



A27 Polegate Bypass and the A22 New Route

Opened June 2002

The Foreword

The opening of the Polegate Bypass marks an important step in the delivery of the Government's ten-year transport plan. The plan includes investing £21 billion in England's motorway and trunk road network. The Polegate Bypass is the first of the major road schemes to be completed under this programme.

The £17m bypass will remove two thirds of the existing traffic from the centre of Polegate. This will ease congestion in the town, improve safety and bring general environmental benefits to the local community. Together with the East Sussex County Council's improvements to the A22, the bypass will also provide improved access to Eastbourne.

I welcome the completion of the Polegate Bypass and am delighted to be associated with its formal opening.



A handwritten signature in blue ink, which appears to read 'Tim Matthews'. The signature is stylized and fluid.

Tim Matthews
Chief Executive

The Vision

Local people have been campaigning for the Polegate bypass for many years and will now benefit from the removal of heavy traffic from the centre of the town, making it a safer, cleaner and more amenable place for residents.

Local support for the scheme grew when the construction of East Sussex County Council's A22 New Route began. This was to include an eventual connection to the Polegate bypass scheme at Dittons, but could not come into effect until the A27 scheme had been built.

The 2.5 km (1.5 mile) two lane dual carriageway for the A27 now links up with the A22 New Route, creating the new through route to the centre and east of Eastbourne. This not only means faster, more reliable connections to and from the town centre and coast, but provides for the regeneration of the area. It also means that residents whose town has been divided in two by the A27 trunk road and had suffered from its noise, air pollution and traffic delays, will be able to create a closer community again.

Aerial view of of Cophall Interchange





Traffic congestion in Polegate

In 1980 the Department of Transport consulted the public on alternative routes for a combined Pevensey and Polegate bypass and announced a Preferred Route in 1982.

The Pevensey section was taken forward as a separate scheme and opened to traffic in 1990. Proposals for the Polegate section, now known as the A27 Polegate Bypass, were presented to the public at an exhibition in December 1991. A Public Inquiry followed in June 1992 as a result of which the Sayerland Road footbridge was added to the proposals to maintain a pedestrian link to the houses on Bay Tree Lane and Sayerland Lane.

Following the Public Inquiry it was intended to build the Polegate Bypass as part of a

larger Design, Build, Finance and Operate contract which included other schemes on the A27 and the A21 in Sussex and Kent but this was cancelled in the mid 1990s.

However, following the review of the road construction programme after the current Government was elected, the Polegate Bypass was one of 37 schemes (since increased to 53 schemes) included in the “Targeted Programme of Improvements”, announced in 1998, to be started within 7 years.

An extension of the Bypass from the Cophall roundabout westwards towards Wilmington and improvements to the A27 between Polegate and Lewes were included in the South Coast Multi Modal Study covering the whole of the A27 from Southampton to Folkestone. The report of the Multi Modal Study is due to be published in early 2003.

Description of A27 Bypass

The 2.5km long dual carriageway runs from the A22 at Cophall Farm to the western end of the Pevensey Bypass at Dittons where it links with the County Council's new A22 Route from Eastbourne. The bypass will remove two thirds of the existing trunk road traffic from Polegate, making it a safer, cleaner and more amenable place to live. Together with the new A22 route the Bypass will help regeneration in the Eastbourne area.

The scheme largely passes through open countryside in shallow cuttings and embankments to the north of Polegate. There are three crossing points, at Sayerland Road footbridge, the Cuckoo Trail bridleway bridge and the Shepham Lane combined bridleway and accommodation bridge.

The scheme includes a new section of dual carriageway on the A22 north of the Cophall roundabout carried out on behalf of East Sussex County Council. A reinforced concrete underpass on this section provides access for local traffic to Bay Tree Lane and Sayerland Lane.

