

[Rail Freight]

Giant metal shredder opens

A new rail-connected metals recycling terminal – part-funded by a £1.72million Freight Facilities Grant from the Welsh Assembly – has been officially opened at the port of Newport. Equipped with the world's largest industrial shredder and a new gantry crane that has one of the fastest ship-loading rates for a metals recycling terminal in Europe, the facility will handle in excess of 60,000 tonnes of scrap metal transported by rail from Wimborne and Nottingham.

Recycling centre for Willesden hub

Plans have been approved for a state-of-the-art recycling centre at Old Oak Sidings, Willesden Junction, one of the only sites in London with good potential connections between road, rail and canal. The plans by Powerday plc are backed by EWS and British Waterways London, and could see over a million tonnes of material moved off the roads each year.

Hutchison will pay for gauge upgrade

The Rail Freight Group

The new railway structure

The Railways Bill, designed to provide the legislative changes to implement the Rail White Paper, has been published and started its passage through the House of Commons in December.

It confirms that the Government's sole objective is to take control of railway spending, and devolve as much of the responsibility and blame for this as it can to Scotland, Wales, the English regions and Passenger Transport Executives.

The White Paper committed Government to enable long-term access rights for freight, in order to provide comfort for its private sector investors, and this is being worked through with the Office of Rail Regulation, Network Rail and the Department for Transport. However, central to this will be the Route Utilisation Studies to be undertaken by NR in the future, and into which Government will provide the high level input to specify passenger services – so anyone who thinks their local service is not good enough writes to the Secretary of State for Transport! To ensure fair allocation of capacity, there must be a corresponding high-level input for future freight demand. The Secretary of State cannot do this, and the Rail Freight Group, along with the Freight Transport Association, has offered to provide this; without it, freight will be left out.

However, of equal worry is that, as part of the abolition of the Strategic Rail Authority, the obligation in Section 206 of the 2000 Transport Act is threatened. It requires the SRA to formulate strategies in furtherance of its purposes (to promote the network for the carriage of passenger and goods) and, in particular, one relating to services in various parts of Great Britain for the carriage of passengers and goods by rail by way of the Channel Tunnel.

The present Bill permits the Scottish Executive to make strategies for Scotland, and the Welsh assembly for Wales, but there is no obligation on the DfT to publish strategies for England or the UK overall, or to take over the SRA's strategies which the Secretary of State approved in the few years of the SRA's existence.

Equally importantly, we question whether the duty on the Government to promote the use of the railway for the carriage of passengers and freight will survive, since the new Bill concentrates the duty on Government to 'promote improvements in railway service performance' and 'otherwise to protect the interests of users of railway services'. We have never seen Government have any interest in the freight users of railway services, so assume that this all applies to passengers. There is nothing about providing for growth in passengers or freight traffic, and the obvious way of improving performance is to reduce the number of trains using the network, with loss of freight traffic and more overcrowding on passenger services than there is at present.

It was only a few years ago that the Government formed the Strategic Rail Authority in recognition that the railways need long-term policies and planning which the short-termism of central government financing could not easily adapt to. That is still true today, and it will be interesting to see how the DfT, in managing the franchises and providing the finance for Network Rail, will get around this problem.

It must also recognise in the detail of the structure that, when two businesses, one private and the other public, are effectively competing for space on a publicly funded infrastructure, then the public sector will generally win. This is why the private freight operators in Germany and Benelux have such a difficult time. The private sector rail freight industry needs this recognition all the way through the new structure. It is seriously lacking at present.

Rail freight operators have access rights which the White Paper recognises must be for the longer term; there must be capacity reserved for future freight growth, as exemplified by the recent planning document committing the SRA to provide 30 train paths a day between Ipswich and Peterborough as part of the Section 106 Agreement, if the developments at the Haven Ports are given planning permission.

This is a very short-term Bill to get control of the railways' finances, clearly along with the other changes that do not require legislation. It would be good if Government accepted at least some of the responsibility for the mess and cost increases – after all, Government allowed Railtrack to be created; Government made little effort to control the hysteria, some within Government departments, that followed the serious accidents; and Government signed off the franchises prepared by its agency, the SRA.

Through all this, rail freight has cut its costs and improved its efficiency, grown by 50% since privatisation and, in the process, invested some £1.5billion of real private sector money. We do not like being forever included in the blame culture that is meted out to the railways as a whole.

Andrew Gritten

Andrew Gritten, Chairman of Central Railway, died suddenly in early December. Andrew had conceived and promoted this project for a high gauge dedicated freight railway linking Liverpool and the Channel Tunnel, all financed in the private sector, over 15 years ago, and with his colleagues, had doggedly taken it forward ever since. It had its parliamentary ups and downs, and was turned down by the Secretary of State only last year. It had its opposition, not only from aggrieved householders, but also from some of the railway establishment, but the idea has many similarities to that being promoted as New OPERA, a network of new or upgraded freight only lines on the Continent, designed to provide much more capacity for rail freight. New OPERA links in with the Channel Tunnel and then Central Railway, if it can be built.

What is seriously wrong with the current process for applying for permission to build rail lines is that, in practice, projects have to be promoted by the Hybrid Bill procedure, which requires the Government to take the Bill through Parliament and, therefore, to 'support' the Bill. It declined to support Central Railway in this way, but why should it 'support' a private sector project which should surely be able to seek permissions on its merits. If it fails, its backers lose their money. Government wants private sector investment in the railways, but has not as yet found a mechanism for them to go forward without Government backing, which certainly CR did not want.

An opinion column of the Rail Freight Group. www.rfg.org.uk

A fresh look at CrossRail

CrossRail is going nowhere because it doesn't go where the traffic is, according to the promoters of Superlink

CrossRail is an ageing project. It was recommended in the 1988 Central London Rail Study as a means of easing congestion on the Underground.

Essentially, CrossRail was a central London scheme, put together in a hurry, with heavy rail extensions bolted onto the ends. In today's world, where fundability reigns, rearranging traffic flows in London is not enough. CrossRail's central tunnel doesn't actually generate incremental revenue - only large volumes of new traffic will do that, and thus minimise subsidy.

This is the argument of Superlink Ltd, the business-led railwayman's alternative to an 'unfundaible' CrossRail. Readers may groan at a rival 'back to the drawing board' approach just as CrossRail has gained permission for a Hybrid Bill. But the people behind Superlink give the proposal credibility.

John Prideaux created the modern InterCity business, then headed up British Rail's Channel Tunnel Rail Link project when it was planned to come in from the south of London and run in tunnel to King's Cross with a spur to Waterloo. Dr Prideaux came up with the route via Stratford to St Pancras, which didn't go down well with the British Railways Board - but is being built.

Then there's Michael Schabas who promoted the Jubilee Line Extension on behalf of the Canary Wharf developers. In 1993 he was advising a residents' group on the Channel Tunnel Rail Link and proposed the approach from the east into St Pancras. John Prideaux took him on board.

At Provincial Services, Chris Stokes sponsored the London Midland Region's Manchester Airport Extension scheme plus the Hazel Grove chord and the Windsor Link. As Deputy Director Network SouthEast he actually represented BR on the Central London Rail Study which recommended CrossRail.

So three very experienced people who all do total railway. Their take on CrossRail has been to focus not on the central tunnel, but on the needs of the region's railways. Thus they are promoting Superlink as a scheme which supports South East planning policies.

For example, the largest concentrations of new houses will be in the Thames Gateway, along the Stansted-M11 corridor and in Milton Keynes - which is set to double in size. These will all require more rail capacity.

Thus the Superlink team has started with these regional requirements and then seen how the various routes can be connected to best effect. They have also considered alternative routes for the tunnel itself.

Eastern promise

All the major rail routes from the East are congested. While the Channel Tunnel Rail Link domestic services will take some pressure off London Bridge, there is little scope to relieve Fenchurch Street or Liverpool Street.

