

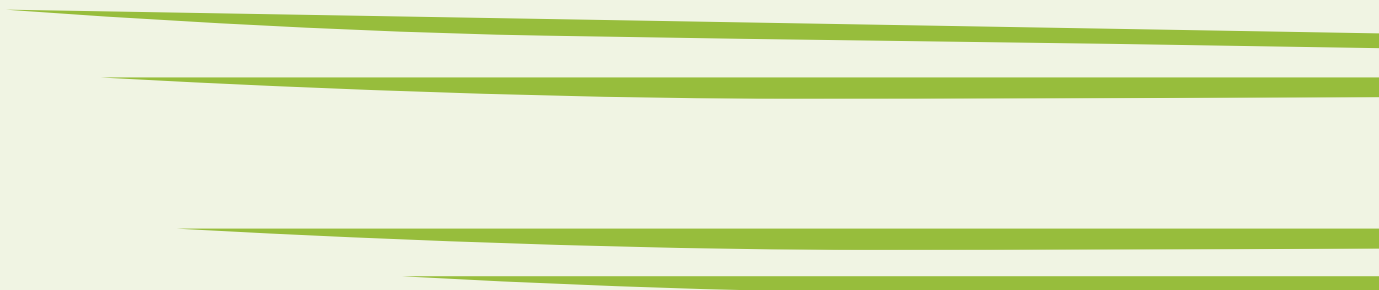
# *manifesto*

THE HIGH SPEED RAIL INITIATIVE

January 2006



**GREENGAUGE21**



***GREENING***

# *manifesto*

THE HIGH SPEED RAIL INITIATIVE

January 2006



**AUGE 21**

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Greengauge21 **A1**

# 1

## Overview

For the last half century, the economies in Europe and the United States have been moving into advanced and increasingly international services, whilst employment in their manufacturing industries has been declining. In Britain this phenomenon is generating a fundamental shift in regional economic geography because, as manufacturing declines, the economic focus has been moving southwards towards the business services sectors that are concentrating in and around London.

The effects are well known. The income gap is growing. In the midlands, the north and Scotland, economies are relatively weak and unemployment remains high. In the south, infrastructure is operating at or above efficient capacity and there is pressure for development in the countryside around London, especially in the western crescent and in the northern Home Counties, including the Milton Keynes and Cambridge areas.

We face some very difficult choices. Is there a sustainable way of accommodating the huge growth expected in the southeast? How can the north close the productivity gap with the south without adding public sector costs and straining the overall economy? Does economic progress have to be at the expense of environmental sustainability? Or can we think of imaginative solutions that can change the circumstances within which we have to make these choices?

The state of our transport system is a symptom of these wider forces, and we all experience its frustrations on a daily basis. It is inefficient because it is often congested, and it is undermining our attempts to meet targets on greenhouse gas emissions because Britain is the most car-dependent country in Europe.

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There is general agreement that a joined-up strategy is needed, one that recognises the important linkage between decisions on the location of development on the one hand, and the provision of transport infrastructure/ services, on the other. But there seems to be little chance of success on the back of our current efforts. The consensus on the need for road user charging is important and no doubt welcome, but it's not enough to solve the problems associated with a growing economy.

High Speed Rail is the missing ingredient. With it, we can extend the range of the London effect, so that a much larger part of the country can exploit the opportunities of the world city economy. This means that businesses in the midlands and the north can participate in the economic advantages enjoyed by the south. At the same time, the pressure for development in the southern regions will be eased. We would create for ourselves an alternative to continuing near-total dependence on the least sustainable forms of long distance transport.

These are the reasons why *Greengauge21* is promoting the concept of a network of high speed railway lines to be built over the next few decades. The network can be developed incrementally, starting from a single line.

The advantages of high speed rail are:

- › An accessibility transformation for the regions across Britain served by new high speed trains, providing the missing stimulus to local and regional economic regeneration
- › An increase in the capacity of the commuter network into London, allowing its economy to continue its growth as a world city, and to a lesser extent commuting advantages for other cities/conurbations as well.
- › Fast and reliable surface access from the regions to London's airports, especially Heathrow and the possibility of linking into regional airports as well
- › The provision of a framework for the creation of an attractive, inter-connected transport system, right across the country.

*We have set up  
Greengauge21 as a ‘not  
for profit’ organisation  
to research and develop  
the concept of a  
high speed rail (HSR)  
network, and to promote  
its implementation  
as a national  
economic priority.*





## 2

# High Speed Rail and Other Modes

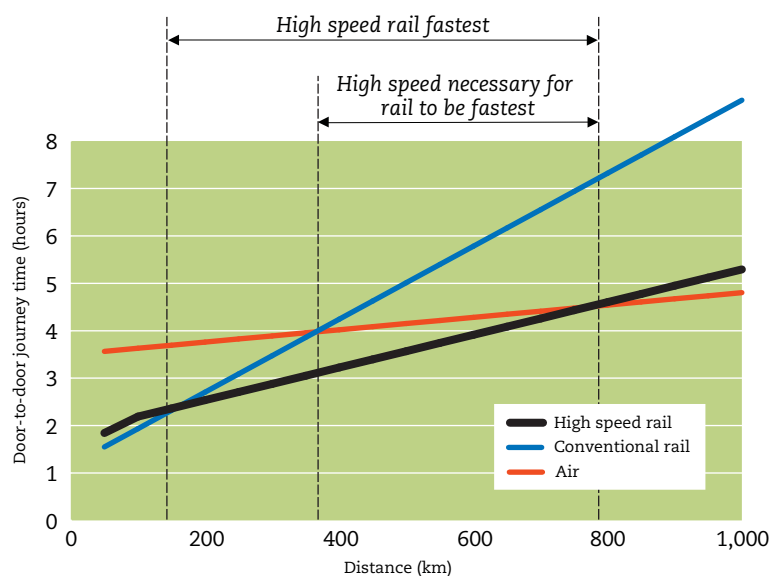
A north-south high speed rail line would connect the major cities of Northern England and Scotland with the Midlands and London. There could be direct routes to Heathrow and onto the Channel Tunnel Rail Link, which will be completed in 2007, as well as into Central London.

