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ENVIRONMENT & LANDSCAPE
Environmental Statement

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**A406 GOLDERS GREEN/ BRENT STREET
JUNCTION IMPROVEMENT – ENVIRONMENTAL
STATEMENT 01/91**



HA 44/27/547 1*

THE A406 TRUNK ROAD
GOLDERS GREEN ROAD/BRENT STREET
JUNCTION IMPROVEMENT

ENVIRONMENTAL STATEMENT



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GREEN ROAD/BRENT STREET
JUNCTION IMPROVEMENT

ENVIRONMENTAL STATEMENT

DEPARTMENT OF TRANSPORT
LONDON REGIONAL OFFICE

JANUARY 1991

**A 406 NORTH CIRCULAR ROAD
GOLDERS GREEN - BRENT STREET IMPROVEMENT**

ENVIRONMENTAL STATEMENT

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**A 406 NORTH CIRCULAR ROAD
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ENVIRONMENTAL STATEMENT**

1.0 INTRODUCTION

This Environmental Statement is provided consequent upon the European Community's Directive No. 85/337 EEC for the assessment of the environmental effects of proposed private and public projects including highways. It provides an environmental assessment of the proposed improvement of a 1 km section of the North Circular Road (A406) near Golders Green in north-west London. This Environmental Statement complies in format and content with the regulations of Directive No.85/337 EEC as enacted by the Highways (Assessment of Environmental Effects) Regulations, 1988.

2.0 THE SCHEME AND ITS SURROUNDING AREA

REGIONAL CONTEXT

Figure 1

2.1 The A406 North Circular Road (NCR) runs for a distance of approximately 43km from the M4 and the A4 at Chiswick in the west, to the A13 in the east. The road forms the major orbital trunk road within north London.

2.2 The scheme is set within a dense and complex road network in north-west London (shown in figure 1), where the NCR intersects with several important radial routes. South of the scheme, junctions are formed with the A41 trunk road at Brent Cross Interchange, the M1 at Junction 1 and the A5 at Staples Corner Interchange. To the north, junctions are formed with the A1 Great North Way, the A598 Regents Park Road / Finchley Road, and the A1 Falloden Way.

2.3 The A502 forms a junction with the NCR near Golders Green. The A502 is a radial route between the A1 and the A41. West of the NCR junction the A502 is named Brent Street, while to the east it is called Golders Green Road. This meets the A598 Finchley Road at Golders Green.

GENERAL NCR IMPROVEMENTS

2.4 This Scheme is part of the Department of Transport's comprehensive programme of improvements for the North Circular Road. The location of the Golders Green scheme is shown in Figure 1.

THE AREA OF INTEREST

Figure 2

- 2.5 The area of interest is located entirely within the London Borough of Barnet (LBB), and occupies a corridor approximately 300m wide extending from the Northern Line railway viaduct in the south to Bridge Lane, a distance of just over 1 km. The area consists predominantly of residential properties, with some parkland and a few commercial properties. The area of interest is shown on Figure 2.
- 2.6 The River Brent runs through the area in a north to south direction, west of the NCR. South of Brent Street it lies between houses fronting the NCR and Shirehall Park. North of Brent Street, it is bounded to the west by rear gardens and Brent Park to the east.
- 2.7 Brent Park forms part of a linear network of Public Open Spaces along Mutton and Dollis Brooks. Its eastern extremity adjoins the NCR for most of the length between Brent Street and Bridge Lane.

TOPOGRAPHY and GEOLOGY

- 2.8 In the London Borough of Barnet there are two distinct systems of high ground. To the north-west a ridge runs from Chipping Barnet to Stanmore Heath and in the south-west the high land is in the Hampstead Heath area. A third, lower plateau stretches from Whetstone to Finchley at about 91m Above Ordnance Datum (AOD). The ridges alternate with valleys draining either south-west to the River Brent, eastwards to the River Lea or north-westwards to the North Mimms swallow holes.
- 2.9 Within the area of interest the main topographical feature is the valley formed by the River Brent, which runs from north to south, and is parallel and close to the western side of the NCR. The ground levels in this section of the River Brent valley rise from about 43m AOD in the valley floor to 74m AOD at Brent Street, north west of the scheme, and 64m AOD in Golders Green Road, south east of the scheme. The drainage pattern in the area is in a south-westerly direction via Dollis Brook and Mutton Brook which join just north of the scheme to become the River Brent.
- 2.10 The area is within the syncline known as the London Basin formed by strata of the Gault Clay overlain by Chalk. In turn these strata are overlain by Thanet Sand, Woolwich and Reading Beds and London Clay forming a plateau within the London Basin. These deposits are overlain in parts by superficial materials of glacial

and fluvial origin. These materials comprise Glacial Till, Glacial Sands and Gravels, Terrace Gravels, Brickearth and Alluvium and are largely confined to areas of high ground or river courses such as the River Brent.

EXISTING ROADS

- 2.11 The existing A406 is formed of dual three lane, approximately 9m wide, carriageways with a central reserve generally 4m wide which contains a 1.8m high anti-pedestrian barrier and 12m high lighting columns at 75m centres. The carriageways are kerbed and backed by a footway 2.3m wide throughout the area with 2.5m wide verges in places.
- 2.12 Within the limits of the scheme the NCR runs in a mainly north - south direction, rising from an elevation of approximately 41m AOD at the Northern Line railway viaduct in the south to approximately 48.7m AOD at Bridge Lane.
- 2.13 The A502, a 10m wide single carriageway road flanked by 3m wide footways, forms a traffic signal controlled junction with the NCR. To the west of the junction Brent Street falls from an elevation of approximately 50m AOD at the junction with Shirehall Lane, to approximately 44m AOD where it crosses the River Brent at Brent Bridge. East of the junction Golders Green Road rises to approximately 52m AOD at the junction with Princes Park Avenue.
- 2.14 Throughout the area of interest the NCR is subject to a 40mph speed limit and has clearway status.
- 2.15 Between the railway viaduct and the A502/A406 junction three local residential roads, Shirehall Park, Heathfield Gardens and Western Avenue, form junctions with the NCR. With the exception of the A502 junction there are no gaps in the central reserve and only left turns into and out of the minor roads are possible. Throughout this section there is direct vehicular access from a number of residential properties on to both carriageways of the trunk road. Vehicles are frequently parked on the northbound verge causing obstruction to sightlines and pedestrians.
- 2.16 North of the A502 the NCR is flanked by mature trees or hedgerows for the greater part of its length. Due to the level difference between the elevated gardens of properties in Woodlands and the carriageway, a retaining wall approximately 2m high has been constructed on the eastern side of the NCR. Brook Lodge has direct access to the northbound carriageway just to the north of the A502 junction.

- 2.17 The intersection of the A502/A406 is controlled by traffic signals. Left turns and straight-ahead movements are permitted from each of the approaches to the junction; right turns are prohibited with the exception of buses turning into Golders Green Road from the NCR.
- 2.18 At present pedestrians wishing to cross the NCR are catered for by two footbridges. One is located near the railway viaduct at the southern end of the area and the second is located just south of the A406/A502 junction. However, a high proportion of pedestrians crossing the NCR do not use the footbridge at the junction but choose to cross at ground level.
- 2.19 Currently bus route numbers 83, 183, and 240 cross the junction travelling east - west along Golders Green Road and Brent Street. Route 112 provides services along the NCR between Ealing Broadway and Palmers Green. Buses also turn between the NCR to the south and Golders Green Road.

PLANNING DESIGNATIONS

Figure 2

Structure and Local Plans

- 2.20 The current statutory planning framework is provided by The Greater London Development Plan (1976), the London Borough of Barnet Development Plan 1988, a Council approved non statutory interim plan and the recently published proposed Unitary Development Plan (UDP) (1989). The UDP was the subject of a Public Inquiry in October 1990 with the Inspectors report expected to be published in January/February 1991. The UDP should be a statutory planning document by September/October 1991. In practice it is already being used to make planning decisions.

Conservation Areas and Areas of Special Character

- 2.21 There are no Conservation Areas within 1.5km of the area of interest.

Listed Buildings

- 2.22 There are no listed buildings within the area of interest.

Nature Conservation

- 2.23 There are no areas of Metropolitan or Borough Ecological Significance near to the section of NCR under consideration. However, Brent Park was identified in a supplement to the London Borough of Barnet Topic Study

No. 10 as an "Ecologically Sensitive Area" of local interest. This is a lesser category than either a Metropolitan Site or a Borough Site. Refer to Ecological Survey paragraph 2.36.