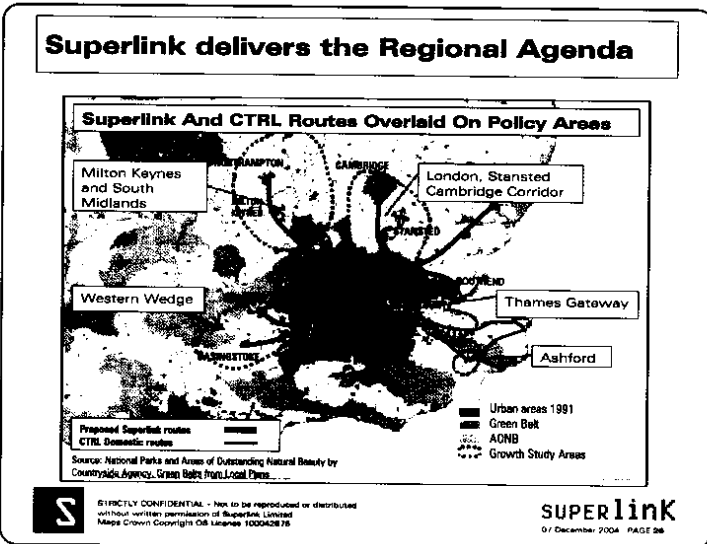
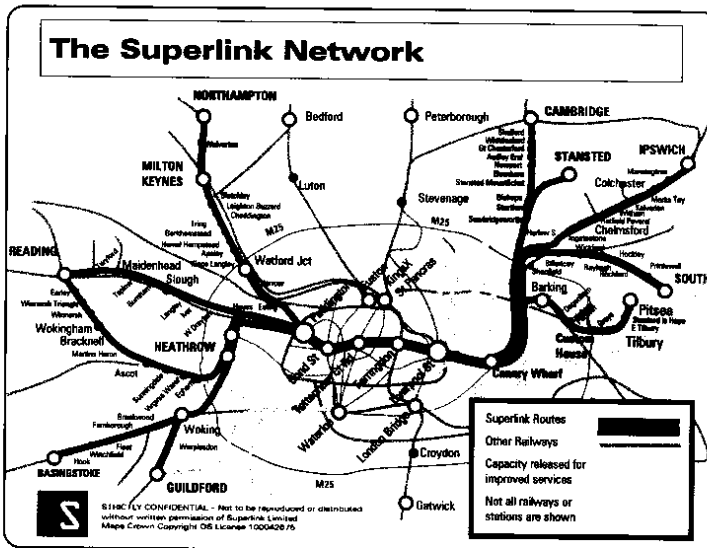
Superlink proposes extending the central tunnel, continuing past Canary Wharf to Newbury Park. Just west of Barking, Superlink would have a connection with the Tilbury loop line, giving access to the north Thameside regeneration areas. The Tilbury line service could be increased to eight trains an hour with formations strengthened from eight to 10 cars.

Direct services to central London plus airports and the major rail interconnections would increase the attractiveness of this area

of north Thameside, for both new housing and employment. The buzzword is 'development capture'.

Superlink would also connect with the Great Eastern main line at Shenfield. This would allow some services from Chelmsford, Colchester and Ipswich to run through to Canary Wharf, the West End and, as we shall see, to Milton Keynes. Superlink would also run over the Great Eastern branch to Southend Victoria. Currently, spare capacity on this route cannot be used because of congestion into Liverpool Street.

By putting some existing services onto Superlink, the promoters say that paths would become available for more suburban services into Liverpool Street from Shenfield, plus additional stops by fast trains at Stratford. New journey opportunities would also be created.



Informed Sources

As the map on p22 shows, a massive expansion in housing is proposed in the M11 corridor. Already there are concerns about the inability of the existing utilities to cope, and that includes transport.

Superlink's proposal is for a connection into the existing West Anglia line near Harlow. Cambridge and Stansted Express trains would be transferred to the new line. Removing these fast trains would make the route through the Lea Valley an homogenous metro-type service, increasing capacity in the Stratford-Tottenham-Enfield-Harlow corridor.

At the same time a direct fast rail service of four trains an hour would be provided between Stansted and Heathrow, running non-stop to Canary Wharf and Paddington respectively. Four trains an hour from Cambridge also would allow the King's Cross-Cambridge fast service to be reduced, freeing capacity at Hitchin Junction and through the Welwyn Viaduct twin track section.

Western approaches

Destinations west of London have always tested Crossrail: at one time it was expected to run up the Chiltern line. Superlink claims to have found three routes to the west which can generate revenue.

First is the M4 corridor (Slough-M Maidenhead-Reading), a miniature silicon valley with an overheated employment market exacerbated by high priced housing. Superlink proposes taking over all the services using the slow lines between Reading and Paddington and pairing them with the Thameside group of services. Thus affordable housing to the east is linked with hi-tech jobs to the West, plus direct access to the West End and Canary Wharf for travellers into Paddington.

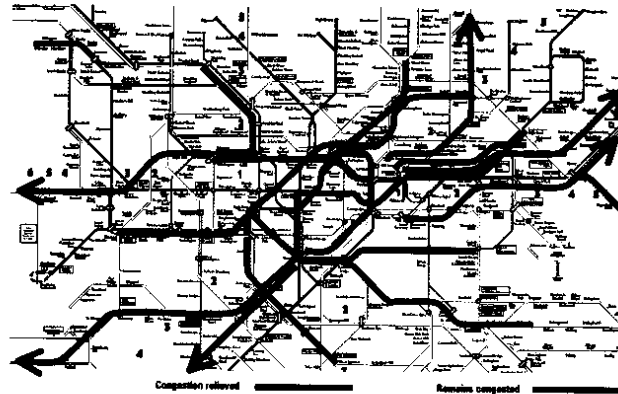
Heathrow

Heathrow is an obvious destination and pairs with the Stansted/Cambridge service in the East. Superlink's twist is to keep going at Terminal 5, on the surface down the eastern side of the M25 to a direct connection into the South Western main line at the existing grade separated junction at Byfleet. This would allow Superlink to run through to Basingstoke and Guildford via Woking. A connection at Staines would also allow Superlink to run to Reading over the Windsor lines, serving another expanding employment area.

This part of Superlink is a more direct version of the 1990s Airtrack scheme, based on using the existing line from Staines via Virginia Water to Woking.

Finally, and I have deliberately saved it until last, Superlink proposes serving the M1 corridor - Watford-Milton Keynes and Northampton. Young Mr Brunel originally intended that the Great Western Railway should terminate at Euston and at Kensal Green the

Congestion relief with Superlink



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SUPERlink
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Great Western and the West Coast main line are about a mile apart.

While the West Coast slow lines are at capacity during the peak, diverting commuter services onto Superlink would at least improve distribution within central London in the peak, relieving the Victoria and Northern Lines. These services would be paired with the Chelmsford, Colchester and Ipswich services in the east.

Tunnel options

Which brings us to the central tunnel. Superlink reckons that this will represent half the capital cost of the project: you could buy the Leeds or Edinburgh light rail systems for the cost of just one of the stations.

While the current Crossrail route is safeguarded, it has not gone through the statutory approval process. John Prideaux knows a lot about this from his time at Union Railways. To succeed, promoters have to be able to demonstrate that they have identified and considered reasonable alternatives.

Superlink has identified two alternative alignments. Its southern route takes Crossrail south under the royal parks before picking up the line of the Thames, with stations at Park Lane, Waterloo, Blackfriars and London Bridge.

A second alternative remains north of the Bayswater Road and Oxford Street after

leaving Paddington, with a station between Bond Street and Oxford Circus before swinging north to a station between Euston and St Pancras, then turning south east with a station at Farringdon before picking up the current alignment.

Superlink is also questioning the value of Crossrail's Whitechapel station. If this were dropped, the tunnel could run direct between Liverpool Street and Canary Wharf.

Breathtaking

This is all breathtaking stuff. You can see the proposal being greeted with groans at the thought of starting again after £300million has been spent developing the current Crossrail scheme. Is it 'helpful' to rock the boat, just as permission has been given for the hybrid bill?

But I have a lot of respect for those concerned. In particular they have hands-on experience of what it takes to get Bills for mega-projects through Parliament, combined with deep understanding of railway operation and economics. And they are not exactly impressed by what Cross London Rail Links Ltd has achieved for £300million to date.