A27 Bypass route nearing completion



A27 Contract Statistics

Highways Agency

Assistant Director	Paul Arnold
Project Manager	Graham Link

Atkins

Managing Director	Neil Thomas
Divisional Director	Richard Craig
Project Director	Dick Brace
Project Manager	Nick Godkin (and Employer's Agent)
Employer's Site Representative	Peter J Nicholson
Assistant Employer's Site Representative	P Savage
Assistant Employer's Site Representative	Sam Gunasekara

Morgan Civil Engineering

Director of Civil Engineering	Ian Gregg
Project Manager	Gary Phoenix

Owen Williams (Contractor's designer)

Designers Site Representative	John Chapman
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Contract Details

Contract Value	£17.3 Million
Contract Period	22 months/104 weeks
Total Length of scheme km and miles	3.4km (2.2 miles)
Volume of Excavation	305,000cu.m
Volume of Fill	482,000 cu.m.
Volume of Structural Concrete	4750 cu.m.
Tonnage of steel Reinforcement	770 tonnes
Tonnage of Structural Steelwork	134 tonnes
Area of Carriageway Surfacing	110,000sq.m.
Area of Footpath/Cycleway/Bridlepaths	7,000 sq.m.
Length of Drainage	14.4 km

Main Carriageway Construction

Thin Wearing Course	Proprietary "Safepave" 20mm thick
Base course	Heavy Duty Macadam Base course
Road base	Heavy Duty Macadam Roadbase
Sub-base	Cement and Lime stabilised Weald Clay on A27 BypassType 1 Type 1 Sub base elsewhere (A22 dualling and side roads)

The Environment and Archaeology

Environment

A wide range of measures have been taken to minimise the impact of the scheme on the local environment. These include

- the use of low noise road surfacing
- earth bunds and heavy close board fencing along side the Bypass to further reduce the impact of traffic noise;
- drainage pollution control measures to contain accidental spillages.;
- minimising the use of freshly quarried materials by using a borrow pit adjacent to the site,
- the use of lime and cement stabilised sub base in the road construction

Ecological surveys carried out before the start of construction confirmed the presence of Great Crested Newts in a pond near to the proposed Cophall roundabout and two species of bats in trees near the Cuckoo Trail.



Great Crested Newts and all bats are protected by legislation and special measures had to be taken before

construction work could start.

While the Great Crested Newts were hibernating, low polythene fencing, about 2 ft high sloping away from the site, was put up to exclude them from the Bypass site. When the newts emerged from hibernation those outside the Bypass site could not climb the polythene fencing while those inside the fencing could climb over the fence or could be collected in non harming traps on the site side of the fence and relocated to ponds outside the Bypass site. The existing pond where the newts were originally found was preserved and a special low profile newt fence was erected to keep newts off the completed Bypass.

Natterer's bats and Noctule bats were found roosting in holes in trees on the line of the Bypass near to the Cuckoo Trail. Several other trees were identified as potential bat roosting



Tree planting along the A27

The Environment and Archaeology

and nesting sites and therefore a number of bat boxes were put up in trees along the Cuckoo Trail in replacement. Before any trees were cut down all roosting holes were carefully inspected by licensed ecologists to ensure that no bats were in occupation.

Landscape planting began 12 months before the start of construction and by the time it is completed in the Autumn of 2002, over 100,000 trees and shrubs will have been planted along the length of the scheme.

Archaeology

Before construction work begins on any new road, the Highways Agency takes steps to ensure that any archaeological artefacts are located, recorded and, if possible preserved. This is part of our long-standing commitment to the environment and our heritage.

Preliminary archaeological investigations on the route of the Bypass were completed in October 1999.

Further, more detailed, investigations were carried out on the site of a suspected post medieval farmstead near to Bay Tree Lane and on two 16th century brick kilns close to the Cuckoo Trail. Although the findings were not of major importance, artefacts including pottery, brick, tile and worked flint fragments are currently being stored before being offered to a local museum.

Construction and Engineering

Before construction began the Highways Agency held detailed discussions about how the work would be carried out with affected landowners, local authorities and other groups. Advance ecological and archaeological surveys were carried out and, as a result of discussions with Transco, an existing gas main on the A22 was diverted before the start of the Bypass construction to minimise overall disruption.