Tree Preservation Orders

- 2.24 The rear gardens to nos. 1-10 Woodlands Close, which back onto the NCR opposite Brent Park, are protected by a blanket Tree Preservation Order (TPO) (Tre/HE/3 TPO). Other TPO's exist on the western bank of the River Brent to the rear of Danescroft Gardens between Green Walk and Holmfield Avenue and to the eastern side of Woodlands Close.

Green Belt

- 2.25 This section of the NCR does not fall within the Green Belt designation.

Open Space

Metropolitan Open Land

- 2.26 The draft UDP identifies Metropolitan Open Land at Brent Park from Brook Lodge in the south to the northern end of the Decoy. Brent Park forms part of the linear network of Public Open Space along both Mutton and Dollis Brooks. LBB will not permit within open land any development which is not compatible with its functions and essentially open character.
- 2.27 The scheme would remove two small areas of Metropolitan Open Land from Brent Park. A strip of 0.09 ha would be lost along the eastern edge and an area of 0.08 ha from the north-east corner. Exchange land would be provided. (See paragraph 3.24). 0.05 ha would be returned on completion of construction works. The total area of Brent Park is currently 2.9ha.

Private and Public Open Space

- 2.28 These land use designations are shown in Figure 2 as illustrated in LBB's Borough Development Plan topic study 3, Environment (1981).

Other Open Land

- 2.29 The draft UDP stresses the value of all open land, especially where it makes a contribution to a strategic or borough-wide network of open space or a green chain, or fulfils local amenity needs.

Recreational areas

District Parks

- 2.30 The section of NCR under consideration falls within an area identified by the draft UDP as deficient in District Park provision.

Local Parks

- 2.31 The NCR is adjacent to an area defined by the draft UDP as being deficient in Local Parks. See figure 2. Brent Park is designated as a Local Park in the LBB Topic Report No.10. and forms part of an informal series of Open Space along both Mutton and Dollis Brooks and is therefore of strategic importance to the open spaces and footpath links in this part of the Borough.

THE URBAN FABRIC

- 2.32 At the end of the 19th Century, the area was still largely rural although sporadic development had taken place along North End Road, now Golders Green Road and along Shirehall Lane. There were also longer established villages in the area such as at Hendon. The pattern of existing development has followed the evolution of the railway and the road system. As transport improved, the spread of urbanisation extended over much of the then open countryside.
- 2.33 The NCR was constructed in the period 1922 to 1927 as a dual carriageway to just beyond the northern end of the current scheme. Here the carriageways merged on the approach to the junction with the Barnet Bypass which had been constructed a few years previously. The Edgware branch of the Northern Line underground railway was also extended above ground at about this time and was a further spur to the development of the area.
- 2.34 Much of the area was developed in the inter - war years. This period initially established the characteristic landscape of broad highways dividing mixed suburban housing, shops and offices. Local shops are sited along the upper part of Brent Street. The main commercial and retail areas of Golders Green and Brent Cross Shopping Centre lie outside the area of interest. In most instances development comprises substantial two storey detached and semi detached dwellings but there are also substantial blocks of flats, commonly four and five storeys high.

- 2.35 Through this extensively developed area run several linear elements of open space. These mark part of the course of the River Brent and also Dollis and Mutton Brooks, which are north of the scheme.

WILDLIFE AND CONSERVATION

- 2.36 An ecological survey was undertaken of Brent Park and the surrounding area with particular reference to the North Circular Road corridor. The survey was carried out by Environmental Advisory Unit (EAU) in September 1990.

Brent Park

Woodland

- 2.37 The trees and shrubs are a mixture of native and ornamental species, and the ground flora is typical of a recently disturbed habitat. There is common birdlife in the woodland but the only mammals occurring are brown rats and grey squirrels. The woodland was not found to have any intrinsic nature conservation value as in a semi-natural woodland, but has local value due to the scarcity of wildlife sites within this part of Barnet.

The Decoy

- 2.38 The water is stagnant and algae form the only plant life. No large invertebrates were found. Four species of waterfowl are present and there are large numbers of brown rats which may be a health hazard.

River Brent

- 2.39 The dominant wetland plants are invasive, non-indigenous species and few native plants occur. The sides and base of the channel are man made and do not provide a wildlife habitat. However, the river corridor is of borough significance for wildlife as it provides a route along which species can migrate eg. Grey Wagtail. It is therefore the most important wildlife feature within the study area.

Decoy Brook

- 2.40 There is a possibility that the brook is contaminated. There is virtually no wildlife present.

PROPOSED EXCHANGE LAND

- 2.41 Two areas of land have been identified as exchange land. One area, located at the junction of the NCR and Brentfield Gardens, N.W.2 is very poor botanically and no bird species are present. Ecological interest is low.
- 2.42 The second area is located adjacent to the southern end of Brentview House. The area is contiguous with the wood/shrub habitat of Brent Park and is of some local value for supporting common birds.
- 2.43 Refer to paragraphs 2.27 and 3.24 for further information on exchange land.

ARCHAEOLOGICAL INTEREST

- 2.44 There are no zones of known archaeological interest in the area and no Scheduled Ancient Monuments.

SCHEME DESCRIPTION AND STANDARDS

- 3.1 The proposed improvement is designed to bring this section of the NCR up to established standards of highway which are more appropriate to its function as a main orbital route. The proposals would improve the free flow of trunk road traffic at the A406/A502 junction while giving improved safety, environmental and economic benefits. Grade separation of the existing A406 and A502 would relieve congestion and reduce the volume of traffic likely to use residential roads to avoid the A406/A502 junction.
- 3.2 The NCR would be improved between the Northern Line railway viaduct to the junction with Bridge Lane (a distance of approximately 1Km) where it would tie into the proposed Regents Park Road improvement scheme.
- 3.3 Throughout the length of the improvement, the scheme would be constructed to provide an 85kph dual three lane carriageway standard all purpose road, with 11m wide carriageways. The main feature of the scheme is that the NCR would be taken in retained cut underneath its present junction with the A502 and there would be no slip road connections.
- 3.4 The NCR would remain approximately on its existing line but with a slight shift to the east between Western Avenue and Hanover Mead. This would necessitate demolition of 8 properties in Brentmead Place, 7 due to the shift in line and a further 1 property to provide a through access road. All these properties are owned by the Department of Transport.
- 3.5 Land would be taken from the grounds of 73 residential properties and the communal grounds of 5 blocks of flats adjacent to the NCR. A small area of land would be acquired from Brent Park.
- 3.6 Properties in Brentmead Place, Sinclair Grove, No.52 Heathfield Gardens, Brook Loge, Brentview House and Sheila House would lose direct vehicular access onto the NCR. Access to these properties would be re-provided via a service road and private means of access (PMA).
- 3.7 Immediately north of the Golders Green Road - Brent Street junction the retained cutting would be covered for approximately 150m to form a short tunnel. The maximum depth of cutting below existing ground level would be approximately 8.5m.

LIGHTING AND SIGNING

- 3.8 The NCR would be lit throughout by new 12m high columns mounted in the central reserve. The luminaires would be of High Pressure Sodium cut off type fixtures.

SIDE ROADS

- 3.9 The A502 Golders Green Road - Brent Street would remain approximately on its existing line and level as a 10m wide single carriageway. There will be no provision for turning movements between the NCR and A502.
- 3.10 For operational and safety reasons it is proposed to stop up three minor side roads which at present form junctions with the NCR. The roads affected are Western Avenue, Heathfield Gardens and Shirehall Park. Access to the NCR for local traffic could be via the A41 Brent Cross Interchange to the south and adjacent junctions to the north.

ACCESS

- 3.11 The proposals would involve 24 properties in Sinclair Grove losing the ends of their rear gardens, 11 of which would lose vehicular access from the rear of the property. This facility would be re-provided via a private access road to the rear of nos. 30-56 Sinclair Grove. No.1 Western Avenue would lose a strip of garden to enable the access to be constructed.
- 3.12 To the west of the NCR, and the south of the A502, 38 properties in Brentmead Place would lose vehicular access to their property from the NCR. This facility would be re-provided via a service road located in front of Nos. 4-44 (even) Brentmead Place and to the rear of Nos. 48-78 (even) Brentmead Place, and a private means of access to the rear of Nos. 80-82 (even).
- 3.13 Access to the garage serving No.52, Heathfield Gardens would be provided adjacent to No.54, Heathfield Gardens.
- 3.14 Brook Lodge would lose direct access onto the NCR, access being re-provided from Brent Street.
- 3.15 Brentview House and Sheila House would lose direct access onto the NCR, access being re-provided through Brent Park.