Politically, the Mayor of London, Ken Livingstone, doesn't care where the traffic that goes through Crossrail comes from, or what it does for anyone outside London. On the other hand, Superlink must be very attractive to Deputy Prime Minister John Prescott as he tries to solve the housing shortage in south east England.

Superlink argues that Crossrail is unworkable. Within the team Michael Schabas is the demon computer modeller and he claims to have produced a model which can replicate the results of the Crossrail Benchmark Scheme. This gives the comparison in the table.

Meanwhile the Editor is braced for a bulging postbag as our expert readership gets stuck in over the Christmas and New Year holiday. More details are available on www.superlink.org.uk

HOW SUPERLINK STACKS UP

Project 60 year Net Present Value
Funding gap = capital plus operating costs less revenues
All figures £billion

	Phase	Construction cost	Funding gap
Crossrail		7.3	6
Superlink	1	7.2	4.9
Superlink	1+2	8.0	4.2
Superlink	full scheme	9.6	3.2

Phase 1 Cambridge/Stansted-Reading/Maidenhead/Heathrow
Phase 2 Tilbury loop-Milton Keynes

Source: Superlink

On time for 2007

Section One of the Channel Tunnel Rail Link (CTRL) opened in September 2003. It runs for 74km between the Channel Tunnel and Fawkham Junction, near Dartford. Section Two – now more than 75% complete – will extend the new railway 39km from north Kent, running under the River Thames and approaching central London from the east. As well as the terminus at London St Pancras, there will also be new international stations at Ebbsfleet (between Gravesend and Dartford) and at Stratford in east London. Section Two is planned to open early in 2007.

There is now a continuous route from London St Pancras all the way to the junction with Section One of the CTRL in north Kent.

Major civil engineering work for the CTRL's tunnels under London was completed ahead of schedule, with the last section of concrete paving laid in late October 2004.

'The end of tunnel boring was marked by an event at Stratford in March,' says Alan Dyke, Union Railways' Managing Director. 'In seven months after that the remaining civil engineering work has been completed on the tunnels – installing the concrete base and walkways.

'Completion of all the tunnels – under the Thames as well as under London – has also coincided with the completion of the rest of the route structures – viaducts, bridges, tunnels, culverts and the rest.'

The route will soon all be in the hands of the 'Systemwide' infrastructure installation teams – they have established their main railhead at Swanscombe, next to the south portal of the Thames tunnel. Tracklaying is underway, and has now passed under the river.

Good progress

While clearly pleased with the progress that is being made, and with completion of the whole Channel Tunnel Rail Link anticipated on time in early 2007, Alan Dyke is mindful that 'there is always a risk of things going wrong – we do monitor everything very carefully, but we are involved in a high-risk activity. Happily, we are leaving the heaviest work behind now, on time, and close to budget.'

Previous page: A completed section of the CTRL London tunnels. This is the Up line tunnel for St Pancras-bound trains, showing the incline down towards Graham Road ventilation shaft, Hackney. OA Photos/CTRL

WHO'S WHO ON THE LINK

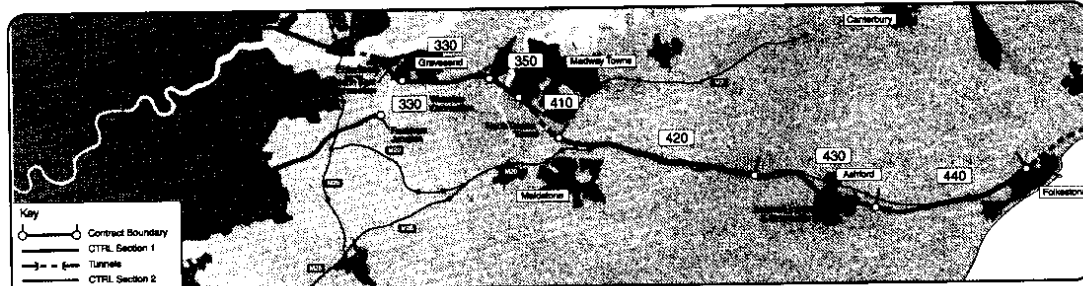
In 1996 London & Continental Railways was selected by the Government to build and operate the Channel Tunnel Rail Link, and to own and run Eurostar (UK) Ltd. LCR's shareholders are BSN Ltd, SG Waring & Co Ltd, National Express Group plc, French Railways Ltd, Systra, Sotefin, Solihull, LDF Energy Ltd, Arup Group Ltd and Sir William Halcrow & Partners Ltd.

LCR subsidiaries Union Railways, South and North were put in charge of construction of Sections One and Two of the CTRL. Rail Link Engineering (RLE) is the design and project manager of the CTRL, and responsible for managing construction. RLE is a consortium of LCR's engineering shareholders – Arup Group Ltd, Bechtel Ltd, Sir William Halcrow & Partners Ltd and Systra.

LCR subsidary CTRL (UK) Ltd acts as a client for the operation and maintenance of Section One of the CTRL, and will do so for Section Two upon completion. Network Rail (CTRL) Ltd – a subsidiary of Network Rail – maintains and operates the CTRL under contract.

MAJOR CTRL CONTRACTS

<p>Contract 220 London Portal to Stratford Box Nishimatsu/Skanska-Consentration joint venture Approximate value: £145million</p> <p>Contract 230 Stratford Box Skanska (UK) Approximate value: £105million</p> <p>Contract 240 Stratford to Barrington Road Costain/Skanska/Bachy Soletanche joint venture Approximate value: £125million</p> <p>Contract 250 Barrington Road to Ripple Lane Edmund Nuttall/Wayss & Freytag/Kier consortium Approximate value: £115million</p> <p>Contract 302 Diversion of Utilities at Thames & Kent Avenues – Ford Motor Company Alfred McAlpine/AMEC joint venture Approximate value: £6million</p> <p>Contract 303 Ford and Choats Manor Way bridges Kier Construction Approximate value: £13million</p> <p>Contract 310 Ripple Lane to Thames Morgan Est/Vinci Construction Grands Projets Approximate value: £178million</p> <p>Contract 320 Thames Tunnel & route civils Hochtief/J Murphy & Sons Approximate value: £130million</p> <p>Contract 340 Stratford and Ebbsfleet stations RLE – construction manager for 13 trade contracts £45million</p> <p>Contract 342 Highways work connecting A2 to Ebbsfleet station Hochtief/Norwest Holst Approximate value: £120million</p> <p>Contract 361 Pipe Diversions – Thames Utilities J Murphy & Sons Approximate value: £16million</p>	<p>Contract 365 Ripple Lane Undertrack Crossing AMEC Civil Engineering Approximate value: £1million</p> <p>Contract 556 Signalling and Control, Section 2 CSEE Transport Approximate value: £30.5million</p> <p>Contract 557 Communications Systems, Section 2 Optilan (UK) Ltd Approximate value: £8.5million</p> <p>Contract 558 Radio Propagation System (Section 2) Thales Telecom Services Approximate value: £6.5million</p> <p>Contract 576 Track and Overhead Catenary Systems, Section 2 ACT joint venture: Alstom Transportation Projects, Carillion Construction, Travaux du Sud-Ouest Approximate value: £120million</p> <p>Contract 588 Mechanical & Electrical Systems, Section 2 EMCOR Drake and Scull Approximate value: £70million</p> <p>Contract CTRL M01 Infrastructure Maintenance, Section 1 Carillion Rail Approximate value: £92million</p> <p>St Pancras area contracts</p> <p>Contract 102 Removal of gasholders, gas governor relocations Edmund Nuttall Approximate value: £5.15million</p> <p>Contract 103 Civil engineering – King's Cross Railway Lands Kier Construction/Edmund Nuttall Approximate value: £107million</p> <p>Contract 104A Signalling – Eastern Track Slew Westinghouse Rail Systems Approximate value: £2.5million</p> <p>Contract 104B Trackwork – Eastern Track Slew</p>	<p>Motherwell Bridge Construction Approximate value: £3.3million</p> <p>Contract 104C Telecoms work on track slews Thales Telecom Services Approximate value: £3million</p> <p>Contract 104E Signalling – Western Track Slew Westinghouse Rail Systems Approximate value: £5.4million</p> <p>Contract 104F Western Track Slew Mowlem Railways Trackwork sub-contractor – Corus Rail Approximate value: £7.85million</p> <p>Contract 104G Signalling – final St Pancras layout Westinghouse Rail Systems Approximate value: £28million</p> <p>Contract 104H Design/installation of track and overhead lines Mowlem Approximate value: £61million</p> <p>Contract 10E (combined) St Pancras station Joint venture of Costain, Bachy Soletanche, O'Rourke Civil Engineering, EMCOR Drake & Scull Approximate value: £385million</p> <p>Contract 124 Railway staging/interface enabling works at Kentish Town Network Rail</p> <p>Contract 126 Camden Council depot – York Way Mowlem Approximate value: £3.5million</p> <p>Contract 136 Highways and utilities diversions Edmund Nuttall Ltd Approximate value: £11.5million</p> <p>Contract 137 Lifts at international stations Fujitec UK Approximate value: £7.5million</p> <p>Contract 138 Escalators at international stations Otis Approximate value: £9million</p>
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St Pancras International