Construction of the Bypass began in August 2000 with site clearance at the new Cophall roundabout on the A22. Severe weather in the Autumn delayed site clearance of the main 1.5 mile route until Spring 2001 when it was carried out in just over 5 weeks. The bulk of the construction work has effectively been achieved in just 14 months.

On the A27 section of the scheme the Highways Agency has used a construction technique not previously used on a major Trunk Road in the United Kingdom.

A road is made up of a number of layers of different material. Traditionally most UK roads have a lower layer of stone aggregate, known as the sub base, to provide a firm foundation. Up to three layers of graded aggregate bound with hot bitumen – the tarmac – are laid on top of this, and, when cooled, provide the finished road with

strength, durability and a safe, smooth running surface for traffic.

In most cases aggregate for the sub base layer has to be quarried elsewhere and delivered to the site by road, rail or sea. At Polegate the natural Weald clay found on site has been



Pouring Concrete on Baytree Lane underpass by Cophall Roundabout

treated with lime and cement, a process known as stabilisation, to make it suitable to use as the sub base foundation layer in place of imported aggregate. Not only has this saved having to remove the clay from site, it has also saved having to import suitable aggregate from elsewhere in the country. It is estimated that this saved approximately 3,700 vehicle

Construction and Engineering

trips in the Polegate area. Although Lime and cement stabilisation of clay has been used before in the UK, particularly for airport taxi-ing and parking areas, Polegate is the first time it has been developed for use on a major Trunk Road.

At Sayerland Road a retaining wall has been built to allow the Bypass to remain in cutting where it passes the end of the road, shielding the view of the road and traffic from nearby houses.

The bored concrete pile retaining wall is 170m long with individual piles up to 26m