PEDESTRIANS

- 3.16 Pedestrian facilities would be provided throughout the scheme. South of the A502, footways would be provided alongside the NCR and the service road in front of Brentmead Place. Pedestrians would cross the NCR at existing ground level.
- 3.17 The A502 would be crossed using a traffic signal installation with pedestrian and cyclist facilities.
- 3.18 North of the A502, a footway on the covered section over the NCR would link the A502 with Brent Park and continue along the west side of the NCR.
- 3.19 On the east side of the NCR, a cycletrack/footpath routed through what is at present the garden of No 20 Woodlands Close would connect the NCR with Woodlands Close.

CYCLISTS

- 3.20 Cyclists would be encouraged by signing to use side roads parallel to the NCR (Western Avenue, Sinclair Grove, Woodlands and Woodlands Close). To the south of the scheme, Western Avenue would be connected into the North Circular cycle route at the Brent Cross Interchange via a combined cycleway/footway alongside the NCR.
- 3.21 A shared, traffic signalled, installation for cyclists and pedestrians would be provided on the A502 to the east of the bridge over the NCR.
- 3.22 To the north of the scheme, shared pedestrian and cyclist facilities would connect Woodlands Close with Bridge Lane and a proposed cycle route currently under investigation.

BUS BAYS

- 3.23 Local bus routes along the A406 and the A502 would remain unchanged. The existing bus stops at the A406 / A502 junction would be repositioned in the cutting along the NCR, approximately 90 m south of the junction, with 3m wide ramps leading from the bus bays to the A502. Buses which currently turn right at the junction into Golders Green Road and left from Golders Green Road to the NCR (west) could be re-routed via the A598 and the A1 Great North Way.

EXCHANGE LAND

- 3.24 Land adjacent to Brentview House and at Brentfield Gardens will be provided in exchange for land to be taken along the eastern edge and in the north eastern corner of Brent Park. See paragraphs 2.27, 2.41 and 2.42 for further information on exchange land.

4.0 DATA ON ENVIRONMENTAL EFFECTS

APPRAISAL FRAMEWORK

- 4.1 This data is included in the assessment framework, on the following four pages.

Group 1: Travellers

Sub-Group	Effect	Units	Published Option		Do Minimum	Comments	
			High	Low			
All vehicle travellers			High	Low		<p>A. Each column shows the improvements of the preferred route over the 'Do Minimum' option. (The 'Do Minimum' is the base road and traffic network against which alternative improvements can be evaluated). Hence the 'Do Minimum' entries are zero.</p> <p>B. Present Value of Benefits (PVB) are for a 30 year period from the expected date of opening and discounted to 1988 prices at 8% pa.</p> <p>C. It is assumed that national average figures for vehicle occupancy and for accident rates and costs will apply.</p>	
	Time savings	£m (PVB)	23.4	16.7	0		
	Vehicle operating cost savings	£m (PVB)	0.0	0.0	0		
	Value of accident savings	£m (PVB)	5.0	3.0	0		
	Reduction in casualties:-						The figures indicate the probable total reduction in casualties over the whole of the 30 year assessment period if the national average rates and distribution between groups apply to each alternative. They take no account of the safety implications of the detailed design of the new routes.
	Fatal	number	6	7	0		
Serious	number	112	98	0			
Slight	number	563	487	0			
Driver stress			Low	High			
View from road			Residential	Residential			
Traffic delays during construction	£m (PVB)		-3.0	-2.0	0	<p>A. Figures are calculated using the same assumption on traffic composition as for travel benefits. No detailed survey has been undertaken.</p> <p>B. 1988 prices, discounted to 1988 at 8% pa.</p>	
Pedestrians (1000 pedestrian movements per day will be affected)	Change in amenity		Moving the footways further from the NCR and landscaping where possible will improve amenity.	Increase in traffic will reduce amenity.		Pedestrian figures are from the 1987 12-hour count.	
	Safety		Segregation of pedestrians and vehicles will improve safety. A traffic signalled crossing will assist pedestrians cross the A502.	Possibility of increased number of accidents as traffic flow increases.			
	Severance (New)		Slight: Grade separation will reduce severance at the junction. No change elsewhere.	No change. The NCR will still have to be crossed.			
Cyclists	Change in amenity		Two way cycle facilities provided along eastern side of proposals.	Increase in traffic will reduce amenity.		<p>A. Cycle facilities will link the North Circular cycle route at Brent Cross and a proposed cycle route, currently under investigation, at Bridge Lane.</p> <p>B. Facilities will be shared with pedestrians.</p>	
	Safety		Segregation of cyclists and vehicles will improve safety. A traffic signalled crossing will assist cyclists cross the A502.	Possibility of increased number of accidents as traffic flow increases.			
	Severance (New)		Slight: Grade separation of the junction will reduce severance throughout the scheme.	No change. The NCR will still have to be crossed.			
Bus Users	Access to bus stops		3m wide ramps will provide access to the bus laybys along the NCR from the A502 and the service road.	No change.		<p>1. Bus laybys along the NCR are located approx. 100m south of the A406/A502 junction.</p> <p>2. Bus stops along the A502 remain in their existing location.</p>	

Group 2: Occupiers

Sub-Group	Effect	Units	Published Option	Do Minimum	Comments	
Residential	Properties demolished	Number	8	0	<p>The cost of property acquisition and demolition is included in Group 6</p> <p>A. General increases caused by raising speed of traffic and demolition of screening properties. Do Minimum increase due to local carriageway widening.</p> <p>B. The changes in noise are the difference between the forecast for the unpublished option for 2011 and the existing (1990) levels. The units are dB(A)_{L₁₀} 18 hr. 6 a.m. - midnight.</p> <p>No decreases in Do Minimum. Retained cutting and covered section give significant reductions to adjacent properties.</p> <p>Properties considered are those directly adjacent to the MCR.</p> <p>A number of properties will suffer a deterioration in the quality of their outlook. However there will be an improvement for a greater number due to the cutting and covered section. The numbers involved are as follows: Significant improvement 87, Slight improvement 15. Most of the deterioration in outlook would be caused by loss of existing trees at Sinclair Grove, the eastern side of Brentmead Place and Woodlands Close.</p> <p>A. Each column shows the effect of the 'Published Option' over the 'Do Minimum' option. Hence the 'Do Minimum' entries are zero</p> <p>B. Properties considered are within 200m of the proposed road</p> <p>C. No property would experience an air quality level worse than international standards</p> <p>D. Vehicle emissions of CO are predicted to reduce by 45% by 1996 and by 80% by 2011.</p> <p>Construction vehicles would be restricted in their use of local residential roads.</p> <p>A. Properties affected are located in Brentmead Place.</p> <p>B. No properties experience an increase in noise.</p> <p>C. The changes in noise are the difference between the forecast for the published option for 2011 and the existing (1990) levels. The units are dB(A)_{L₁₀} 18 hr. 6 a.m. - midnight.</p> <p>Visual obstruction is compared with existing conditions.</p> <p>Construction vehicles would be restricted in their use of local residential roads.</p>	
	Noise	Number of houses experiencing increase of more than 15 dB(A) _{L₁₀}	0	0		
		10-15dB	0	0		
		5-10 dB	111	0		
		3-5 dB	15	14		
		Number of houses experiencing decrease of more than 15 dB(A) _{L₁₀}	0	0		
		10-15dB	1	0		
		5-10 dB	5	0		
		3-5 dB	24	0		
	Visual obstruction	Number of properties subject to:				
		High	33	53		
		Medium	12	16		
		Low	28	27		
	Visual intrusion	Number of properties subject to:				
		High	45	No change		
	Medium	12				
	Low	18				
Air Quality	Number of properties experiencing increase in pollution from:					
	Carbon Monoxide	0	0			
	Lead	12	0			
	Nitrogen Oxides	27	0			
	Hydrocarbons	10	0			
	Number of properties experiencing decrease in pollution from:					
	Carbon Monoxide	1319	0			
	Lead	847	0			
	Nitrogen Oxides	451	0			
	Hydrocarbons	781	0			
Severance						
a. Relief to existing severance		Slight	None			
b. Imposition of new severance		Slight	None			
Disruption during construction	Volume of excavated material to be removed (m ³)	110,000	2600			
Commercial premises a. Office buildings	Noise	Number of properties experiencing decrease of more than 15 dB(A) _{L₁₀}	0	0		
		10-15dB	0	0		
		5-10 dB	1	0		
		3-5 dB	0	0		
	Visual obstruction	Number of properties subject to:				
		High	0	1		
		Medium	0	0		
		Low	0	0		
	Visual intrusion	Number of properties subject to:				
		High	0	No change		
		Medium	1			
		Low	0			
	Severance					
	a. Relief to existing severance		Slight	None		
	b. Imposition of new severance		Slight	None		
Disruption during construction	Volume of excavated material to be removed (m ³)	110,000	2600			