Civils work continues at the St Pancras terminus of the CTRL. High-profile and critical milestones for the project in the past year were the opening of the Midland Mainline interim station at Easter 2004 and its extension to accommodate Thameslink services from Bedford in September. Alan Dyke says: 'It was quite a complex activity to shut down St Pancras main line station on Friday night and open again on the Monday morning (13 April) on the new deck – having commissioned track, signalling, passenger information systems and so on over the Easter weekend.'

'The interim station operation has worked very well, and its major importance was that it enabled us to start on the St Pancras trainshed. It is indicative of the complexity of the work at St Pancras that it took us, from the start of work in July 2001, until Easter 2004 to start on the trainshed – because we had to relocate track several times over – to create the new Midland main line approaches [as detailed in *Modern Railways*, December 2002], build the deck extension, and move the trains out.'

'Restoration of the Grade-One-listed trainshed is a major project in its own right – and though timely completion of Thameslink

work is also vital, the restoration is on our critical path now. Having got into the trainshed, a lot of activity is concentrated inside it – we've been able to get to work on stripping-out the existing station deck, the track and platforms, and get up into the roof, to see at first hand the condition of the ironwork and the fabric that makes up the trainshed.'

Because it is a Grade-One-listed building, adds Alan Dyke, the repairs and restoration have to be in keeping, 'so simple basic solutions are not available to us. We are doing repairs in like materials and in a like manner because of the nature of the building.'

'It is of course time-consuming and expensive, and in some respects unpredictable until you actually get in there – but it is a robust structure and any concerns that we might find an unexpected major flaw are behind us.'

'We are all looking forward to restoring the trainshed, it is the arrival and departure point for the line, and it is a very appropriate structure for that role.'

A visit to the trainshed in late November found the station platforms being removed, and the first reinforcement mesh being placed for the new cast concrete deck on top of the original wrought iron deck. The

famous clock above the concourse has gone away to be restored.

A moveable scaffold has been installed within the Barlow-designed trainshed for work on the roof, which will see existing materials completely replaced with new glazing panels and slates. A 70-metre scaffold span is made up of aluminium trusses with steel sheeting, providing a runoff for the hydro cleaning water, a safety screen, and weather protection. It will be lowered and re-erected in different positions. The roof itself is temporarily pierced by cranes.

Meanwhile, in the undercroft, the painstaking work of restoring the slender cast-iron columns which support the station deck was continuing – very careful shot blasting is needed because of the presence of lead in old paint. The undercroft base is being lowered to accommodate services for the station and retail facilities that the undercroft will house: a supported floor will be installed above.

About 1,400 workers were on site at St Pancras and its approaches at the end of 2004.

St Pancras, step by step

Mowlem Railways is the principal contractor for the railway works at St Pancras.

Following a series of track slews to enable the rebuilding and widening of the station approaches while keeping Midland main line services in operation, the process of building a major new station at St Pancras involves complex phasing of work.

First, the four-platform interim station (platforms 10-13) on the east side of the new northern extension deck was opened for Midland Mainline at Easter 2004. These four were electrified and a further two platforms (8 and 9) were added in September 2004, when



the blockade began for construction of the Thameslink station box under Midland Road and the west side of St Pancras.

This also enabled work to start on the existing St Pancras station, including the iconic Barlow trainshed.

When the Thameslink box is finished, four new platforms (numbers 1-4) will be built on the west side of the new deck, creating the final location for Midland Mainline trains.

Then the international platforms (5-10) will be completed in the middle, and the CTRL domestic platforms (11-13) to the east side.

Thameslink box

There is a very large construction site right underneath what was the station throat of St Pancras, where the new station 'box' structure for Thameslink is being built around the existing Thameslink tunnels, under Midland Road on the west side of the St Pancras terminus. Through Thameslink train services

between Bedford and Brighton are interrupted until the spring of 2005.

'It is difficult to visualise, even when visiting the site, the impact of the Thameslink box underneath the station,' says Alan Dyke. 'You can't really see much, as it is below ground, and even the way we're building it, from the top down (putting the roof in first), helps to obscure the scale of the work.'

'To enable this work to take place (after opening the four platforms at Easter to move Midland Mainline trains into the interim station), in September we opened two more platforms and installed electrification so that we could divert Thameslink trains from the north into St Pancras to terminate.' The interim station commissioning was coordinated with Network Rail works to enhance the capacity of both the Midland main line and Thameslink lines at Belsize and Carlton Road Junction north of St Pancras, and at Clerkenwell and King's Cross

Thameslink station, where Thameslink trains to and from the south terminate during the closure period.

'The complexities of the temporary timetable and handling the interchanging passengers are actually working quite well, after some settling-

ST PANCRAS CHAMBERS PLAN

Manhattan Loft Corporation (MLC) and London & Continental Railways submitted planning and listed building applications to the London Borough of Camden in July 2004 for a 244-room hotel and 68 apartments in the former Midland Grand Hotel at St Pancras station.

St Pancras Chambers is controlled by LCR. MLC will be responsible for the development of the whole project and Whitbread PLC, Marriott brand franchisee in the UK, will be the hotel operator.

The application for this prestige site included a five-star hotel, with two restaurants, two bars, a health centre, a ballroom and 20 meeting and function rooms, in all totalling about 323,000 sq ft. The total cost of the development is put at approximately £100million.

St Pancras Chambers, the Grade-One-listed building which fronts St Pancras station, was built as the Midland Grand Hotel between 1868 and 1876 to designs by Sir George Gilbert Scott. The building closed as a hotel in 1935 and has been empty for 20 years.

The applicants say the scheme retains the external appearance of the original building and a sympathetically designed hotel extension is proposed at the rear, with careful restoration of internal rooms of historic significance.

Left: Inside the Barlow trainshed at St Pancras station, with refurbishment work under way in late November 2004. Under the roof is the moveable scaffold, which provides a runoff for contaminated water, a safety screen, and weather protection. The deck is to be reinforced, with part opened up to provide access to station facilities and retailing in the undercroft. CJW Photographic, by courtesy of CTRL project

Below: Construction of new railway infrastructure north of St Pancras on the King's Cross railway lands in November 2004. The Midland main line runs north to south, left to right across the picture; the North London Line runs from mid left to top centre.

Next to the Midland main line at the left are aggregates handling facilities (green in colour) to replace those previously sited on the railway lands. Visible above these in turn are:

- the St Pancras to North London Line (NLL) connection (which was to have been used by Eurostars to reach North Pole depot - but now there will be a new depot at Temple Mills);
- the CTRL to NLL connection intended for through trains to the WCML;
- the replacement NLL to East Coast main line (ECML) connection ('North London Incline').

The enclosed CTRL bridge across the ECML can be seen at top centre of the picture in front of the portal of the CTRL's tunnels. The arches of York Way, the road running across the site, are to be demolished early in 2005 and replaced by a ground level route.