Journey times would be transformed, and there would also be the prospect of very high levels of reliability for travellers, with exceptional levels of safety and personal security.

### High Speed Rail Perspective Journey Times

London–Birmingham	45 min
London–Manchester	1hr 30 min
London–Leeds	1hr 20 min
London–Edinburgh, Glasgow	2hr 45 min

Note: These journey times apply with a fully developed High Speed Rail network. These times would be achievable to/from Heathrow Airport as well as Central London. For rail journey times to/from Paris, add 2h 15 min (via CTRL and Channel Tunnel). Current high speed rail technology allows operating speeds of up to 350km/h.



Source: Steer Davies Gleave, Commission for Integrated Transport, 2004

The primary focus for High Speed Rail will be on longer distance travel markets. This is because across the 400 to 800 km bandwidth of journey lengths, high speed rail is the fastest way to travel.

Experience suggests that with High Speed Rail, demand for domestic air services to/from Southeast England airports would be significantly reduced, taking pressure off runway slots and potentially allowing their use for more valuable international flights.

For the longer distance car user, there would be a really attractive alternative and the prospect of a reduction in motorway traffic levels. There would also be a major consequential advantage with the release of substantial amounts of track capacity on existing railways for growing freight and commuter traffic, with the prospect of more efficient overall use of the rail network.

High Speed Rail is a crucial component of an effective national strategic framework for sustainable transport. It is notable that the countries with the best provision for walking and cycling—Denmark, the Netherlands, Sweden and Switzerland—all have major and sustained programmes of investment in trunk and high speed rail.

In Britain, the high speed capability is important to attract demand away from other congested routes and modes and drive the economics of a more efficient transport system. But we also have a capacity imperative in the southeast and a north-south economic imbalance to address too. These are the issues that generate the rationale for High Speed Rail (HSR) in Britain's interests, avoiding the potential trap of simply following the course pursued by our near neighbours whose problems and geographies are quite different.

**INTERNATIONAL EXPERIENCE**

Across Europe, the High Speed Line (HSL) network has grown apace. Already there is over 3,700 route-km in use, and soon the HSL networks will extend to over 5,000 route-km, to which Britain will contribute a total of only 113 km. Further expansion is being considered, with projects totalling about 2,000 route-km at various stages of development.

Europe's high-speed rail network—route length (km) as at November 2005

Country	In use	Building	Total
France	1,573	320	1,893
Spain	941	644	1,585
Germany	793	88	881
Italy	248	618	866
Belgium	120	77	197
Netherlands	0	120	120
Britain	74	39	113
<b>Total</b>	<b>3,749</b>	<b>1,906</b>	<b>5,655</b>

Source: International Union of Railways (UIC) information (personal communication).  
Qualification: over 250 km/h.

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In addition Japan, South Korea and Taiwan have between them over 2,600 route-km in service and another 7000 route-km under construction, giving a total of 3,300 route-km. The major part of this, nearly 2,600 route-km, is in Japan. In China there is the short MAGLEV high speed line serving Shanghai Airport.

The European and Asian experience with high speed rail is useful insofar as clear lessons can be drawn. Certainly, in France, economic regeneration in cities such as Lille has followed the implementation of their TGV network. But the picture is not uniform. This is an area that *Greengauge21* is investigating. Preliminary indications are that where there has been a local or regional initiative designed to bring about a high level of regeneration capitalising on high speed rail, there has indeed been a substantial degree of success.

# 3

## Regional and Economic Issues

**High Speed Rail offers a solution to the two economic imperatives of redressing the north-south imbalance and providing the capacity for the ‘mega-city region’ economy in the south to continue its remarkable period of expansion.**

The long term structural change in Britain’s economy has greatly benefited the UK as it is one of the few countries that possesses a genuine world city with a significant proportion of its economy in international services sectors. The effects have been good for overall growth and prosperity, but it has been anything but even. It has resulted in rapid growth in the south, and has left the midlands and northern regions with economies that are relatively weaker, despite government policies to redress regional imbalances. There are also significant variations within individual regions.

### THE SOUTH

In the wider southeast (that is, the three regions Southeast England, East of England and Greater London), forecasts indicate a population growth of nearly 2 million in 15 years, and an increase in the number of jobs of nearly 1 million, with 30% of these in London, and the remainder in the surrounding East and Southeast Regions. Easy access to Heathrow Airport, and the entry it offers into the global market-place, is a key factor influencing these trends. The southeast is the economic powerhouse of Britain today. It is where employers as well as people want to locate: a genuine market demand.

The areas that don’t share in this pattern of success in the south tend to be in inner London and on the coastal periphery, where traditional jobs have disappeared and often commuting remains too lengthy and too expensive a prospect.