Group 2: Occupiers (continued)

Sub-Group	Effect	Units	Published Option	Do Minimum	Comments
b. Schools, Synagogues	Noise	Number of properties experiencing increase of more than 15 dB(A)L 10-15dB 5-10 dB 3-5 dB	No change	No change	Properties considered are: The County School, Hasmorean Preparatory School, Hendon Reform Synagogue, Hendon Adath Yisroel Synagogue and Alma White Bible College
	Visual obstruction	Number of properties subject to: High Medium Low	No Change	No Change	
	Visual intrusion	Number of properties subject to: High Medium Low	No Change	No Change	
	Severance a. Relief to existing severance b. Imposition of new severance		Slight None	None None	
	Disruption during construction		None	None	
Open Space a. Brent Park	Land take	Hectares	0.17	0	<ol style="list-style-type: none"> 1. Brent Park has been designated 'Metropolitan Open Land' in 1987 and described in London Borough of Barnet's Topic Study 10 as an 'Ecologically sensitive area' 2. Area includes 0.05 ha of temporary and 0.12 ha of permanent land take 3. Exchange land will be provided to compensate for land taken 4. The 'A406 North Circular Goldens Green Road/Brent Street Junction Improvement - Ecological Assessment' of September 1990 concludes that the ecological impact of the published option is low

Group 3: Users of facilities

Sub-Group: Users of:-	Effect	Published Option	Do Minimum	Comments
a. Brent Park	Reduction of amenity due to land take	Moderate: 880 m ² of scrubland and 820m ² of grassed open space will be taken from Brent Park	No effect	1752m ² of exchange land will be provided to mitigate reduction in amenity

Group 4: Policies for conserving and enhancing the area

Policy	Authority	Interest	Published Option	Do Minimum	Comments
a. Protect Public Open Spaces	London Borough of Barnet	Effect on area of Brent Park (2.9 ha)	Reduced by 0.17 ha	Not affected	London Borough of Barnet's proposed Unitary Development Plan 1990. Exchange land will be provided to compensate for land taken
b. To enhance the environment	London Borough of Barnet	Protection of trees rear of 1-10 Woodlands Close (Approx. 57 trees)	approx. 30 trees lost	Not affected	London Borough of Barnet's proposed Unitary Development Plan 1990 Area covered by Tree Preservation Order No. Tra/HE/3TPO
		Enhanced amenity due to new entrance at underpass/road	Covered section of underpass will provide new amenity for pedestrians	Little scope	In the published option, a pedestrian link will be provided over the covered section to Brent Park
		Potential new amenity areas (ha)	0.45	0	Seating area and parkland landscaped on covered section of underpass

Group 5: Transport, development and economic policies

Policy	Authority	Interest	Published Option	Do Minimum	Comments
Transport a. To improve efficiency and safety of trunk road traffic in London	Department of Transport	Improvement of MCR	Free flow of traffic will produce major improvement	Widening of junction will produce slight improvement	Department of Transport 1989 white paper 'Roads for Prosperity'
b. To maintain an efficient bus service	London Regional Transport National Express Coaches	Turning movement at A406/A502 junction	No turning allowed	As existing	Currently only National Express coaches turn at the junction Alternative routes are available

Group 6: Financial Effects

Sub-Group	Interest	Units	Published Option		Do Minimum	Comments
Department of Transport	Construction costs	£m (PVC)	14.615		0.157	Costs in 1988 prices are discounted from years of expected expenditure to 1988 at 8% pa (PVC = present value of costs, PVB = present value of benefits, NPV = net present value).
	Land costs	£m (PVC)	0.962		0.010	
	Compensation costs	£m (PVC)				
	Maintenance costs	£m (PVC)				
	Total cost	£m (PVC)	15.577		0.167	
	Total quantified monetary benefits	£m (PVB)	High 25.44	Low 17.67	0	Includes savings in time, vehicle operating costs, accidents and traffic delays during construction. Taken from Group 1.
	Net present value compared to do minimum	£m (NPV)	10.03	2.26	0	

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SUMMARY OF THE MAIN ENVIRONMENTAL EFFECTS

Landscape

- 4.2 South of the A502 Brent Street, the major environmental effect would be the closer proximity of the NCR to the adjacent housing and the loss of 8 dwellings and parts of rear gardens.
- 4.3 In the vicinity of the existing junction, north of the A502, trees and some land would be removed from Brook Lodge, Hanover Mead and Brent Park.
- 4.4 North of the tunnel, a substantial number of existing trees would be removed along the eastern edge of the proposed alignment. Some of these trees are protected by a Tree Preservation Order.

Visual Impact

- 4.5 The existing design and alignment of the NCR is such that the high level of traffic it carries seriously degrades the outlook for those houses situated in close proximity to it.
- 4.6 The proposed design and alignment of the NCR would also cause high visual intrusion in some areas, mainly at the southern end of the scheme. However, over most of the scheme's length the quality of the outlook experienced from the dwellings would be improved over that of the present situation, due to the proposed cutting and the covered section. In general traffic would be less visible than at present and the visual impact would be greatly reduced in the vicinity of the covered section of the cutting.
- 4.7 At the south of the scheme the quality of the outlook would remain at a similar level to that existing. In general, visual intrusion experienced by pedestrians would be greater than that experienced from dwellings because a greater amount of the road and its traffic would be visible from footways.
- 4.8 Properties directly adjacent to the NCR currently experience some visual obstruction from passing vehicles, particularly lorries. Placing the NCR in cutting would generally reduce the visual obstruction experienced by these properties, particularly in the vicinity of the covered section of cutting where NCR traffic would be hidden from view.

Air Quality

- 4.9 Removal of the traffic signal controlled junction and the creation of more free flowing traffic along both the NCR and the A502, would improve air quality in the vicinity of the scheme.
- 4.10 The predicted number of properties experiencing an increase or decrease in air quality, from existing conditions, using 2011 traffic figures and 1990 emission levels are summarised below:

Pollutant	Increase	Decrease
Carbon Monoxide (CO)	0	1319
Lead (Pb)	12	647
Nitrogen Oxides (NO)	27	451
Hydrocarbons (HC)	10	781

Safety

- 4.11 It is anticipated that there would be a reduction in the number of accidents as a result of separating the NCR and A502 traffic. Pedestrians would cross the NCR safely and conveniently at existing ground level using the new footways provided by the A502. A shared traffic signalled crossing would be provided to aid pedestrians and cyclists crossing Golders Green Road.

Noise

- 4.12 Predicted traffic noise levels with and without the proposed scheme have been calculated for 2011 traffic flows, and compared with existing noise levels. The results are summarised below:

	Number of Properties Affected	
	With scheme	Without scheme
Noise Level Increase more than 3 dB(A)	126	14
Noise Level Decrease more than 3 dB(A)	30	0

- 4.13 In general, placing the NCR in retained cutting and covering part of it would reduce the noise of traffic at adjacent residential properties.

- 4.14 It should be noted that the total "properties" experiencing a decrease with the scheme or an increase without the scheme include Brook Lodge (containing 33 flats) and Hanover Mead (containing 48 flats).

Traffic

4.15

A plan showing the existing road network is shown in Figure 8. Roads on which the Scheme is expected to produce substantial increases in traffic flow are identified in blue. (Changes to the existing Annual Average Daily Traffic of 30% or more by the opening year are based upon high growth forecasts, and are taken as substantial for this purpose). The scheme is not expected to produce any substantial decreases in traffic on local roads between 1990 and 1996.

5.0 MITIGATION MEASURES

COVERED SECTION OF CUTTING

- 5.1 Placing the NCR in retained cutting, approximately 8.5m below existing ground level, would significantly reduce the visual, aural and severance effects of NCR traffic on this area.
- 5.2 The area above the covered section would be extensively landscaped to further reduce and soften the impact on adjacent properties and would link this area to Brent Park, effectively extending the leisure and informal recreational amenity of Brent Park to Brent Street and Golders Green Road.