Part of the main CTRL route curving south into St Pancras is visible close to the centre of the photo. Hawk Editions, by courtesy of CTRL project



in – a lot of people are making an interchange, more than were anticipated when the job was originally planned, because of the growth in passenger numbers on both Midland Mainline and Thameslink.

The works are extensive and are now lasting for 35 weeks – the original plan was to do the works in 25 weeks, but working 24 hours a day.

'The 25-week plan was devised probably about ten years ago,' says Alan Dyke, 'and in the event we've not been allowed to work 24 hours. Our planning application for working hours was rejected, and a public inquiry into our appeal found in favour of the residents, preventing us from working extensively overnight. This is of course understandable, but it does mean more disruption for Thameslink passengers and more constraints on how we work.'

'We began the blockade of the Thameslink route in the middle of September – working time restrictions did also have an impact on our preparatory work, but we started satisfactorily and we are now well into the work, on programme. A lot of the risk areas that we anticipated have been overcome now. The Thameslink station work started with demolition of the existing tunnel and excavation along its length, and is going well.'

'We're very anxious to do this work as quickly as possible... as the western extension of the new St Pancras station sits on top of this box, there can be no station until it is finished.'

Despite the differences over working hours, Alan Dyke adds, 'I'm pleased to say we do have good relationships with our neighbours the local residents, and because of that we've actually been able to ease some of the restraints on working. So we have been working underground for 24 hours a day, though not taking material away at night – preparatory work including some demolition in the excavation has been permitted overnight.'

The piled sidewalls and much of the roof of the station box have been put in place in



LONDON 2012 OLYMPIC BID

Transport is at the heart of London's bid for the 2012 Olympic and Paralympic Games, with the main venues centred in and around Stratford. Alan Dyke says, 'We've been working with the Olympic team and SRA to develop a plan for a shuttle service between St Pancras and Ebbwfleet using the domestic rolling stock. This would provide a high-capacity, high-speed "Olympic Javelin" service to Stratford in 6 or 7min from St Pancras, or 8 to 9min from Ebbwfleet.'

'At Ebbwfleet, there is the capability for a very large car park, so that people can leave the M25 motorway there and park-and-ride on the Javelin service.'

'International services would probably not stop at Stratford during the Games, but there would be interchange instead on to the Javelin service at St Pancras or Ebbwfleet – we would dedicate all four platforms at Stratford to the Javelin service as platform capacity is critical to the throughput of passengers, and there would be additional stairways and ramps for access. International trains would run through Stratford on the fast lines.'

Two of the platforms at Stratford will be to UIC dimensions and would have an overaid deck – this arrangement can currently be seen at the St Pancras interim station, where what will later become international platforms are being used for Thameslink and Midland Mainline services.

The redevelopment of the Stratford railway lands is not in conflict with the proposals for the 2012 Olympics – planned residential housing would form part of the Olympic village, as would hotel complexes also planned.

advance of breaking-up the existing Thameslink tunnel. And on those parts of the St Pancras western extension site that are not occupied by the Thameslink box, supporting columns for the new overhead station deck are appearing.

King's Cross railway lands

With work on the complex of tracks north of St Pancras now well advanced, the railhead that has been transhipping spoil for removal by train is due to close soon, making way for final parts of the new railway layout.

The viaduct to carry the realigned North London Incline (the link between the North London line and East Coast main line) was completed in autumn 2004, together with the northern span of the bridge which will carry the CTRL over the realigned and lowered York Way. The North London Incline diversion is due to take place in February 2005, after closure of the existing York Way road viaduct across the site.

In May 2004, Argent St George (now Argent), London & Continental Railways, and Exel submitted planning and heritage applications for King's Cross Central, a 67-acre 'brownfield opportunity site' on the King's Cross railway lands. The area owned and controlled by LCR and Exel will become available for development with the completion of Channel Tunnel Rail Link works.

The applications are for comprehensive, phased, mixed use development of former railway lands, including business and employment uses; residential uses, serviced apartments and hotels; shopping, food and drink and professional services; community, health, education, cultural, assembly and leisure facilities; multi storey and other car parking; re-erection of Gas Holder guide frames to enclose new residential and other development.

The proposals include the refurbishment, investment and new uses for over 20 historic buildings and structures including the Great Northern Hotel, the German Gymnasium, and railway structures.

THAMESLINK STATION AND TUNNELS

When the Thameslink station box at St Pancras is completed, trains will run through the empty shell of a station. Though the CTRL project was (as we reported in our previous CTRL Special Report, *Modern Railways*, October 2003) commissioned to design the fit out of the station, no commission came from the SRA to complete the station.

So the new Thameslink station cannot be ready in time to disperse and feed passengers from/to the new international station.

The unused station will be joined by other assets intended to form part of the Thameslink 2000 upgrade project – principally, the pair of tunnels linking the Thameslink route with the East Coast main line which is being constructed as part of the CTRL work in the King's Cross railway lands north of St Pancras. One of the Thameslink-East Coast tunnels has been driven and finished, the second one (intended for northbound trains) is being passed beneath the existing Thameslink tunnel during the current blockade of the route, to provide for a grade-separated junction (junction turnouts will not be installed at this stage). The finished tunnels will be lined and handed over to Network Rail, with drainage and security provision.

Meanwhile, on the east (King's Cross) side of St Pancras station, escalators and a subway under Pancras Road have been built, with a stairway on the other side of the road, but a blank wall where the access to a new London Underground northern ticket hall should be. As detailed in *Modern Railways*, December 2004, this part of the King's Cross / St Pancras Underground station redevelopment has been called in for consideration by the Secretary of State for Transport after cost and phasing problems. Apart from the new ticket hall itself, this part of the project would provide a second access to deep level tube lines, direct from the side of the new St Pancras complex, whose 'centre of gravity' for passenger circulation will be further north than was the case with the original terminus.

A further dent in the business prospects for the CTRL is the delay in commencing domestic services between St Pancras, Stratford and Kent. While the St Pancras international and CTRL domestic station is to be ready in 2007, the recent announcement that Hitachi had been appointed preferred bidder to provide CTRL domestic rolling stock gave a likely commencement date for domestic services of 2009 (which can possibly be interpreted as meaning the winter timetable change in 2009). One benefit delayed will be feeding domestic passengers to high-speed services at the CTRL stations.



The Thameslink station box begins to take shape within the excavation next to the west side of St Pancras station in late November 2004. In a site enclosed by new piling, the original brick tunnel has been demolished.

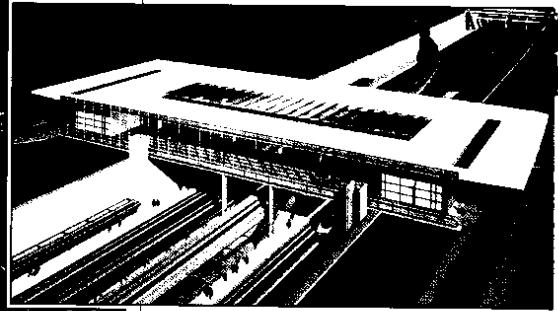
CJW Photographic, by courtesy of CTRL project



From North Kent to L



Left: View northeast over the CTRL Stratford station box in November 2004. The connecting line towards Temple Mills can be seen curving up from the CTRL route within the sub-surface box. The existing Stratford station is off the right of the picture.
Hawk Editions, by courtesy of CTRL project



Above: Stratford station - impression. CTRL

At the eastern end of CTRL Section Two, right next to the junction with Section One, the final 'plug' of chalk was removed from the new railway tunnel beneath the A2 at Pepper Hill, Gravesend in October 2004. This marked the completion of spoil excavations for Section Two.

The 564-metre tunnel was constructed by building the walls and roof first, then excavating 45,000 cubic metres of earth and chalk from below. It is part of CTRL Contract 342, which covers 3.5km between Southfleet and the Thames tunnels at Swanscombe.

'Works also included the widening of the A2 road above, with new road junctions to serve the station, so we've built more roads than railway just there', says Alan Dyke. Three lanes of traffic had to be maintained in both directions on the A2, involving four phases of work and the construction of a temporary embankment.