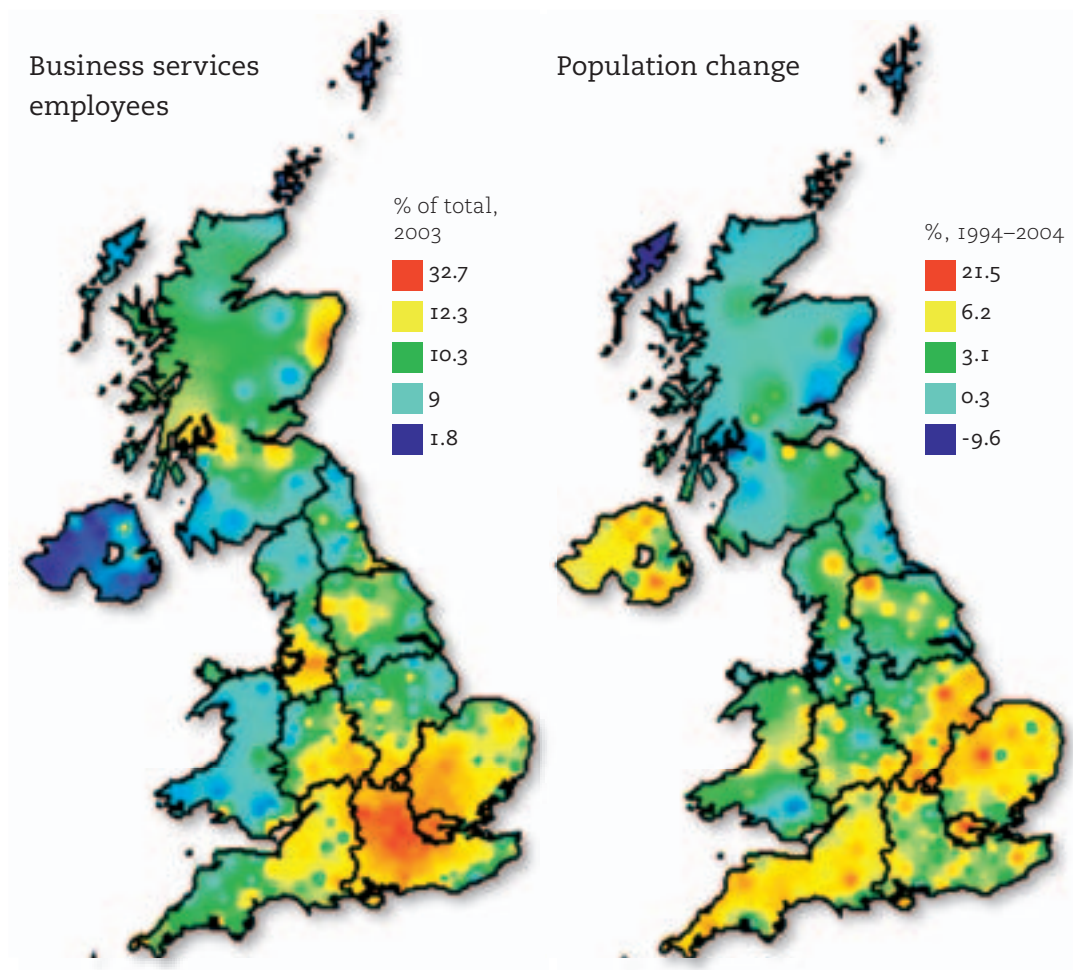
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### THE NORTH

In the midlands, the north and Scotland, there are cities that are showing, on a smaller scale than London, the beneficial effects of similar changes. Cities such as Leeds and Manchester, Edinburgh and Birmingham have the prospect of becoming the service sector growth poles for wider city regions.

The underlying economic and demographic trends that are shaping the Britain of the future present a world of opportunity for the young, mobile, highly educated, cosmopolitan populations of all regions, many of whom seek success in the south in an exceptionally wide range of human activities on a national and international scale. There is a drift of graduates from universities across the country towards London. This is creating a society that is increasingly dependent on public service employment in the north and that places increasing demands for development in the South.



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### **SOMETHING HAS TO BE DONE**

Infrastructure in the south has come under great pressure—transport, housing, schools, water supply, hospitals and so on—all will have to be expanded. Transport is already heavily congested and slow across much of the country, and again at its busiest in the southeast. Unsurprisingly, it is top of most lists of concerns in surveys of business interests and frequently, for residents too.

In the north the policy focus is on economic regeneration, whereas in the south, the last ten years has seen a raging debate between the supporters of growth and restraint that has focussed mainly on housing targets and housing land allocations. To a lesser extent there has also been a debate on how to provide transport for the growing populations and the growing demand for travel.

Through the 1990s a broad, if loose, consensus was created on transport policy. The realisation dawned that something had to be done: something had to change in the face of growing congestion and environmental damage—especially from greenhouse gases.

### **FULFILLING OUR ECONOMIC POTENTIAL**

Better management and use of existing transport infrastructure was part of the prescription. Remarkably, it has even been understood that road users should be charged on a per mile basis, although opinions differ on what should happen with the cash flows this will generate.

However, in the long term the south can only fulfil its economic potential if transport systems are expanded and the north if its perceived relative locational disadvantage can be overcome. High Speed Rail can shift these perceptions, not to create in the north a pale shadow of the south, but to join the country together so that its overall economic productivity is enhanced. The Internet revolution may have created the opportunity for greater flexibility in patterns of work and travel, but it has not brought an end to growth in travel demand. On the contrary, it has very significantly widened the opportunity for choice—of home, job, leisure activity and lifestyle—and in so doing it has increased the demand to exercise that choice over a much wider area. Thus, as the economy expands so too will travel; and in turn, increased travel is part of the reason why the economy expands.

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### USING HSR TO CREATE EXTRA CAPACITY FOR COMMUTERS

Expansion of transport systems in the south will require a significant increase in rail network capacity. Measures—some of which are already in hand—can squeeze more out of what exists today. The cross-London rail projects, Crossrail and Thameslink will add further capacity, and there are still some worthwhile opportunities to increase the capacity of existing lines. But even so, within 10-15 years, overcrowding will become severe. The need for this extra capacity is going to be felt most along corridors to the north and west of London due to the distribution of expected population and employment growth. We need to be able to get much more capacity out of the existing commuter rail network to accommodate this growth, and HSR will create precisely this opportunity, bypassing the existing approaches to London.