LANDSCAPE AND VISUAL

- 5.3 The landscape proposals are illustrated on figure 3. They are designed to integrate the proposed road as much as possible into its surroundings and to reduce the visual impact when viewed from nearby property.
- 5.4 A variety of landscape treatments would be employed to achieve these objectives:-
- i) **Tree and shrub planting in verges.** This is proposed mainly to the west of the NCR south of Brent Street and also adjacent to Brent Park. South of Brent Street, the planting would provide additional screening from the road for the adjacent housing and would be an important softening influence in this urban area. North of Brent Street, trees would reinforce the present leafy character of the road.
 - ii) **Dense native tree and shrub planting along retaining walls within the new highway boundary.** This solution has been proposed where existing tree cover would be removed due to retaining wall construction to the rear of properties in Woodlands Close and Sinclair Grove. Land within the new highway boundary at the top of the walls would be planted to screen views of the road and to maintain and reinforce the planted character of the existing road.
 - iii) **Acquisition of land for dense native tree and shrub planting.** Land would be acquired to the rear of Sinclair Grove and to the rear of Woodlands Close for essential planting.

- iv) **Offsite planting by agreement with the landowner.** Offsite planting is proposed to supplement the planting within the highway boundary. It should aim to further soften any visually intrusive effects of the proposed realignment. Further planting by agreement could be included where requested by landowners and where it could be shown to be mitigating any residual visual effect resulting from the improvement.

- vi) **Planting on Covered Section.** The covered section would provide an improved entrance to Brent Park and a new facility for the locality. A sitting area would be provided adjacent to Brent Street, leading into parkland planted with trees and shrubs. These would be a mixture of ornamental and native species. The parkland design would be formal adjacent to the sitting area becoming less formal on its approach to Brent Park. Ornamental planting would front Brook Lodge.

WILDLIFE AND CONSERVATION

- 5.5 The ecological effects of the road widening on the trees and hedgerow to the east of the NCR and on Brent Park to the west would be minor as only small areas are affected. There would be some loss of nesting sites. The effects of the widening would be mitigated by appropriate replanting.

- 5.6 The proposed exchange land at Brentfield Gardens could be designed to include a wild flora area or pond to improve its ecological value.

- 5.7 The existing trees and shrubs will be retained on the proposed exchange land adjacent to Brentview House. The site will be sensitively managed to enhance its potential for woodland species.

- 5.8 It is proposed that surface water drainage from the proposed road would run into the River Brent via suitable oil and sediment traps and thus no special detrimental effect on the river would arise. Drainage works would have to meet the approval of the river authority.

6.0

ALTERNATIVES CONSIDERED

6.1

In 1969, draft orders were published for an improvement scheme involving a long flyover in excess of 7m above existing ground level to carry the A502 over the NCR. A public inquiry was scheduled for July 1973 but following representations by the GLC on the environmental impact of the proposals, plans for the inquiry were cancelled.

6.2

In 1979 three alternatives were presented at a public consultation. Two of them, the Red and Green Schemes, involved the NCR being at or slightly below existing level and the A502 carried over on a flyover. The Blue Scheme consisted of an underpass for the North Circular Road, passing beneath the A502 without any connection between them. The preferred route which was announced in 1980 was the Green Scheme. The scheme was subsequently put into abeyance, but was reinstated in the National Roads Programme in 1985 and in 1987 Gifford Graham and Partners were appointed to investigate and recommend alternative schemes.

6.3

In the latest study, the detailed investigations have produced only one scheme that can provide a safe effective and environmentally acceptable solution to the problem. Alternative schemes, including the earlier Green scheme, providing for various turning movements between the NCR and the A502 were considered. All were found to be unacceptable on safety and/or operational, environmental and economic grounds.

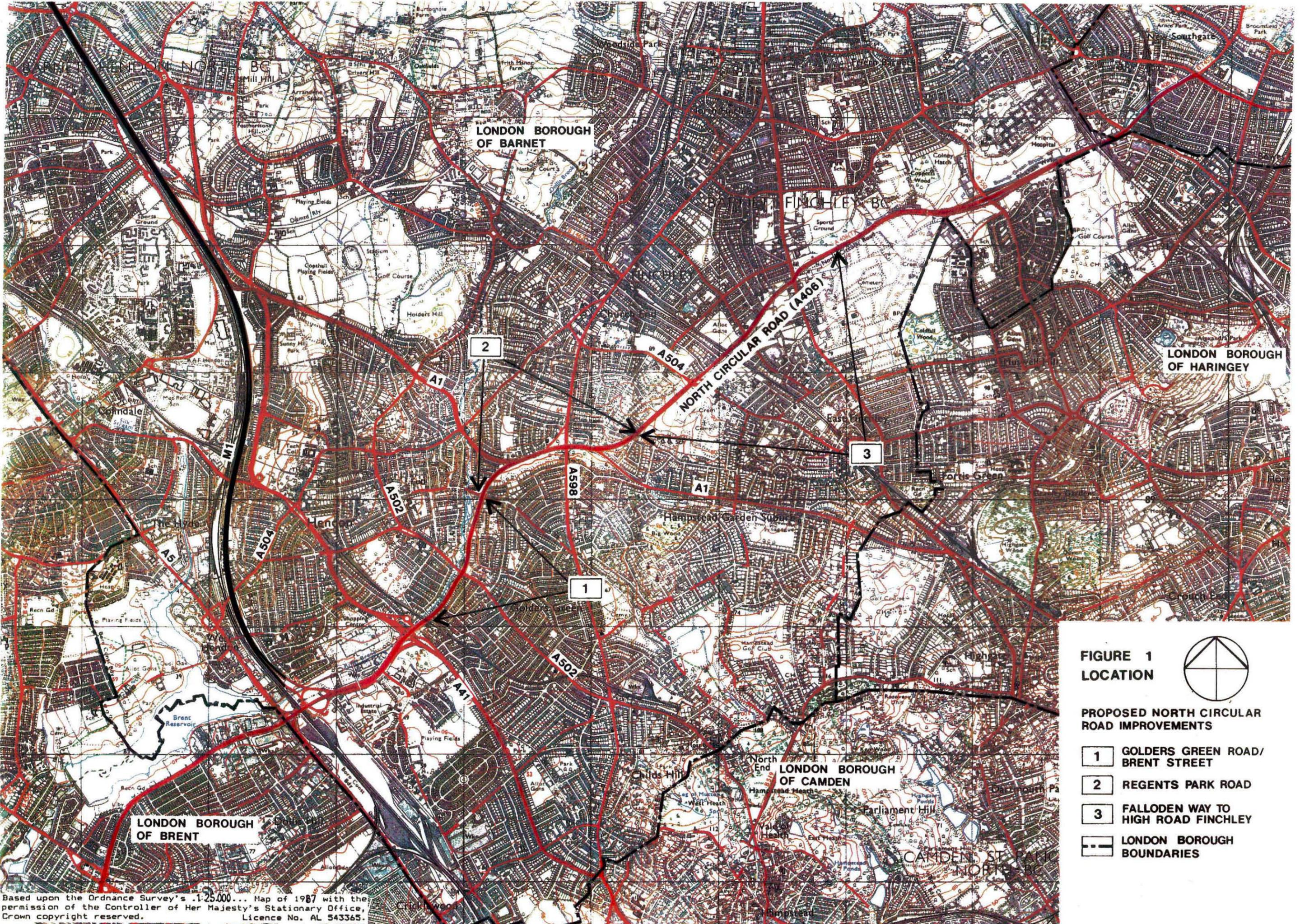
7.0 CHOICE OF PUBLISHED SCHEME

7.1 Following Public Consultation the preferred route was confirmed in a Public Statement issued on 16th July 1990. The Statement also announced the addition of a 150m covered section north of the A502 and a private access road into the rear of No. 52, Heathfield Gardens through the grounds of No. 54, which is currently owned by the Department of Transport.

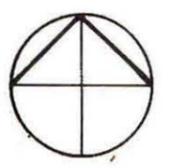
Changes since Preferred Route Confirmation

7.2 Since the preferred route was confirmed in July 1990, other design changes have been incorporated in the proposals.

- i) The footway located along the rear gardens of properties in Woodlands would be replaced by a shared cycle/pedestrian path through the front garden to No.20 Woodlands Close.
- ii) The private means of access to the the rear of Nos 48-78 Brentmead Place would be linked to the service road located in front of 4-44 Brentmead Place. This newly created highway would necessitate the demolition of No 46 Brentmead Place which is currently owned by the Department of Transport. The section of road to the rear of Brentmead Place would be widened locally to provide passing bays, where possible located between existing trees, the road itself being moved 3m away from the bank of the River Brent to retain vegetation.
- iii) The existing vehicular access onto the NCR from Brentview House and Sheila House would be stopped up. Access would be re-provided through Brent Park to the rear of Lakeside Lodge.
- iv) Direct access onto the NCR from the garage serving 52, Heathfield Gardens will be stopped up. Alternative access would be provided adjacent to 54, Heathfield Gardens.