It has now been confirmed that a permanent infrastructure maintenance base for the CTRL will be created further east at Singlewell, beside the A2. Network Rail CTRL and maintenance contractor Carillion will vacate the present facilities at the cattle market site in central Ashford, which will thus be freed for redevelopment as part of the town centre plan.

Ebbsfleet

'Just to the north, at Ebbsfleet, we have now built the international station - the roof has recently gone on, track is being laid, the platforms are being surfaced, and the car park is being laid out.' Eurostar has dubbed this station Dartford International, although the official name remains Ebbsfleet International.

Junctions have been laid from the North Kent line, through the CTRL domestic platforms, onto the Section Two route, providing access for infrastructure installation using the railhead next to the Thames tunnel.

'It is a very interesting archaeological area,' says Alan Dyke. 'We knew we'd find a Roman town, but we did not expect elephants

STRATFORD RAILWAY LANDS

In 2003 submissions were made by Stratford City Development Partners for a mixed-use development around the CTRL station at Stratford in east London, and by Land Securities to build over 7,000 new homes near Ebbsfleet.

The Stratford City proposals involved, on a 73 hectare site: a 'metropolitan centre' with three department stores and 120 shops, 4,500 new homes, 465,000 square metres of office space, 2000 hotel bedrooms, conference and leisure cluster; two schools and a range of community and health facilities; and 13 hectares (32 acres) of open amenity space, including parks and lakes. The London 2012 Olympic and Paralympic Games bid would exploit and amend the proposals.

and rhinoceroses, and an Anglo-Saxon watermill! In an area generally of worked-out chalk quarries, it was intriguing that those bits that weren't quarried were actually full of very significant archaeological finds.

'The finished Thames tunnels have had fans fitted, the track and cables are in place. With tracklaying now continuing north of the Thames tunnels, long welded rail strings delivered to Ripple Lane, Dagenham, are being pulled into the London tunnels. Racking and cable-pulling for cable installation has been going on for some while.'

Just north of the 3km long twin tunnels under the river Thames, the CTRL's Thurrock viaduct is finished. This interlaces existing road infrastructure, going under the approach spans of the QE2 Dartford road crossing bridge and above the Dartford road tunnel exit. Tracklaying began here in late 2004.

Just before that, a public walk across this structure took place in early November 2004, taking advantage of the asphalt finish over the waterproofing on the 1.3km viaduct. The walk was advertised locally, and attracted about 700 people on a dry Sunday, continuing part of the way into the Thames tunnel, as far as tracklaying activity permitted.

The route across the Rainham and Aveley marshes - 7km of 'viaduct on the ground' supported by piles reaching through the marsh to solid chalk - is also completed, and worksite areas are gradually being returned to nature.

Where the route nears the London tunnels, another critical item, the connections to the historic network at Ripple Lane, were completed in September 2004.

The three Exchange Sidings have connections to the CTRL and London, Tilbury & Southend route and Ford and Hanson traffic is also directed through them. 'This is a strategic piece of infrastructure,' says Alan Dyke, 'enabling freight serving London to join/leave the CTRL, and also providing a refuge for CTRL trains that cannot enter the London tunnels for whatever reason.'

The September work package also saw the decommissioning of four level crossings on the adjacent LT&S railway, three of them replaced by grade-separated road crossings of both CTRL and LT&S railways and the fourth by a footbridge spanning both lines. Dagenham Dock station has been remodelled.

The five main ventilation shafts along the London tunnels have seen the end of civils work and are all now being fitted out, with fans and electrical plant. Cladding is being erected around them.

The sub-surface Stratford International station box is complete - at 1,067 metres long, it is the same length as London's Tottenham Court Road. It is spanned by five bridges carrying roads and railway lines - and the station concourse which is itself nearly complete.

Excavated material from the box and tunnel spoil is being placed in a permanent

London

'landraise' on the railway lands around the box – with good weather last summer, more than 70% of the total material had been placed by the autumn. The final ground level will be six metres above the original level.

Temple Mills

In the northeast corner of the Stratford box, the single-line connection to the train maintenance depot at Temple Mills, just north of Stratford, is under construction. Transport Secretary Alastair Darling confirmed in November 2004 that a new depot is to be built there.

The depot will come into service when Eurostar trains begin to operate from St Pancras in 2007, and will replace North Pole International depot, which along with Waterloo International station will pass to the ownership of the Department for Transport. The DfT is to decide on their future.

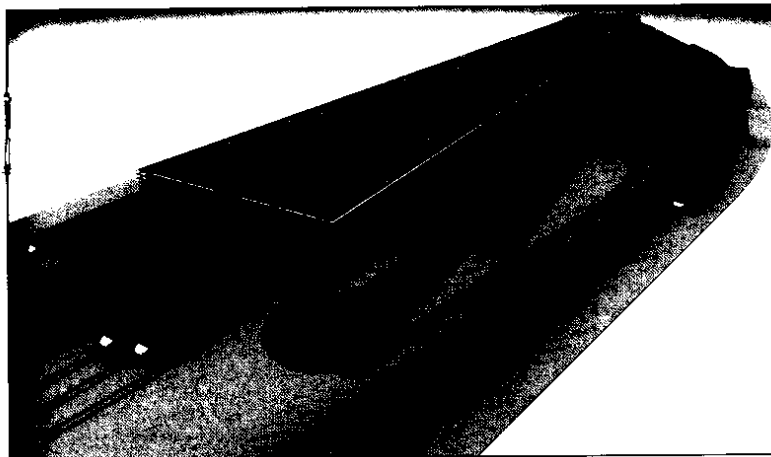
Original plans envisaged that Eurostars from St Pancras would gain access to North Pole International via the North London and West London lines, but it has now been decided that recent increases in traffic on the already-busy North London line mean that Eurostars cannot be accommodated without costly and disruptive infrastructure improvements.

Provision for a depot at Temple Mills was made in the CTRL Act, and the Government decision to bring construction forward was 'in the interests of efficient operation of the CTRL service and the Eurostar fleet'. Access will be to European gauge, so it can be used by future generations of passenger rolling stock.

The Government has agreed in principle with LCR to provide up to £402million for the new depot package, which is not included in LCR's finance package for the CTRL.

The site of the new depot was secured and cleared, and the groundworks contractor was at work excavating foundations, by November 2004.

The Stratford-Tottenham Hale line will have to be moved to make space for the depot and this is to happen in spring 2005.



Modern Railways JANUARY 2005

ELEPHANT AT EBBSFLEET

Construction work for Ebbsfleet station on the CTRL unearthed a 400,000 year old Early Stone Age site. The major find was the skeleton of an elephant, surrounded by flint tools lying undisturbed where they were originally discarded. Very few elephant remains have been found in Britain and this is the first to indicate butchery of the carcass by early humans.

The skeleton has been identified as a straight-tusked Palaeoloxodon antiquus – an extinct species last present in Britain more than 100,000 years ago. These elephants, which were completely different from the more widely-known mammoths, were over twice the size of the largest modern African elephant.

Bones from other large animals including rhinoceros, buffalo and wild horse have also been found nearby. The remains were preserved in muddy sediment near what was then the edge of a small lake.

The archaeological investigation is being carried out by Oxford Archaeology on behalf of Rail Link Engineering and Union Railways (North).

Helen Glass, Archaeology Manager for RLE, said: 'This find is an amazing discovery. During pre-construction investigations across the Ebbsfleet Valley we found an Anglo-Saxon mill as well as the substantial remains of a Roman town and villa complex.'

'The programme is now very challenging,' says Alan Dyke. 'We would have liked to start in the summer as groundworks are very weather dependent.'

The depot will consist of an eight-road shed for Eurostar trains, with berthing sidings, train washers, and toilet discharge facilities. There is no provision for CTRL domestic trains – the SRA has been reviewing depot locations for these.

The neighbouring English, Welsh & Scottish Railway depot at Temple Mills will stay in place, but with reduced siding facilities. Network Rail's infrastructure depot has already been relocated to Whitmoor, near March.