Construction work on Polegate Bypass

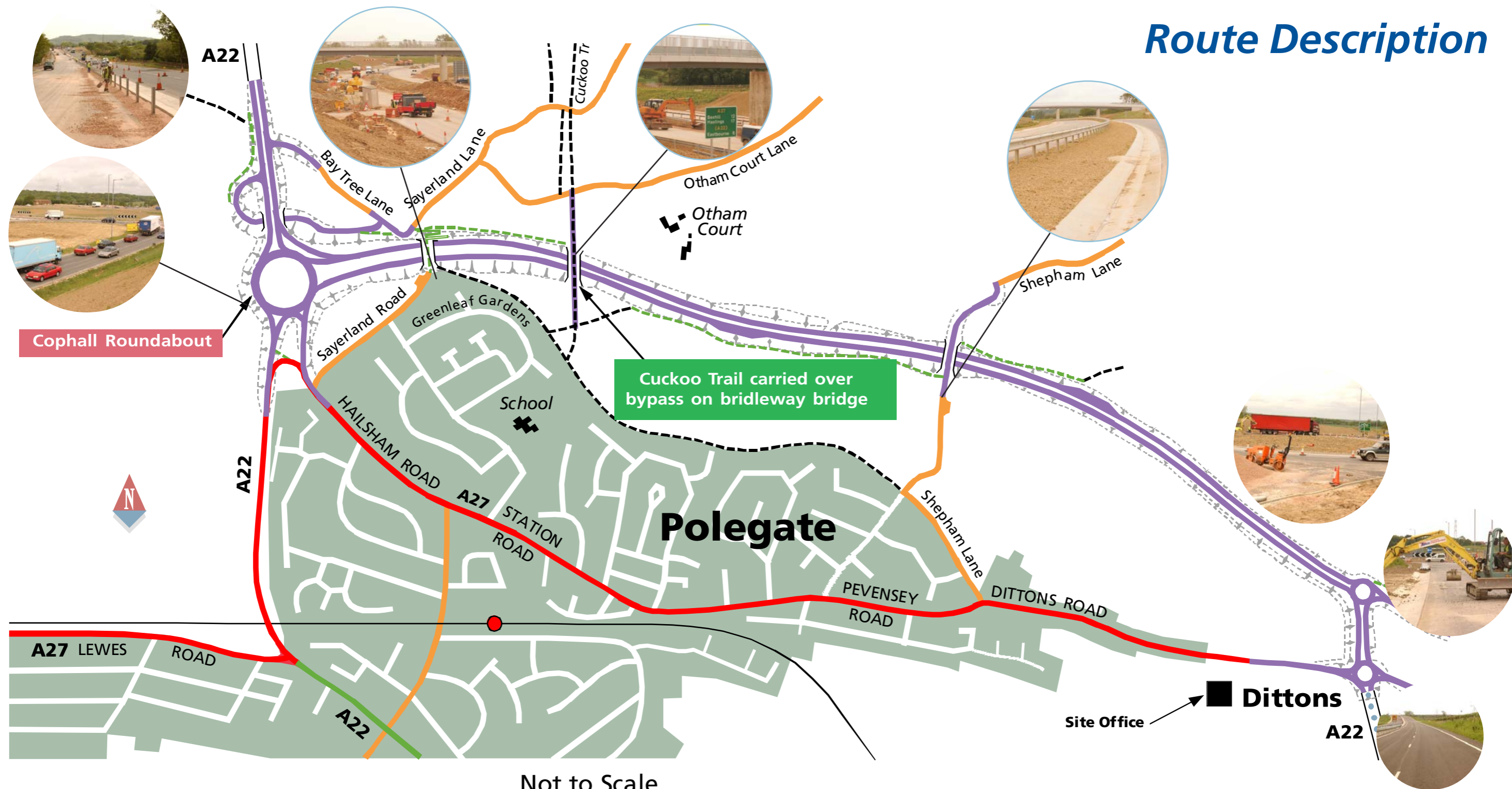


deep and 1.2m in diameter touching each other to form a continuous buried wall. The Bypass side of the wall is faced with a sound absorbing block wall and all that can be seen from houses on Sayerland Road is the concrete capping beam on top of the piles.

The retaining wall also forms the support for the southern side of the Sayerland Road footbridge, which links Sayerland Road and Bay Tree Lane.

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Route Description



Cophall Roundabout

Cuckoo Trail carried over bypass on brideway

Polegate

Site Office ■ Dittons

Not to Scale

History of New A22 Route

Developing a new route for the A22 east of Willingdon was first suggested in the 1975 East Sussex Structure Plan and, as a result, in 1979 a study was carried out into possible alternative routes between Dittons and Eastbourne Town Centre.

The County Council consulted on a route between the existing A27 at Dittons and Willingdon Drove. It also had some ideas for the roads connecting with Eastbourne town centre as a way of creating more space for east-west traffic south of Willingdon Drove.

In the same year, 1979, the Department of Transport was looking at bypass routes around Polegate and Pevensey and it consulted on its plans.

The Pevensey bypass was built and opened in 1990 but the Polegate bypass was delayed causing a knock-on effect to the County Council's development of proposals for the A22 New Route. Construction of this had to be confirmed before any design work could be carried out. By 1983 it was clear that decisions on the A22 New Route not only



Tree planting next to the A22

depended on the Polegate bypass but also on Eastbourne Borough Council's plans for the Eastbourne Park area and as part of that plan, in September that year, the County Council consulted on a new set of proposals.

The route of the new road has been protected from development since 1986, a protection extended in 1988 to cover possibilities for the junction at Bedfordwell Road, which became the preferred scheme in 1989.

The route north of Lottbridge Drove was finally approved in 1990 and the Dittons to Willingdon Drove section was granted planning consent in February the following

History of New A22 Route

year. The Compulsory Purchase and Side Roads Orders were confirmed in August 1993 following a Public Enquiry.

Plans were extended to include the dualling of Lottbridge Drove to the Tesco Roundabout, just to the north of Seaside Roundabout, as it was felt this would improve the chance of funding while giving a better economic return.