**FIGURE 1
LOCATION**



PROPOSED NORTH CIRCULAR ROAD IMPROVEMENTS

- 1** GOLDERS GREEN ROAD/
BRENT STREET
- 2** REGENTS PARK ROAD
- 3** FALLODEN WAY TO
HIGH ROAD FINCHLEY
- LONDON BOROUGH
BOUNDARIES

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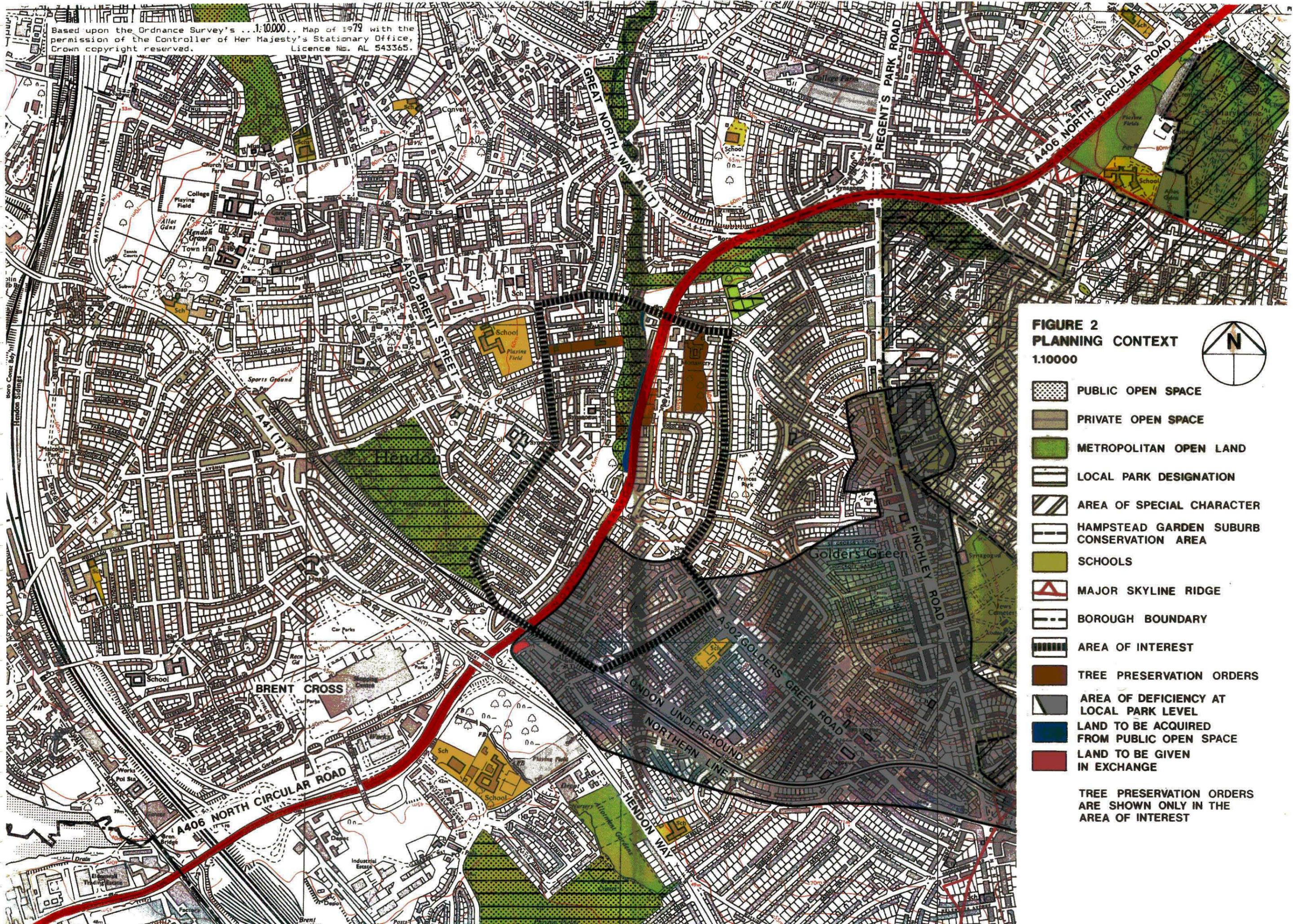
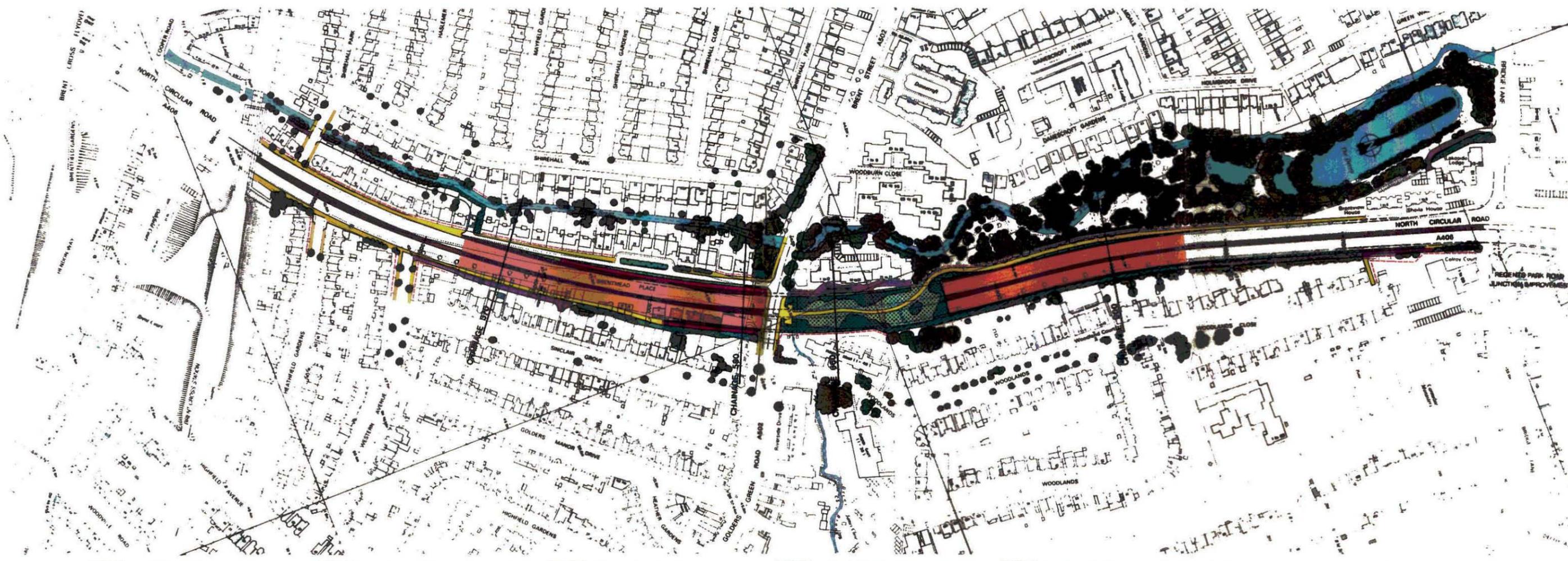


FIGURE 2
PLANNING CONTEXT
1:10000



-  PUBLIC OPEN SPACE
-  PRIVATE OPEN SPACE
-  METROPOLITAN OPEN LAND
-  LOCAL PARK DESIGNATION
-  AREA OF SPECIAL CHARACTER
-  HAMPSTEAD GARDEN SUBURB CONSERVATION AREA
-  SCHOOLS
-  MAJOR SKYLINE RIDGE
-  BOROUGH BOUNDARY
-  AREA OF INTEREST
-  TREE PRESERVATION ORDERS
-  AREA OF DEFICIENCY AT LOCAL PARK LEVEL
-  LAND TO BE ACQUIRED FROM PUBLIC OPEN SPACE
-  LAND TO BE GIVEN IN EXCHANGE