Station services

Emcor Rail has secured an £11million contract to undertake the design, procurement, installation and commissioning of engineering services for the Stratford and Ebbsfleet stations on the CTRL – including project management, design, supply, installation, testing and commissioning of the mechanical, electrical, public health, communications, fire detection and protection services at both stations. Completion is expected in December 2005.

Emcor had already won similar work at St Pancras, as well as Contract 588 for

Impression of the new Eurostar depot at Temple Mills. CTRL

Mechanical & Electrical works, including tunnel ventilation.

Emcor Rail also won a £2.3million contract to expand and modify Network Rail's telecommunication systems to enable the CTRL blockade at St Pancras to commence on schedule.

Emcor was responsible for the design and implementation of the adapted telecoms systems to enable trains to be turned either side of the blockade using additional signal post telephones and modifications to customer information systems, cab secure radio systems and train reporting systems. The scope of work also necessitated the provision of a number of spot radio systems and tunnel lighting control circuits.

Both Parsons Brinckerhoff and Emcor were sub-contracted to Jarvis; Parsons Brinckerhoff for the signalling design and Emcor for the design & implementation for telecoms.

Tunnel ventilation

Ventilation ductwork specialist Senior Hargreaves has two contracts worth nearly £6million on the final phase of the CTRL.

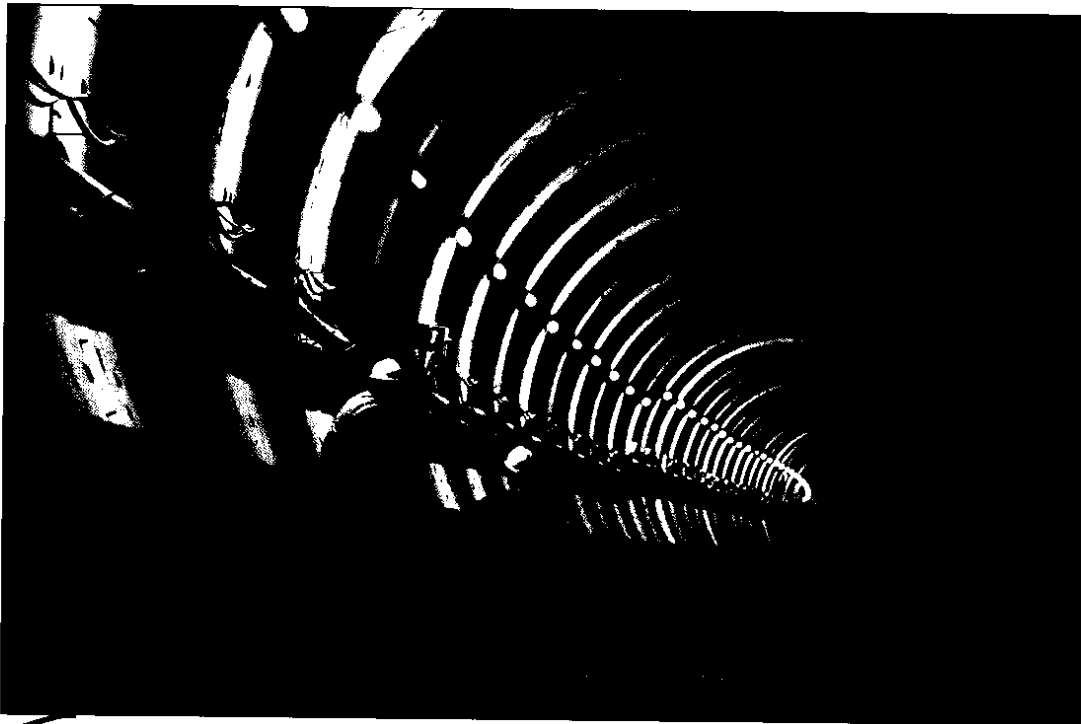
Hargreaves will provide ventilation work on the London and Thames tunnels in a contract with Emcor Rail Ltd, the main contractor. This contract includes the provision of standard ventilation and emergency ventilation systems. These systems are housed in the five ventilation shafts for the London tunnels, and portal buildings on each side of the Thames.

The main function of the ventilation systems is either to supply or extract air from the tunnels in the event of incidents. Sophisticated computerised control will enable maximum flexibility of use and be able to provide air for passenger comfort in a stationary train and for maintenance work in the tunnels.

At each of the Thames portals, Hargreaves will supply and install systems that will inject large volumes of air through portal ejectors (a Saccardo system), which will induce airflow through the tunnel.

All of the ventilation fan areas will have integral access platforms gantries and ladders for maintenance. Hargreaves will also be responsible for providing the ventilation systems in the head house buildings at the top of each shaft which house switch and control rooms.

Hargreaves also has a supply and installation contract with the CORBER (Costain, O'Rourke, Bachy Soletanche and Emcor Rail) consortium at the CTRL St Pancras site.



Preparing tunnels for tracklaying

The completion of the London tunnels required three main concreting jobs. The invert or base of the tunnel was the first stage – sleepers will later be placed on it and concreted into place. The tunnels also have a continuous passenger evacuation walkway at door-step height, for use if passengers have to be evacuated from a train, as well as a lower-level examination walkway at the other side.

With few straight or level sections, the tunnels' placement was designed in three dimensions, and the base slab is pre-profiled for track cant (superelevation on curves).

The traditional, laborious method of constructing walkways would have been to lay and align the track, then set the walkway edge, with temporary shuttering to contain the concrete. But now, says Alan Dyke, 'laser guided surveying techniques are so accurate that we can set the walkway from the known design line of the rails in advance.'

All three main concreting jobs were carried out using slip form pavers, a novel use of a machine familiar from its use in road surfacing.

'We had nearly 40km of these walkways to build, so it was worth investing in specialist equipment provided by a UK and a Dutch

contractor. These laser guided machines achieved the phenomenal rate of 600 metres of concreting a day, working extended shifts.

'There was a real risk of progress being limited by concrete supply – we were putting 900 cubic metres a day into the tunnels, which even on normal construction work would be a really impressive rate.

'The advantages we had of course were a continuous site, an uninterrupted opportunity to do the work, no restraint on working hours, batching plants already in place at the end of the tunnels after previous phases of work, and the capacity to deliver the concrete using rubber-tyred trucks running through the tunnels.

'So the work finished early and produced a good quality result.'

Track form in tunnels

Minimising groundborne noise and vibration from trains in the London tunnels has been an important issue for the Channel Tunnel Rail Link project. 35km of twin UIC 'C'-gauge tunnels (17.5 route km) will carry trains at up to 230km/h on the London approaches.

Alan Dyke says: 'We asked our contractors ACT (Alstom, Carillion, Travaux du Sud-Ouest) to match a performance specification

The Up line tunnel for St Pancras-bound trains, looking in the direction of Stratford.
QA Photos/CTRL

for the tunnels' track, rather than specify the track form – that allowed them to come forward with their proposal which they then had to test and prove. So they have done a series of tests on the track design, primarily to ensure that it doesn't generate vibration to the ground and cause disturbance.'

A variety of possible designs were tested, with 12 subjected to detailed analysis and peer review.

'The trials have delivered a solution better than we anticipated,' says Alan Dyke, 'so we have a higher level of mitigation against groundborne noise than we thought we could achieve – better than we predicted during the process of consultation and approval for the railway.'

The design uses bi-block sleepers, with a rubber boot around each end, cast into the concrete, with an appropriately chosen pad under the rail – so giving two levels of mitigation. It is broadly similar to the track used in the Channel Tunnel, though obviously there was less concern there about vibration impacts.



Track on Section Two

Corus is supplying the ACT joint venture with about 10,000 tonnes of CEN 60kg rail in 216 metre lengths for the CTRL Section Two route and the St Pancras terminal. Geoff Suitor of Corus says: 'High-speed track demands rail and welds of the highest quality; it was paramount that the long welded rail should meet exacting standards. Rail delivery and weld quality were critical areas identified by ACT's client, Rail Link Engineering.'