The A22 New Route could not have been built without a 50 per cent Government Transport Supplementary Grant (TSG) and in December 1993 the County Council was successful in its bid following a joint campaign with Eastbourne Borough Council, local MPs, business and other organisations.

It was always intended that the A22 New



The A22

Route would open at the same time as the Polegate bypass.

Construction was split into two contracts:

Contract 1

covered the section from Willingdon Drove to Seaside and included a 500 metre stretch of two-lane highway between Willingdon Drove and Lottbridge Drove, known as the Highfield Link, and a further 1.5 kms of dualling of Lottbridge Drove. This opened in December 1995.

Contract 2,

connecting Willingdon Drove with the A27 at Dittons, started in January 1996 and consists of 2.6 kms of new dual carriageway north of Willingdon Drove to the A27 at Dittons crossing the railway line on a five-span bridge.

It was always intended that the A22 New

Route would open at the same time as the Polegate Bypass, but the Design, Build, Finance and Operate package under which it would be provided was cancelled in the 1990s. However, following the Review of the Trunk Road Programme in 1997, the Polegate Bypass was given the go-ahead to start construction in 2000/2001, which meant that the A22 New Route could finally be completed.

The A22 New Route – Contract 2

The A22 New Route was one of a series of schemes on the east side of Eastbourne aimed at improving access to industrial areas and relieving residential roads of heavy traffic. It connected the previously completed section of Contract 1 from the Willingdon Drive Roundabout to Dittons Corner, where the Polegate and Pevensey bypasses meet.

Next to the road runs a combined footpath and cycleway, which is part of the National Cycle Network Route 21, and a link between the Hampden Park and Shinewater estates.

The Designers

The scheme was designed by East Sussex County Council's Technical Services Department based its own site investigations.

The department was externalised to Owen Williams in 1998, staff were transferred to the

company, which took over construction supervision.

The Road

Both construction contracts were carried out by Alfred McAlpine, the County Council's main contractor.

Much of the road is built on an embankment across a flood plain and the Environment Agency, as part of its flood control system, required that compensatory storage lakes had to be excavated prior to the embankment being constructed. Several lakes were created, both to store surface run-off and for environmental reasons.

The work also included the diversion of existing sewers that crossed the plain and the building of new control sluices and spillways.

Specialist land drainage consultancy for the Environment Agency was by Binnie, Black and Veatch.

For most of its length the embankment was designed to be 2m high but it was raised to 10m to allow for the Shinewater Bridge over the Eastbourne railway line.

Because of the alluvium beneath the flood plain the fill needed to raise the embankment had to be placed in stages over a period to allow the ground to stabilise. To check this

process a trial embankment was built during the first phase of construction and was monitored for a year.

Material for the embankment was taken from both the short section of cutting at the north end of the route and a borrow pit located next to the west side of the road.

All embankment work was carried out one stage at a time with instruments used to check when work could proceed. Surcharge was also applied to promote early settlement and this material was eventually returned to the west side borrow pit.

Contoured landscaping and environmental embankments were built along the side of the road to reduce the visual impact on nearby homes and to lessen noise. This was combined with acoustic fencing and road surfacing-.

The borrow pit also provided a deposit site for excavated unacceptable material from construction which meant there was no need to remove it from the site by road.

During construction a temporary bridge was built over the railway line so that material excavated could be moved from the north side to the south side of the site. This bridge was removed once the main bridge was built, and the ground restored.

Soft landscaping of the main route and restoration of the borrow pit was carried out by Tillhill Economic Forestry Ltd.

Shinewater Bridge

The five span bridge was built to allow an access track, a major waterway and a cycle path to pass underneath beside the railway line, itself built on an embankment.

The bridge has twin independent continuous composite steel beam and in-situ reinforced concrete slab decks supported on reinforced concrete anchored abutments and reinforced concrete leaf piers.

These abutments are on deep mass concrete foundation blocks and the piers are on bored cast-in-place reinforced concrete piles.