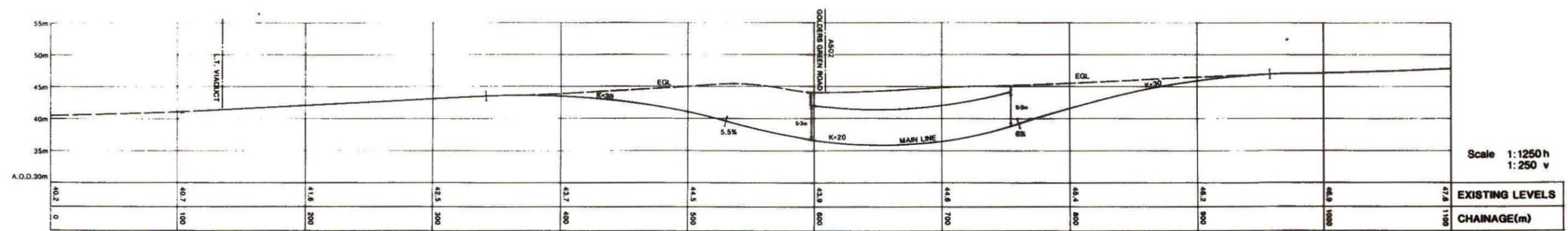
TREE PRESERVATION ORDERS ARE SHOWN ONLY IN THE AREA OF INTEREST



- LEGEND**
- CARRIAGEWAY AT OR NEAR EXISTING GROUND LEVELS
 - PAVED VERGES AND CENTRAL RESERVES
 - RIVER OR BROOK
 - EXISTING VEGETATION
 - LAND COMPULSORILY PURCHASED FOR THE MITIGATION OF ADVERSE EFFECTS
 - CARRIAGEWAY BELOW EXISTING GROUND LEVELS
 - RAMPS
 - PROPOSED MOUNDING AND REGRADING
 - PROPOSED DENSE TREE AND SHRUB PLANTING
 - PLANTING BY AGREEMENT AREAS CONSIDERED APPROPRIATE FOR OFFSITE PLANTING BY AGREEMENT CARRIED OUT UNDER SECTION 253 OF THE HIGHWAY ACT 1990
 - PEDESTRIAN FACILITIES AND CYCLIST FACILITIES
 - PRIVATE ACCESS
 - LANDSCAPE TREATMENT OTHER THAN TREE OR SHRUB PLANTING TO INCLUDE GRADING
 - PROPOSED ORNAMENTAL SHRUB AND GROUNDCOVER PLANTING

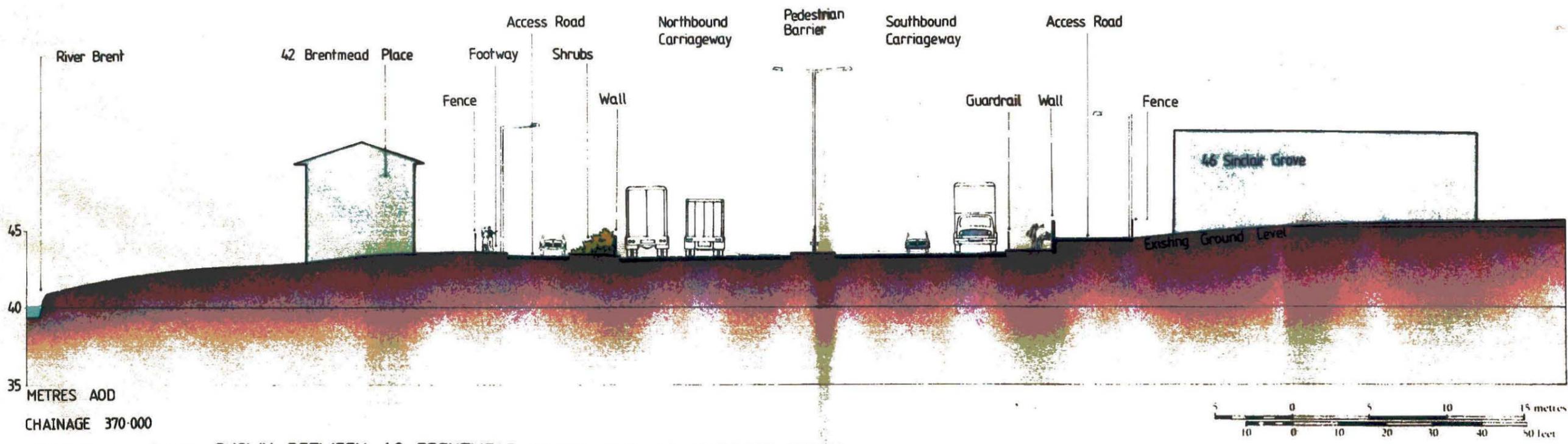


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Scale 1:1250 h
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FIGURE 3