'We also recognised that the demanding timescale for tracklaying in both open track and tunnel environments meant that reliability of rail supply and a robust logistics package for rail delivery were also crucial.'

'To ensure reliability of delivery, Corus exploited logistics capability that has been developed and refined over many years of delivery of long welded rail to UK projects. We utilised market-leading welding expertise to produce long welded rail that met the client's specification. We are confident that

proven and comprehensive Quality Assurance procedures, with extensive experience in the production of long welded rail, mean that we can produce consistent, high quality welds.'

The rail is manufactured at Workington in lengths of 36m. EWS then hauls it to Corus's welding facilities at Castleton, Rochdale, where the rail is welded using the flash-butt method into the 216m lengths.

EWS then hauls the rail to the CTRL where it is delivered into the hands of Freightliner, which provides internal site haulage to ACT's track lay areas.

Corus's fleet of IGA long rail carrier wagons is used, adapted with specialist rail carrying frames to allow discharge of the 216m lengths direct onto the site.

Sleepers

Derbyshire-based Stanton Bonna Concrete's contract for CTRL Section Two is worth £10million.

The company has made significant capital investment in further development work and production of the Sateba slab track system for use in the Section Two tunnels, incorporating sleepers that sit in rubber housings cast into the concrete track bed. To maintain accurate continuity of the rail height, the slab track sleepers must be manufactured within very tight tolerances.

Stanton Bonna will supply 71,000 twin-block sleepers for ballasted track and 68,000 sleepers for slab track, plus 6,000 mono-block sleepers for connections to existing rail infrastructure.

Fastenings

CTRL Section Two is equipped with Vossloh W14 fastenings, preassembled on the Stanton Bonna concrete sleepers. This

Ballast train at the infrastructure installation railhead at the Kent portal of the CTRL Thames tunnel.

QA Photos Ltd, by courtesy of CTRL project

SECTION ONE - 11-SECOND DELAY!

'Section One of the CTRL is now over a year old, and has run very reliably and smoothly,' says Alan Dyke. 'The quality of the infrastructure has proved to be very good, and has stood up to traffic very well, with a minimum amount of maintenance being required. Eurostar delay attributed to CTRL infrastructure averages out at about 11 seconds per train, so this seems to squash any idea that Section One was finished in a hurry and would be unreliable.'

includes the ballastless track section beneath the river Thames.

Network Rail has also been using Vossloh fastenings on monoblock concrete sleepers and steel sleepers. It too has been using this system on ballastless tracks, at Macclesfield and in Ipswich tunnel.

St Pancras track system

To provide vibration mitigation, Pandrol's Vanguard system is used in the platform areas at St Pancras interim station. The rail is supported under the head and in the web with large rubber wedges, leaving the foot of the rail suspended.

The interim station platforms are carried on a slim structural viaduct forming a slab-track formation above the new ticket hall and shopping mall. The structure requires vibration mitigation to protect the pedestrian circulation space beneath the platforms, and the thin structure is expected to exhibit differential movement and needs substantial lateral and vertical adjustment within the track fastening system. As well as achieving vibration mitigation, Pandrol Vanguard allows up to 36mm vertical and 51mm lateral adjustments.

The adjustable stiffness Pandrol VIPA system is used on the transition from the slab to ballasted track, with a short section of timber sleepers, then changing to the standard stiffness of Pandrol Fastclip on G44 concrete sleepers.

INFRASTRUCTURE SUPPLIERS, CTRL SECTION TWO

Rails: Corus UK

Sleepers: Stanton Bonna

Rail fastenings: Vossloh

Rail pads: Getzner (resilient pads) and Sogo

Sleeper boots: Peguform

Switches & crossings: Vossloh Cogifer

Ballast: Stema

Rail operations: ACT Haulage, TSO and Freightliner

Electrification equipment: Arcelor, TLM, Galland, Gilbert, Nexans, Fullmen, Alstom



Signalling and telecommunications



The French TVM430 in-cab signalling system used on CTRL Section One will be extended to the St Pancras portal of the London tunnel. As the speed bands in the TVM system are not applicable to platform approaches, there will be lineside signalling in the St Pancras area, along with the trackside-beacon-based KVB train protection system, already fitted to Eurostar trains and used in France between Gonesse and Paris Nord. (KVB stands for 'contrôle de vitesse par balises' – speed supervision by beacons).

Construction of technical buildings and signal rooms has been simplified by utilising prefabrication techniques. This has enabled construction and initial fitting-out to be undertaken off site, and the first such buildings were erected in the Ebbsfleet area.

Interim station and Ripple Lane signalling

Commissioning of the eastern interim station at St Pancras in April 2004 involved introduction of two new Solid State Interlockings by Westinghouse Rail Systems to replace the existing arrangement.

It also included replacement of a section of the signalling panel at West Hampstead power signal box with Westcad, WRS's control and display VDU-based system. The Westpac Mk IVA interlocking at St Pancras was abolished.

The programme required three new signal gantries and eight new signals to be commissioned as well as the installation of new signalling power, data cables, track circuits and train descriptor data and maps.

Midland Mainline HST leaving the interim station at St Pancras, 23 April 2004. Two SSIs from Westinghouse Rail Systems control train movements here. Tony Miles

The work was later expanded to include the temporary platforms allowing Thameslink services from the north to terminate.

Alterations to the North London line and North London incline will involve changes to King's Cross and Camden Road signalboxes.

For Thameslink box construction, power supply and other cable diversions were necessary to maintain control of the signalling at King's Cross Thameslink and Farringdon.

The final CTRL signalling in the St Pancras area will see the French ITCS interlocking technology interfacing with conventional trackside signalling equipment in and around the station, the approach lines, and connections to the North London line and North London incline.

Mid-platform crossovers previously planned in the Midland main line platforms at St Pancras will not now be provided – they dated from the days when a Heathrow service was being suggested. Current HMRI requirements for mid-platform signalling, together with 'defensive driving' requirements for stopping short of buffer stops, and viewing distances for signals, cannot be met within the length of the platforms. Operational facilities available to Midland Mainline in the new station are currently subject to review.

For track, signalling and level crossing alterations in the Ripple Lane area, Morgan

Vinci and RLE established the CTRL 310 Rail Team partnership, including Scott Wilson Railways (permanent way design), First Engineering (permanent way), Westinghouse (signalling and telecoms), and Balfour Beatty (overhead line).

Packages of railway infrastructure work were grouped into five pre-determined stages that provided for remodelling at Dagenham up and down yards, remodelling of the Hanson and Ford Motor Co connections, new CTRL exchange sidings with a connecting junction and a stand alone SSI controlled by a dedicated temporary shunter's panel. A sixth package covered alterations to four level crossings.

Radio communications

GSM-R – the specialised mobile telephony network designed for vital communications on the railways – is not now expected to be rolled out until 2006-07 (*Modern Railways*, October 2004, p65), too late for the CTRL's need for 'cab secure' communication between a positively identified driver and signaller.

'We will have to provide analogue cab-secure radio as the main voice communication facility when we open Section Two, and will have to change over to GSM-R when it becomes available. This is the same position as on Section One, where we have GSM-R for general use only but intended for cab-secure status', says Alan Dyke.

The main GSM-R radio contract is yet to be placed – the contenders are Siemens and Nortel Networks. Siemens has provided the GSM-R system already in use on Section One, while Nortel is Network Rail's provider for the national network. Assurance of compatibility between the two providers' equipment is an issue to be resolved.

Union Railways has however awarded a £6.5million contract for the radio propagation system for Section Two to Thales Telecom Services. Contract 558 is to provide the radio masts, tunnel 'leaky feeder' and repeater systems and the connection to radio base stations to provide a communication system for signallers, drivers, railway staff and emergency response operators.

Contract 557 for transmission systems was awarded to Optilan (UK) Ltd in October 2003 and comprises the design, procurement, installation supervision, testing and commissioning of a data transmission network, closed circuit television and telephone systems. **MR**

Modern Railways has followed the construction and development of the CTRL in major features in the October 1999, October 2000, November 2001, December 2002 and October 2003 issues, with a report on infrastructure installation in May 2002.