The twin decks each have a fixed movement joint at the northern end and a longitudinal expansion joint at the southern end.

The beams are supported on a combination of fixed, guided and sliding bearings mounted on the abutments and piers.

The total span of the bridge is 120m, 1645 tons of steel were used in its construction and 9400 cubic metres of concrete.

Some smaller structures were also built so that cycle paths and footpaths could cross watercourses.

A22 Contract Statistics

On Externalisation of ESCC Technical Services Department in 1998, the following staff who had been working on the site supervision staff, were transferred to Owen Williams who assumed responsibility for overseeing the remainder of construction, and finalising the Contractor's account.

TSD / OWEN WILLIAMS

Project Manager
Contract Manager
Resident Engineer
Deputy Resident Engineer
Assistant Resident Engineer (Structures)
Assistant Engineer
Clerk of Works

D G A Gillham BSc CEng MICE MIHT
E R Rapa BSc CEng MICE MIHT
G J Denman BSc CEng MICE
C D Peake BSc CEng MICE
D Topley BSc
S J Lade Eng Tech TMICE
G N Kneller
M J Gallagher
D I Barton BSc MSc FGS
N Anderson BSc MSc

Geotechnical Staff

EAST SUSSEX COUNTY COUNCIL

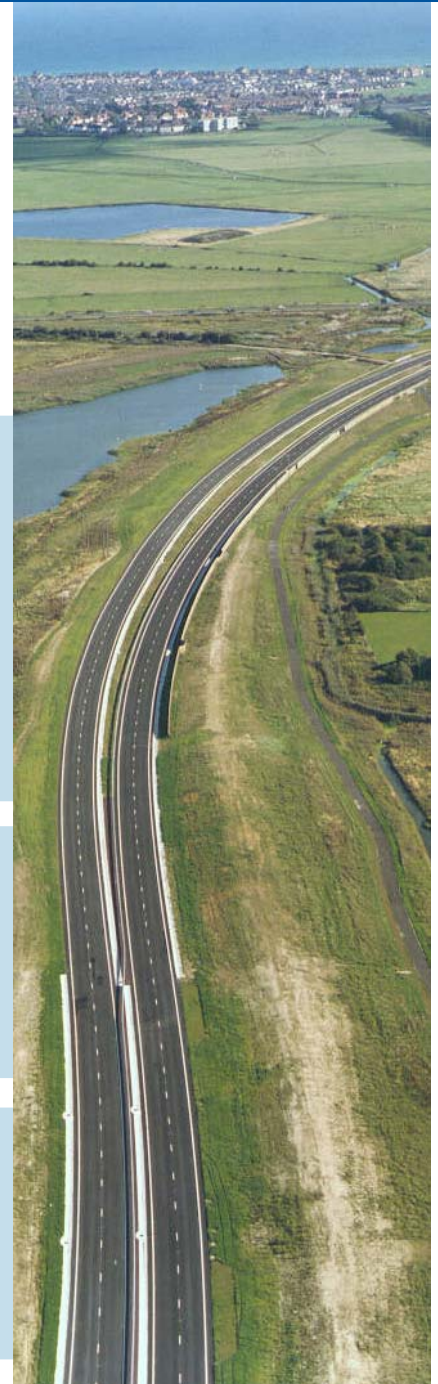
The Engineer
Assistant Director
Contracts Manager
Project Managers

R E Wilkins MSc CEng MICE MinstWM MIHT
D R Jordan BEng CEng MICE MIHT
R F Weeden BEng CEng MICE
J H Wilson BSc CEng MICE
G E Jordan IEng AMICE

ALFRED MACAPLINE CONSTRUCTION LTD

Managing Director
Commercial Director
Regional Director
Project Manager
Agent
Senior Quantity Surveyor

Brian Melling
Mike Wainwright
John Jackson
Richard Bakewell
Derek Henderson
Phillip Turner