SECTION A - ROAD SHOWN BETWEEN 42 BRENTMEAD PLACE AND 46 SINCLAIR GROVE

Planting shown after 15 years growth

FIGURE 4

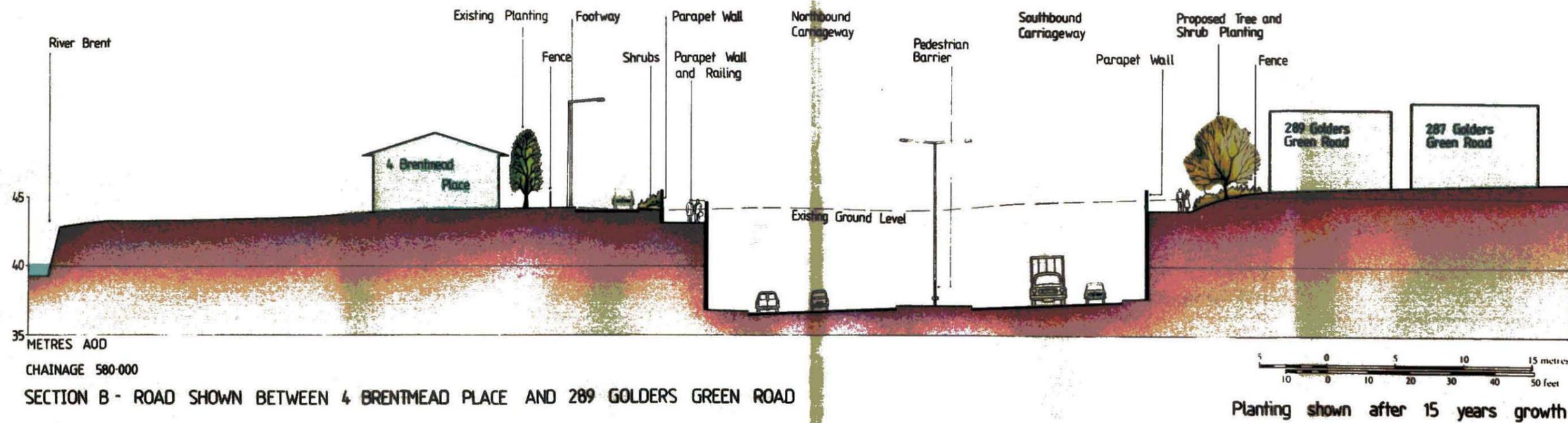


FIGURE 5

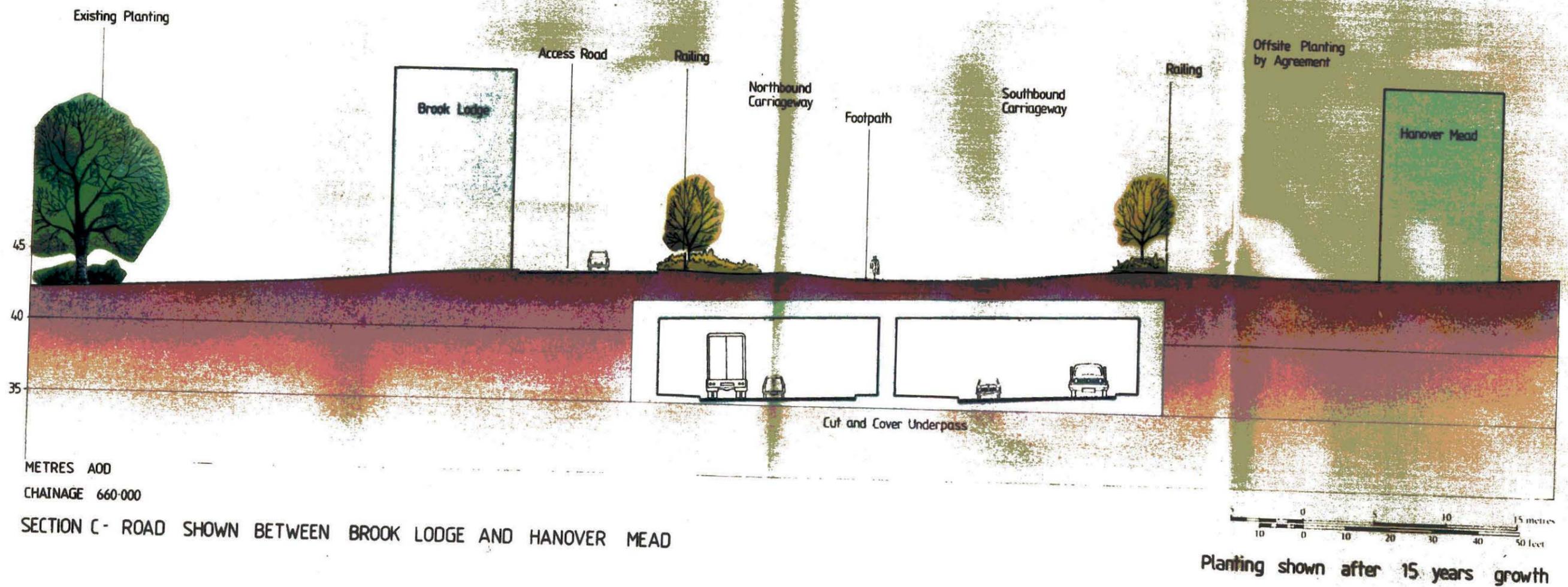


FIGURE 6

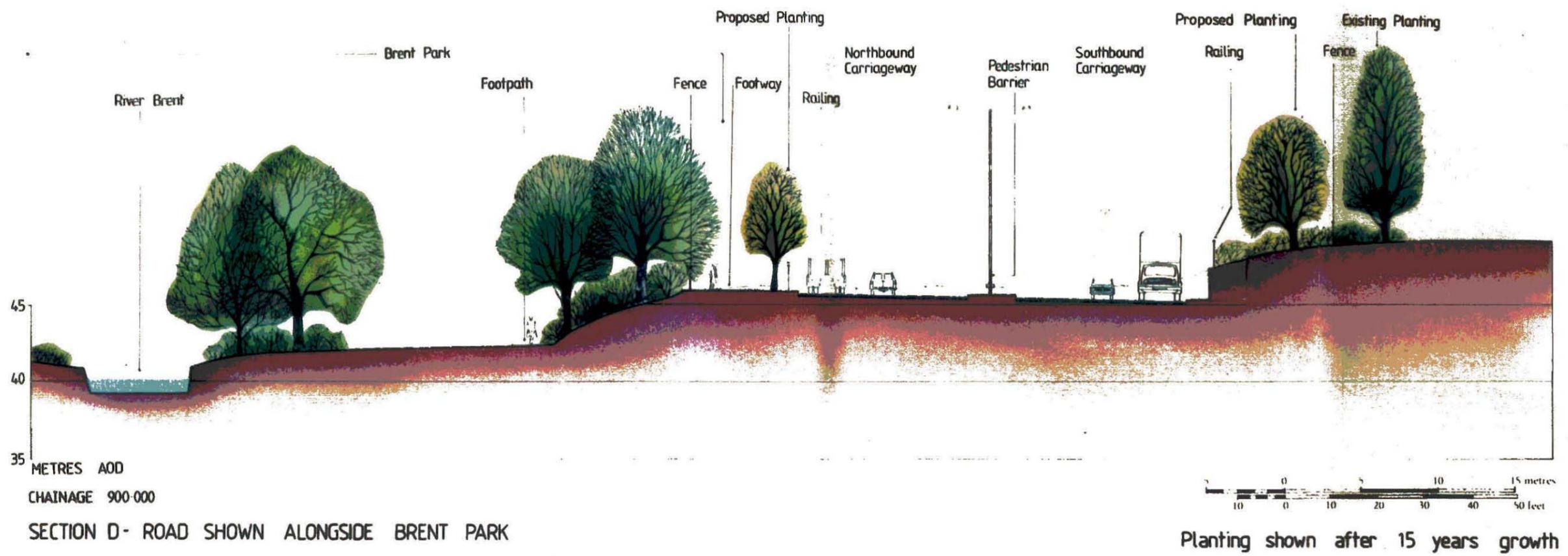
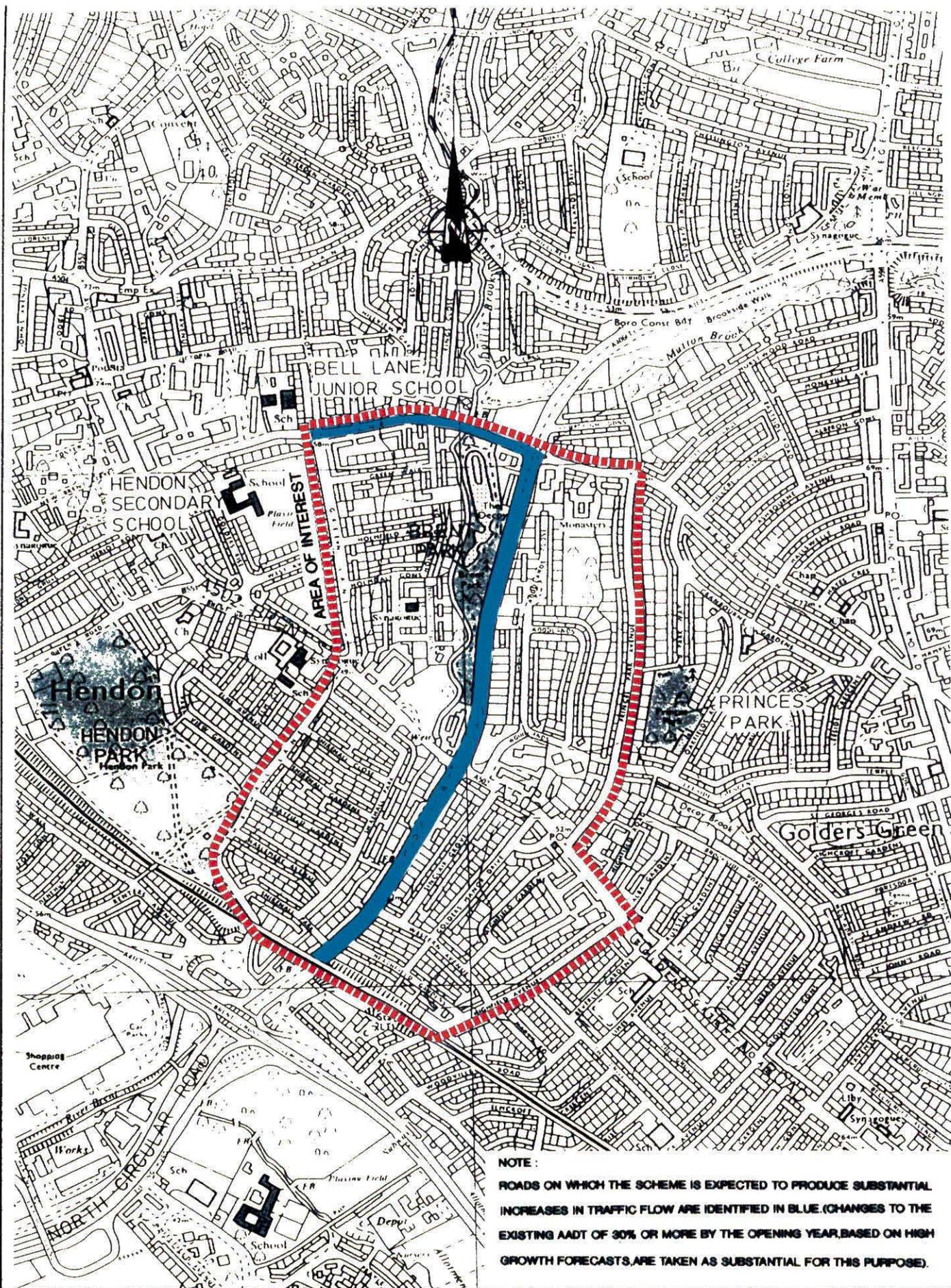


FIGURE 7



NOTE:
 ROADS ON WHICH THE SCHEME IS EXPECTED TO PRODUCE SUBSTANTIAL INCREASES IN TRAFFIC FLOW ARE IDENTIFIED IN BLUE. (CHANGES TO THE EXISTING AADT OF 30% OR MORE BY THE OPENING YEAR, BASED ON HIGH GROWTH FORECASTS, ARE TAKEN AS SUBSTANTIAL FOR THIS PURPOSE).

Gifford Graham & Partners Consulting Engineers	Job title A406 NORTH CIRCULAR ROAD/GOLDERS GREEN ROAD /BRENT STREET JUNCTION IMPROVEMENT			
	Client DEPARTMENT OF TRANSPORT LONDON REGIONAL OFFICE			
Drawing Title PREDICTED CHANGES TO EXISTING AADT FLOW IN OPENING YEAR (1996)	Date	Drawn	Checked	Approved
	JAN'91	SES	CR	
	Scale	Drawing No		Rev
	N.T.S.	5257/16		FIGURE 8