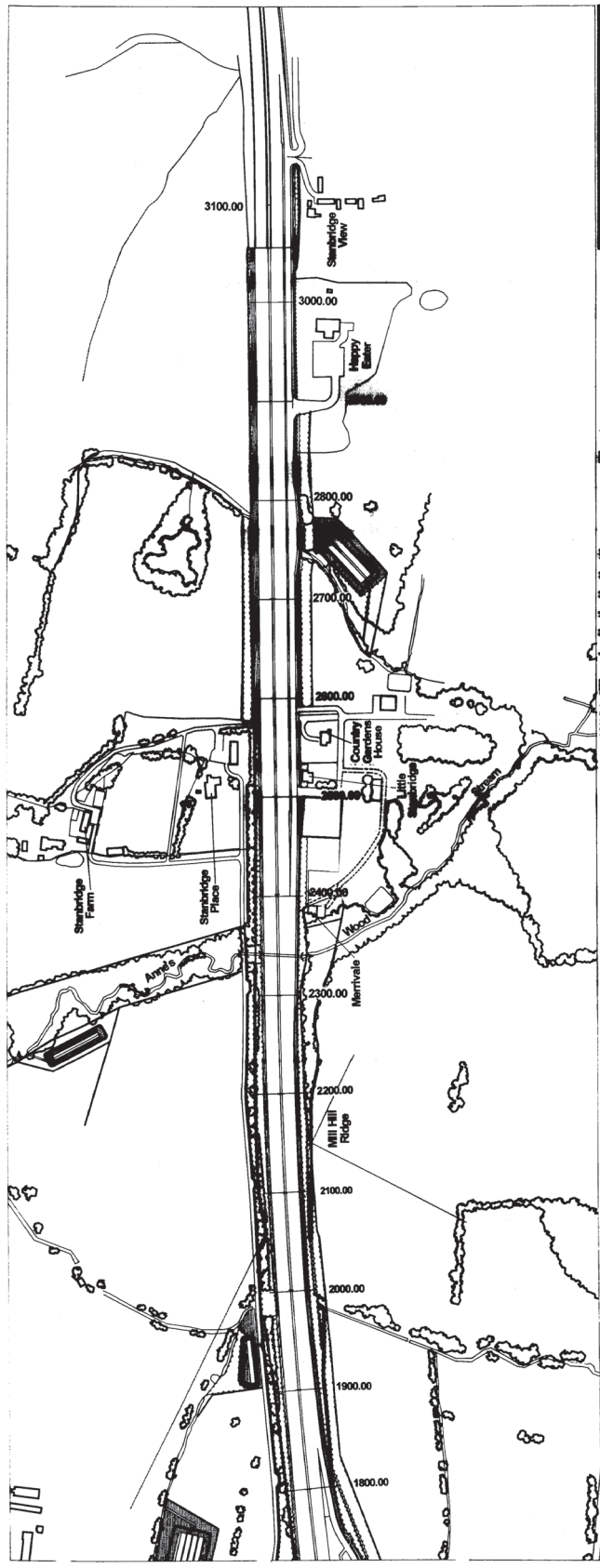
-  Built-up Area Boundary
-  Policy Area
-  Site of Special Scientific Interest
-  Allotments
-  Conservation Area
-  High Weald Area of Outstanding Natural Beauty
-  Countryside Area of Development Restraint
-  A23 Road Improvements
-  Car Parking

Policies which apply as defined by the Structure Plan within the boundary of West Sussex County Council
 G 1 C4 G8A C 1 C2 C 3 C 4 C 14 B 3 B 5 T 1 T 2 T 6
Policies which apply as defined by the Local Plan within the boundaries of the Mid Sussex District Council
 CM 2/1 CM 2/2 CM 2/4 CM 2/10 CM 2/11 CM 2/12 CM 3/1 CM 3/3 CM 3/6 CM 7/1 CM 7/5 CM 7/6

POLICIES AND PLANS MAP

Figure 13.1

Base map reproduced from Ordnance Survey Map © Crown Copyright.

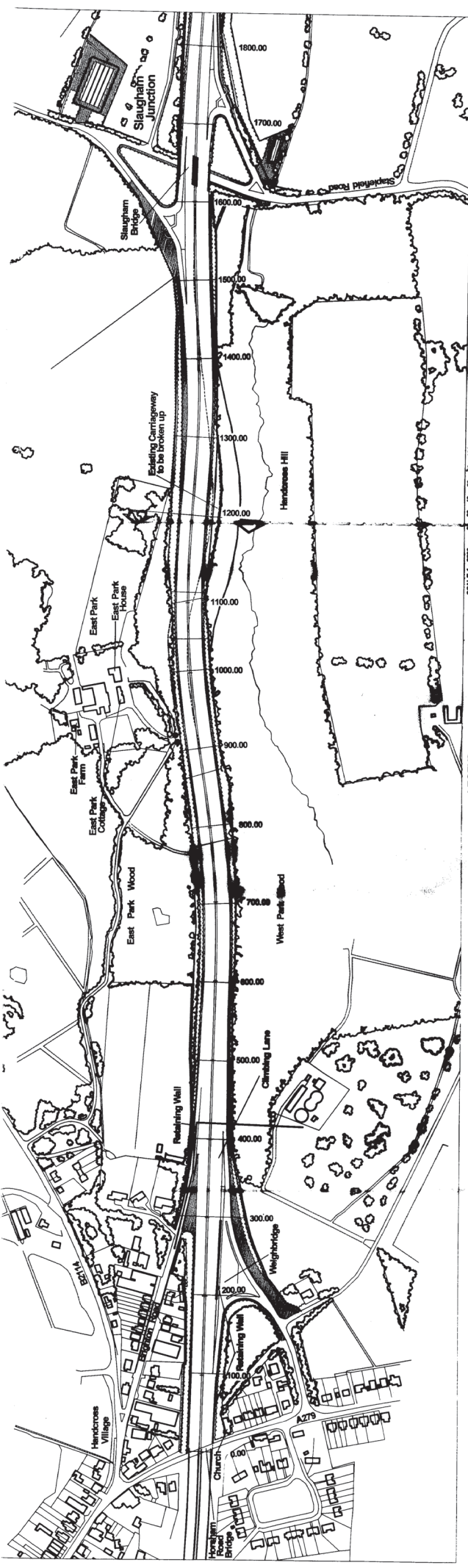


**SLAUGHAM JUNCTION TO
STANBRIDGE VIEW**
Figure 4.2

North

SCALE 1:2000
meters

- LEGEND**
- Woodland / Shrubs
 - Hedge-row
 - Grass
 - Highway Fencing
 - Screen Fencing



**HANDCROSS VILLAGE
TO SLAUGHTAM JUNCTION**
Figure 4.1

SCALE 1:2500

0 10 20 30 40 50 60

NORTH

LEGEND

- Woodland / Scrub
- Hedge/row
- Grass
- Railway / Road
- Stream / Filling