### AN EXCITING PROSPECT

If the northern economies start to catch up, there would be a real prospect of relieving demand pressures in the south. The core cities in the midlands, the north and Scotland would flourish, re-born as the centres of thriving city-region economies. This is why High Speed Rail is such an exciting prospect. It will make it possible for much of the north to share the benefits enjoyed by the south, including access to the principal national global gateways. It will provide the stimulus just where it is needed to create a sustainable surge in the economies of the north, in the centre of the largest cities. This cannot be achieved by any other transport investment.

### THE POTENTIAL BENEFITS OF HIGH SPEED RAIL

- › redress for the north-south divide:
  - › a boost to northern economies
  - › direct access to the global gateways (including Heathrow)
  - › relief to development pressures in the south.
- › retention of population in the Midlands and the North
- › the opportunity to expand London's labour-force catchment
- › capacity for commuter growth in south east England
- › room to grow rail freight on the existing network
- › tax income to government through economic growth
- › savings to HM Treasury:
  - › on infrastructure that would otherwise be needed to support new development in the south.
  - › on upgrading the existing rail network.



# 4

## The Business Case

### A NETWORK, BUILT IN PHASES

Work to date on High Speed Rail has concentrated on the north-south axis. However, the benefits in practice can be wider ranging than this might be presumed to imply. Evidence from the SRA studies is that there is a good investment case for serving both the west and east 'sides' of the country with High Speed Rail.

One approach to doing this that has been examined is a spine route with branches to the east and west to serve the major cities of the north and thence Scotland. However, it was found that, because of capacity imbalances on the various parts of the networks, this had less overall merit, and consequently a weaker business case, than would an approach involving two separate lines, one to the north west, the other the north east. In the longer term, there is sufficient demand to merit both. What is needed is an HSL network, not a single line.

When consideration is then extended to the detail of how different links are to be fashioned to reach Central London, Heathrow and the CTRL, it becomes clear that the network is going to have to be very carefully inter-related to the existing transport systems. Equally, it is evident that an HSL network will have to be implemented in phases, starting with a single line.

So there needs to be a strategy for HSL which identifies the criteria for development of the network and its phasing, and also for complementary policies, especially at the city-regional level to extract full value from the investment. This requires the active involvement of planning authorities at the local/regional level.

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### EVERY REGION CAN BENEFIT

No region need be denied the benefits of HSL, and in the long term, east west links can sensibly form part of the network too. The latter might take the form of enhancements to existing networks rather than HSL per se; there can be helpful network synergies between, for example, north-south HSR and improved east-west links such as those envisaged under the 'Northern Way' initiative.

### Regional Benefits of High Speed Rail

Region/Nation	Benefit
Scotland	HSL Glasgow / Edinburgh to London
North East	HSL Tyne & Wear / Teesside to London & Scotland
North West	HSL to London
Yorkshire / Humberside	HSL to London & Scotland
West Midlands	HSL to London & nw England
East Midlands	HSL to London, North East & Scotland
East of England	Extra capacity on existing rail lines into London (West Coast Main Line, (Midland Main Line, East Coast Main Line)
Wales	Direct rail access from South Wales to Heathrow; North Wales access via HSL to London
South West England	Direct rail access to Heathrow Airport
South East England	A surface transport hub at Heathrow and relief of aviation growth pressure from domestic airlines
London	Wider journey to work catchment for the Central London economy. Fast, direct, access to all regions

While the advantages of HSR to the north, midlands and Scotland were recognised and welcomed by the authorities consulted during the SRA studies, the benefits to the southern authorities were perhaps less apparent. However, creating a direct route for HSR services from the north into Heathrow would create the wider direct rail access to the airport many regions have long sought, and use of the new infrastructure need not be restricted to high speed rail; there would be capacity to accommodate regional and conventional speed services too. This is of immense benefit to the southeast and southwest, offering potential long term relief to the most congested parts of the M25 and allowing the creation of a surface transport hub at the airport, with rail services from the west as well as the north.

**EXCEPTIONAL COST BENEFIT PERFORMANCE**

The evidence available in the business case for north-south High Speed Lines in Britain is shown in the following table. It is taken from the Summary Report prepared by Atkins for the SRA in January 2004 having been updated by them to take into account changes in appraisal techniques contained in HM Treasury’s Green Book. Routes analysed are from London to the West Midlands/ North West (**Option 1**), a line from London to Yorkshire/Humberside (**Option 16**), and a comparable option that links London to Edinburgh via key sites in the Midland and the North (**Option 8**).

	Option 1 North West (Staffordshire)	Option 16 North East (Yorkshire)	Option 8 Central Scotland (Edinburgh / Glasgow)
Net revenue	4.9	8.5	20.6
<b>Total benefits</b>	<b>29.6</b>	<b>44.5</b>	<b>89.8</b>
Capital costs	8.6	10.6	27.7
Net operating costs	5.7	8.3	20.5
<b>Total costs</b>	<b>15.8</b>	<b>18.9</b>	<b>48.2</b>
Net present value	13.3	27.3	40.9
Benefit: cost ratio	2.07:1	2.59:1	2.04:1

Source: Atkins Summary Report Tables 2.1 and 3.2 in Appendix B (available DfT website). Costs and benefits in (discounted) £bn.