A22 Contract Statistics

Contract Value	£ 17.3m
Start Date	8 January 1996
Contract Period	156 weeks
Length of Scheme	2.6km
Width of Carriageway	Dual 7.3m with 1m hardstrips
Earthworks Cost	£ 5.8m
Structures Cost	£ 5.1m
Drainage Cost	£ 0.5m
Blacktop Cost	£ 1.4m
Volume of Excavation	908000m ³
Volume of Fill	632000m ³
Volume of Structural Concrete	10900m ³
Tonnage of Steel	1900t
Area of Carriageway Surfacing	48000m ²
Area of Footpath/Cycleway	12500m ²
Length of Drainage	6300m
Main Carriageway Construction	
Wearing Course	Proprietary Thin Wearing Course
Base Course	Dense Bitumen Macadam Basecourse
Road Base	Dense Bitumen Macadam Roadbase
Sub-Base	Type 1 Sub-base Lime stabilised Sub-grade



Working Together

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long term client and supplier relationships, the Company prides itself on its commitment to safety, continuous improvement and technical innovation.

Our Engineering Services Department provides in-house design and planning capabilities and has developed strong associations with external design consultants. We maintain a comprehensive range of relevant specialist plant in strategically located depots in the UK.

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Atkins

Atkins is one of the world's leading providers of professional, technologically based consultancy and support services. The company is based in Epsom, Surrey and operates from 175 offices around the world, employing over 15,000 permanent staff.

Perhaps best known for its work in highway design and rail consultancy, Atkins also plays a leading role in a range of other markets, including aerospace, defence, education, the environment, facilities and property management, food and drink, power and energy, telecommunications, transport planning, and water. The company's aim is to be widely recognised as the first choice supplier in all its chosen markets.

Neil Thomas is Managing Director of Atkins Transport Solutions, which is part of Atkins Highways and Transportation

Transport Solutions is an 850 strong business across UK that undertakes project development and design activity for the HA, Local Authorities and Contractors.

Working Together

Alfred McAlpine Construction Ltd

Alfred McAlpine is an Infrastructure Services Provider- building, upgrading, managing and maintaining the UK infrastructure. We are dedicated to the development, design, construction, ownership, operation and maintenance of the built environment; from schools, hospitals, offices, factories and leisure facilities, to roads, railways and water treatment facilities. We deliver these services through both our **Capital Projects** and **Support Services and Investments** business streams.

Capital Projects incorporates our **Civil Engineering** and Special Projects businesses.

Support Services and Investments consists of Utility Services, Asset Management Services (road maintenance), Plant Services (AMPL), Project Investments (PFI concessions), Steill Facilities and Steill Networks.

Civil Engineering provides a broad geographical spread of activity across the UK, including major construction projects for customers in both public and private sectors. We are committed to building lasting relationships with our customers, helping them to achieve their objectives on time and to budget. Wherever possible we work on a partnership basis with our Clients and over 75% of the current workload is being undertaken on a partnership or negotiated basis.



OWEN WILLIAMS CONSULTANTS

Owen Williams is a leading design, project and asset management consultancy, providing a comprehensive range of services tailored to suit client needs. A flexible but focused structure has helped develop centres of excellence where individually tailored project teams have the ability to deliver solutions combining attention to detail with innovative thinking.

For over 80 years Owen Williams has provided consultancy services to a wide range of clients in the transportation and property sectors. Founded in 1919 by the late Sir Owen Williams, the firm has been responsible for many notable buildings and structures of the 20th century, including the M1 Motorway, Daily Express Buildings, Gravelly Hill Interchange (Spaghetti Junction) and the British Empire Exhibition, including the original Wembley Stadium, for which Sir Owen received his knighthood.

Growth has seen the firm invest heavily in developing new skills, and a number of strategic acquisitions resulting from rail privatisation has strengthened the company's integrated transport capabilities. The buildings and property side of the business has also evolved with the company acquiring architectural skills. From the U.K. base Owen Williams has expanded into international markets, with links and joint ventures with overseas partners in China, Turkey, India and Bangladesh.





*For further information:
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