To be attractive as investments for Government, ideally the benefit: cost ratio would exceed 2:1 after allowing for the risk and uncertainty inevitably involved in early stage appraisal, (‘optimism bias’) as the figures in this table do. The first, and most striking, conclusion is therefore that all three HSL options pass this crucial Government expenditure test.

Greatest net value is delivered by the longest route (**Option 8**), to Scotland, although this option also has the highest cost. Current rail share of the large London to Edinburgh/Glasgow market has fallen to the 10-20% level, but high speed rail would be expected to win back much of this market from air and establish a dominant market position (just as Eurostar has in the London–Paris/Brussels markets).

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## ROUTES AND PRIORITIES

The conclusion we draw from this work, which is based on a detailed two-year study, is that HSL routes to both the north west and north east are worthwhile and one of them, probably the eastern route, would be worth extending to Scotland. However, in the interim, substantial benefits could be obtained by projecting HSL trains on existing lines north of York/Newcastle to serve the Anglo-Scottish market without needing to wait for new infrastructure to be built throughout.

Helpful though these cost benefit results are, the case for HSL, we believe, will rest on convincing Government, and HM Treasury in particular, of the contribution that an HSL strategy will make to net GDP growth and regional policy. Analytical methodologies for assessing major transport projects that will fundamentally alter Britain's economy and society are not well developed.

Modern London is inconceivable without the Underground, and 21st Century Britain is equally inconceivable without the motorway network. High Speed Rail could generate a similar transformation.

## A CANDIDATE FIRST PHASE

Phasing of the HSL network is a critical part of the overall strategy. One possibility would be to create a London-Birmingham HSL route as a first stage. There are a number of virtues in such an approach:

- › the West Midlands economy has been under-performing and HSL could effectively extend London's labour market substantially and bring a boost to local employment prospects in the service sector in the West Midlands; HSL would strengthen business linkages between Birmingham based firms and the London economy;
- › there are largely existing unused surface rail corridors into both the centre of Birmingham and London;
- › it will take some pressure off the South East, and it would save the very considerable investment costs required to support new residential communities in the south;

- › such a route can immediately offer reduced journey times from London and Heathrow to the North West , and the prospect of extension of HSL northwards at a later date;
- › where new construction is needed, there are motorways to follow (as was done successfully in the ultimate design of the Channel Tunnel Rail Link across Kent) and some unused rail corridors and capacity that is also available;
- › it presents a plausible first 'bite-size' chunk for the high speed network, and would be a valuable stand-alone project in its own right.

However, at this stage we view this option as a hypothesis to be explored rather than a settled proposal.

#### **KEY FACTORS IN HSL NETWORK DESIGN**

The questions of which routes to adopt and the best phasing of implementation lie ahead. But it is already clear that a number of factors, beyond the basic consideration of seeking to maximise HSL's contribution to the wider economic agenda as we have described it, will impact on the way the network might develop in terms of specific alignments. These factors include:

- › best environmental alternative
- › affordable alignments to achieve access to city centres
- › congruence with existing transport infrastructure (the corridor approach)
- › relationships with local and regional development plans
- › consequential impacts on adjoining transport systems, including, but not limited to, the existing rail network
- › interface with existing HSLs, including from the outset, the Channel Tunnel Rail Link
- › availability of suitable large-scale sites for stations and depots.



# 5

## Types of System and Scheme Design

There are technological choices for high speed rail in Britain. They range between the current state-of-the-art systems compatible with existing railways to the development of new technologies such as magnetic levitation. The choice is likely to rest on factors such as system reliability and environmental considerations. Critical here is the question of energy efficiency.

Critical Factors affecting Technology Choice:

- › Cost
- › Overall system reliability
- › Energy consumption
- › Noise
- › Emissions
- › Future-proofing
- › Comfort and quality factors
- › Maintainability
- › Compatibility and extendibility over (a) existing HSLs and (b) existing conventional rail.

In Japan it has proved possible progressively to increase line speeds from 220km/h to 360km/h whilst at the same time reducing energy consumption levels (on a per seat mile basis). Similarly France has increased line speeds from 270 km/h to 350 km/h and introduced double deck TGVs with very low train weights per passenger. Given the importance of tackling climate change issues, and the contribution that HSL can make to reducing demand for both road travel (by car and lorry) and domestic aviation, it is especially important that the environmental benefits of high speed rail are not squandered in an inefficient system design or technology choice.

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### A SYSTEMS APPROACH

While a range of technologies is possible, *Greengauge21* believes that it is important that the HSL technological strategy embraces the concept of forward compatibility, ‘future-proofing’ for advances in control and in traction/motive power systems, for example. It is fairly obvious that HSR technology has to be developed as a ‘system’, but it is also important to recognise that HSR itself cannot usefully be free-standing. It is to be a part of the national transport network. Connectivity with existing systems and being able to maximise benefits from each phase of network development are both important and proper influences on technology choices.

Technologies compatible with existing rail have an advantage in being able to extend new HSL train services over the existing rail network, broadening the area of benefit from a new High Speed Line. But this benefit would be diminished if those parts of the existing network over which high speed train services were extended were unable to offer very high levels of reliability in service. Otherwise there is the risk of compromising one of the principal benefits High Speed Rail has to offer its customers: unmatched journey time reliability.

Provided this issue is addressed, it is perfectly possible for new generation high speed trains to reach towns and cities beyond the high speed network itself. With hybrid power systems (perhaps following recent environmentally-friendly examples created in the automotive sector) this may be achieved using electric power supply over new High Speed Lines, and diesel traction over existing networks. This would avoid the need for unappealing passenger interchange *en route* and, of course, extend the reach of HSR services and broaden the spread of benefits.

### MAINTAINABILITY

Another important issue to consider early on, is the question of whole-life, as against, first cost assessment. This goes to the question of ‘maintainability’—the ease with which assets once created can be maintained and as necessary, renewed, without giving rise to unacceptable cost and disruption. Lack of consideration of such factors many years ago is part of the reason why the West Coast Main Line turned out to be such an expensive and difficult exercise, once it came to the need for a comprehensive renewal of its asset base over the last five years.



**THE OPPORTUNITIES CREATED BY NEW HSL INFRASTRUCTURE**

It is worth considering the wider advantages that HSR could confer. Creating new national infrastructure for HSR could also be used to fashion a north-south water supply system, to help tackle the water shortages that are likely to develop in the southeast (and even in the near continent) over the decades to come. There may too be opportunities for new power supply and telecommunications systems to consider.



# 6

## Maximising the Wider Economic and Environmental Benefits

The over-arching objective of the wider strategy that embraces HSL is to release the national economy from the constraints of its inadequate transport system, and to do so in a way that represents the best approach to address the problems of growing transport demand, of greenhouse gas emissions, of over dependence on fossil fuel supplies from unsustainable and unstable sources, and of poor quality environments. The design and planning of the HSL network needs to be joined up in particular with:

- › emerging thinking on the development of Britain's core cities and its city regions;
- › the revisions to existing land use and regeneration policies that HSL will facilitate;
- › wider transport policy, including management of the road network through, for example, road user charges
- › the transport systems that will service HSL stations;
- › investment plans for the existing ('classic') rail network;
- › wider Government policies on several fronts, including social inclusion,, housing, urban renaissance, the countryside, tourism, airport development and environmental policies;
- › thinking on the forward use of the Channel Tunnel rail link.

This 'joining up' is central to creating the right basis for planning an HSL network; it is part of the wider strategy.

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### CAPACITY FOR MORE FREIGHT

Consideration of the benefits should include the opportunities to make more efficient use of the existing rail network. By taking the fastest trains off conventional lines, headways can be reduced and frequencies of peak services increased. Similarly there will be more capacity for freight services, particularly the long distance container trains from the ports which are the fastest growing market for rail freight, but also for other traffics such as aggregates as well.

### AIRPORTS

There will also be a tremendous opportunity for High Speed Lines to provide fast direct access to Heathrow, (and plausibly, Stansted & Gatwick) as well as regional airports to extend their advantages over a much wider area and reinforce their function as international and national transport hubs. Which airports, and how they should be served, should be a major consideration in planning the routes.

### CITIES AND CITY REGIONS

An important conclusion from the SRA studies was that for HSL to be successful, it must serve city centres. Network designs that only reached the periphery (say the M25 in the case of London) would fail to attract sufficient market share to be worthwhile. They would offer little advantage over flying or driving. This is supported by practical experience elsewhere in Europe: considerable importance has been placed on the development of city centre terminals, integrating regional transport interchanges with commercial developments.

In terms of better accessibility, High Speed Lines will confer a very significant relative advantage to city centres compared with out of town locations. This is, of course, in keeping with a wide range of Government policies, including the Core City programme and the new focus on city regions, as well as with the London Plan which anticipates large-scale employment growth in Central London.

This is the advantage of rail, in stark contrast to the impact on accessibility of every other regional or inter-regional transport investment. Investments in the motorways, in the trunk road network and in airport expansion, each of which may have advantages for other reasons, nevertheless have a tendency to pull development pressures in the opposite direction, away from city centres and towards the urban periphery. Such dispersal also encourages—indeed demands—more scattered road-based travel, which undermines current planning policy.

To be effective, HSL stations need to be located where onward access transport is of the necessary quality and quantity. City centres are ideal from this standpoint in terms of public transport. But proper facilities for car parking/car access will also be needed. This places more emphasis on the need for well structured spatial and transport planning for cities and regions, with effective locally based leadership and coordination. If we are to have region-city mayors, we suspect that high speed rail will find itself with the local champions and democratic mandates so important to ensure success at the implementation stage.

#### **TRAVEL—A PLEASURE FOR ALL**

Lastly, new infrastructure of this type is an opportunity to put right inadequacies of the past. There is no reason why HSL stations should not be stunning pieces of architecture, themselves a subject of pleasure and inspiration. And the difficulties that current stations (and other transport facilities such as airports) pose for less mobile people can be substantially designed out from the start. Level boarding, even for those using powered mobility scooters is perfectly feasible.



## 7 *Funding and Implementation*

Previous studies have made clear that there will inevitably be a substantial call on public sector funds to implement a High Speed Rail network. The argument advanced in this manifesto is that High Speed Rail is essential for the further development of the British economy and society, and that public investment is justified because of:

- a) the improvement to national economic competitiveness and GDP;
- b) the increased ability to continue the expansion of the southern economy;
- c) its contribution to economic regeneration in the midlands, the north and Scotland; and
- d) savings in costs on urban development and infrastructure spend in the south.

Nevertheless, public funding must be kept to the minimum not only through route selection and scheme design, but also through application of technology to minimise capital and operating costs, through continuity of funding to ensure efficient and timely implementation, and through effective management of the construction and procurement process. All the possibilities have to be explored.

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Greengauge21 is in no doubt that funding HSR will be the critical issue for government. The proper concerns of HM Treasury on this matter can be addressed through *phasing* of the network construction as described, through *new funding instruments*—and we describe one such method that employs the ‘user pays’ concept below—and through the adoption of *exacting discipline* in project execution.

### A SECURE, LONG-TERM, FUNDING STREAM

Though it will not be on the same scale as building the railways in the 19th Century or the motorways in the last century, a High Speed Rail network is a huge undertaking that will take many decades to complete. The railways were originally built through private initiative and funding: a process that was attended by bankruptcy and resulted in the idiosyncratic network that has tormented passengers and operators ever since. The motorways were funded through general taxation as resources permitted. Despite their pivotal importance to the national economy and the enormous sums raised in taxes on road transport, motorways were often constructed to specifications which were inadequate to the task. Some had to undergo very expensive and disruptive upgrades not many years after they were opened.

In our view, neither of these models is the way forward for funding High Speed Rail. It is our contention that undertakings of this scale should not be used as an instrument of current or ephemeral macro-economic policy, and should be subject to long term, not short term, affordability considerations. A new approach is needed that will provide a secure source of continuous funding over a long period.

And there are some opportunities to do just this. On the existing rail network, users are today a source of surplus cash flows that are captured through the franchise mechanism. The new GNER franchise, for example, is committed to generating a substantial surplus over its lifetime, annual cash sums that will simply be returned to Government under the current mechanisms. A future West Coast franchise, once the current renewal work and upgrades are complete, would also be expected to generate a surplus.



There is now a recognition that much more efficient use can be made of scarce capacity on the roads by replacement of current taxes by road user charges. However, in return there should also be tangible improvements to the quality of transport—such as through reduced congestion and disruption—necessary to convince motorists of the fairness as well as the logic of the levy. Government already recognises this point, that road users will need to see a benefit from the application of charges and not simply see all the proceeds disappear back to the general Exchequer, if the policy is to succeed.

High Speed Rail will parallel existing motorways and will bring benefits at a transport corridor level, both to those who choose to make direct use of the new HSL services and to the users of other modes where significant relief of congestion can be expected. They will be high capacity services and will be able to provide a very attractive alternative to driving, especially at peak periods when the roads are most congested. This is true for airport users as well.

In principle, at least a part of these cash surpluses should be diverted to help fund the creation of the HSR network, since this has been found to be the best way, overall, to improve transport service provision in a sustainable way. Applying the ‘user pays’ concept at a transport corridor level in proportion to the level of benefit obtained could generate a continuing, and a highly bankable, revenue stream to be used as a building block in the overall financing structure for HSR

This method of funding is more akin to the coal duty levied to rebuild St Paul’s Cathedral and the City of London churches in the seventeenth Century than to past mechanisms for funding transport networks. However, those who would pay would benefit much more directly, both in reduced congestion and in having an alternative means of transport.

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Following the Great Fire in 1666, Church and State were faced with the cost of rebuilding St Paul's Cathedral and the City churches, at a cost that would far exceed income from appeals, public subscriptions and Parish funds—although all these sources made substantial contributions.

In the event, most of the money was provided by a duty levied on coal imports into London. In 1667 a duty of 1s. per 'chaldron' had been introduced to pay for reconstruction of secular buildings; but in 1670, an additional 2s. per chaldron

was charged specifically to pay for the churches. In 1685, the levy was extended until 1700, and in 1697 the period of the levy was further extended to 1716, though at the same time the duty was reduced to 1s. per chaldron. Without this secure long term funding, the rebuilding of St Paul's and a total of 51 City churches would have been impossible.

The result was the construction, over a period of forty years, of one of our greatest national treasures.

Alongside the revenue stream from transport users, there will be other sources of finance to consider, besides the usual type of central government grant. There could be a serious attempt to capture property development benefit value. There is EU funding available for this type of project. Desirably too, regional agencies, having weighed the advantages in prospect, would be able to contribute too.

#### IMPLEMENTATION MANAGEMENT AND COST CONTROL

The railway industry has been through a very difficult period since privatisation. At a time of rapidly growing demand, it had to contend with under-funding of maintenance and renewals during the 1990s, several cycles of reorganisation and restructuring, and the aftermath of the Hatfield incident and the subsequent spotlight on safety. Costs have been very high and performance has only recently started to improve.

When Network Rail was created it was clear that one of its tasks would be to reduce costs. Since then, it has introduced new mechanisms to control costs and improve efficiency including more effective planning of maintenance and renewals. As a result it has been able to meet—and exceed—its financial as well as its performance targets. The industry is now in a much better position to pursue major infrastructure investment than it was a few years ago.

It is vitally important to protect the taxpayer from unacceptable cost overruns. Planning and implementation should aim to minimise the requirement for the public sector to contribute or accept risk. There are some lessons to be learned from the—so far—successful implementation of the Channel Tunnel Rail Link, including allocation of risk to those best able to minimise it through effective project management, and incentives for achievement of demanding construction targets. However, we would also like to explore additional approaches during implementation that encourage innovation, and allow flexibility to save money and improve the product, insofar as it can be done without jeopardising completion dates and budget limits.



# 8 *Conclusion: Greengauge21, A National Transport System for the 21st Century*

Growing congestion and frustration on our national transport networks is damaging Britain's economic competitiveness and prospects.

Nobody seriously argues that our roads can be expanded to keep pace with demand growth. Low-cost airlines have done well, but at a growing cost in terms of fuel consumption and CO<sup>2</sup> emissions. Our railways too are congested—in terms of both track occupation and levels of peak crowding for passengers.

These problems are particularly intense across the South East, but there are elements of this picture right across the country.

The expectation is that demand growth will ease to some extent simply in response to deteriorating conditions on our road network, even though there is a programme of investment in road widenings and bypasses. Rail use is expected, on the other hand, to continue its trend of recent years and grow more strongly, both for passengers and freight. Some investment in the short term, for instance to provide longer trains will allow this to happen. But as things stand, the rail network will not be able to cope with the additional strains much beyond 2015–2020. The more demand for travel is frustrated, the worse the damage to the country's economic competitiveness. Only for a little while longer can we expect to get by relatively unscathed, using the roads and airports built in the 20th Century and the railways built in the 19th Century.

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What is needed is a coherent plan to give the country the transport system it is crying out for. The plan has to address the environmental agenda: it is the transport sector that is damaging the prospects of achieving agreed global warming targets and other environmental objectives. It has to deliver greater safety and personal security and meet the needs of all sections of the community, not just a select few. And it must demonstrably improve the performance of the economy, and that is after taking into account the costs of implementing the plan itself. Without achieving this last requirement, there is little realistic prospect of Government funding.

### THE GREENGAUGE21 VISION

The *Greengauge21* vision offers a way forward. High Speed Rail will take pressure off the road network and support our growing economy. It would create substantially more capacity on our existing rail network for more local and regional passenger services and for more freight. It does this by removing longer distance Inter-city trains from the existing rail network and replacing them with high speed trains running largely on new alignments at speeds of 300km/h or more. These high speed services hold out the prospect of achieving a real shift in economic geography, enabling a wider area to share the benefits of the prosperity of the south and the core cities in the north to grow and prosper, together achieving a reduction in the north-south imbalance.

To be effective, this has to be a comprehensive approach. Existing transport networks need changes to match. A nationwide surface transport service, coordinated and made attractive to motorists and to domestic airline users flying in and out of the crowded southeast airports, is the ambition. *Greengauge21* proposes a new approach to funding: one that is fair and one that brings new revenues from transport use into the equation. We believe that a HSL network can be funded on the basis of this and other sources.

### THE CHOICE

As a nation, we have a choice. If we carry on and try to ‘muddle through’, our cities and larger towns will go into terminal decline, starved of infrastructure investment, poorly connected and unable to compete with developments on the urban fringes. The delicate balance of sustaining the population and employment growth in London, rather than see it dissipate, is a particular risk. The alternative and unwanted prospect is that development patterns will spread, with intense pressure on open space and on the Green Belt: lowest common denominator planning.

Or we can provide the transport infrastructure that will enable our existing towns and cities to grow and prosper, with new high-speed services between the major centres, complemented by better transport within urban areas allied to decisive city planning focused on high quality and sustainability. This way our cherished countryside can be protected. And if the high-speed services also serve our principal international gateways at Heathrow and elsewhere, they will enable a large part of Britain to participate more effectively in the global economy, while obviating the need for expanded domestic aviation growth in the southeast.

*Greengauge21* will promote a strategy, not at this stage a particular technology nor a particular route. The strategy is for the development of a high speed rail network, step by step, just as other essential parts of our national transport system (for example, London Underground) were in the past.

What we believe is needed is debate, yes, but within a tolerably short timescale, to see if we can reach a broad consensus that this is indeed the way forward. Responses to this manifesto are welcome and should be addressed to the e-mail address given in Chapter 2. Together, surely, we can change our part of the world, just as was achieved so brilliantly by our Victorian predecessors, but this time to meet the very different challenges of the 21st Century.





## Greengauge21

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Developing a High Speed Rail strategy for Britain will involve many parties. It demands a consensus—just as one has been carefully created around road user charging—and the involvement of authorities in planning the network at national, regional and local level.

*Greengauge21* has been established to assist the debate on High Speed Rail and to promote it in the public interest. We conceive it as an umbrella under which all those with an interest in supporting and promoting a High Speed Rail network can come together and openly and publicly debate the merits of alternative routes, priorities and technologies, alternative implementation strategies and the economic and environmental effects on the future of Britain.

*Greengauge21* has no vested interest and is not seeking to be part of any direct beneficiary (construction company, operating company etc.). It is a registered company, limited by guarantee, that seeks to act in what it believes is the national and the public interest, by bringing forward the necessary data and arguments so that a debate can take place, so that the many parties that should be involved in such a ground-breaking initiative are fully informed.

*Greengauge21* is being led by Jim Steer, one of the country's leading transport sector specialists. It is producing a body of work to explain the detail of the business case for High Speed Rail, together with analysis that will show how it can be developed and funded. Its Board of Trustees represents a broad spectrum of interests.

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*Greengauge21* will draw the attention of the wider public and business interests to the body of work that has already been carried out into High Speed Rail. We want to ensure that High Speed Lines are not subject to unnecessarily lengthy planning gestation periods because the problem is identifiable now and the lead time is considerable for such a bold initiative. We also want to ensure that the enthusiasm of private promoters is not wasted in conflicting schemes that undermine the very idea we are all keen to promote. To achieve these aims, in the coming months *Greengauge21* intends to publish on its website a series of papers addressing all aspects of the strategy for High Speed Rail.

It is currently intended that these workstreams will be brought together in a report (target date for publication: summer 2006). *Greengauge21* may also help to develop proposals complementary to the HSL network as part of the wider strategy that it is promoting.

*Greengauge 21* welcomes the input of third parties. It is particularly concerned to build on the interest in high speed rail at local and regional level, believing that successful implementation depends on the development of complementary measures to maximise the value of investment in HSL. Its website will provide a growing reference source for high speed rail in Britain, and can be found at: [www.greengauge21.net](http://www.greengauge21.net)

Specific *Greengauge21* studies in hand:

- › Wider economic (GDP) benefits of HSL
- › Regeneration experience with HSLs across Europe
- › HSL Network Planning Criteria

During the course of 2006, a growing body of material will be published on this website, building to a clear position on the steps towards implementation.

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*Greengauge 21* would like to initiate a programme of consultation with interested parties around the ideas contained in this manifesto. Interested organisations should e-mail:

[co-ordinator@greengauge21.net](mailto:co-ordinator@greengauge21.net)



