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BRIEFING PAPER

Number CBP3146, 15 June 2017

# Railway rolling stock (trains)

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# Summary

This paper gives a brief overview of the GB train fleet, explains who owns the trains and how they are leased to the companies that provide train services. It also looks at four big rolling stock procurements: InterCity Express, Thameslink, Crossrail and HS2 and sets out the policies of successive governments.

The bulk of the rolling stock (trains) that run on the railways are owned by three private companies (rolling stock leasing companies, or ROSCOs) – Angel, Eversholt and Porterbrook. These companies lease the rolling stock to the train operating companies (TOCs) who then deploy it on their services. For the most part, the train companies procure the rolling stock directly from the rolling stock companies.

In addition, in recent years the Government has stepped in to procure large rolling stock orders directly from the train manufacturers. Procurements for schemes such as the InterCity Express Programme, Thameslink and Crossrail have seen some controversy due to the award of successive contracts to companies based largely outside of the UK. Governments have been keen to get these companies to invest in UK skills and jobs.

There have been investigations into the rolling stock market over the past 10 years but no radical changes have been made by Government. The current Government's policy, dating back to 2010, is to design franchises that better incentivise rolling stock procurement and innovation. This is also a common theme for the industry, which wants to leverage emerging technology and alternative fuels to revolutionise train travel in the future.

Information on other rail-related issues can be found on the Railways Briefings Page of the Parliament website.

# 1. Overview of trains currently in use

The average age of rolling stock on the GB rail network was 21.1 years at Q4 2015/16. This has been increasing year on year, though there are differences between franchised areas. For example, the **oldest** fleet on the network is the Caledonian Sleeper (41.4 years) followed by MerseyRail (37.3 years) TfL Rail (36.3 years), and Great Western (33.4 years). The **newest** fleet on the network is the TransPennine Express (9.5 years), followed by Virgin West Coast (11.4 years) and London Midland (11.7 years).[1]

In March 2017 the rail industry published its fifth *Long Term Passenger Rolling Stock Strategy*. This gives an overview of the current train fleet and plans for future procurement. In summary, it said:

> Around half of the 6,000-plus new carriages costing £10 billion already committed for delivery from April 2014 to March 2021 have been or will be built in Britain. These will replace 3,000 or more older vehicles, increasing the size and capacity of the national fleet by around 20%.
>
> The strategy estimates that:
>
> - Britain's train fleet is forecast to grow by up to 89 per cent over 30 years;
> - The average age of our trains is estimated to fall from 21 years to 15 years by March 2021;
> - The proportion of electrically-powered vehicles is forecast to rise from 71 per cent now to more than 85 per cent by 2034;
> - Between 11,000 and 16,000 new electric vehicles are expected to be needed by 2046, together with up to 2,000 new vehicles able to operate beyond the electrified network.[2]

The strategy also stated:

> The 6,010 new vehicles already delivered or now committed for delivery will increase the total active national fleet by 2,500 to 3,000 vehicles by 2024. As a direct consequence of this, it can be concluded that some 3,000 to 3,500 existing vehicles will no longer be required by their present TOCs during this time, and will therefore come off lease (although some of these may find new uses during this period). The displaced vehicles will include:
>
> - around 1,600 Type A, C, D and F vehicles, comprising many of the oldest passenger vehicles in the national fleet;
> - around 1,400 Type E and Type F vehicles built in 1981 to 1995, mostly comprising middle distance EMUs, the majority being built by 1990;

[1] ORR dataportal, *Average age of rolling stock by franchised train operating company - Table 2.31* [accessed 14 June 2017]

[2] RDG press notice, "Train fleet growth fastest for decades", 10 March 2017

- around 300 Type B and Type E vehicles that were built after 2002.[3]

The present fleet composition (including committed changes to March 2017) is as follows:[4]

| **Generic Type** | **Total Vehicles, March 2017** |
|---|---|
| A. Shorter Distance Self-Powered<br>(diesel, generally with 75 mph maximum speed); | 1,057 |
| B. Middle Distance Self-Powered<br>(diesel, with 90 or 100 mph capability); | 1,367 |
| C. Long Distance Self-Powered<br>(diesel, with 100 or 125 mph capability); | 1,500 |
| D. Shorter Distance Electric<br>(generally with 75 mph maximum speed); | 2,461 |
| E. Middle Distance Electric<br>(with 90/ 100/ 110 mph capability); | 5,670 |
| F. Long Distance Electric<br>(with 100/ 125/ 140 mph capability); | 1,148 |
| G. Very High Speed Electric<br>(140 mph and above) | 174 |
| **Total** | **13,377** |

Of these 13,377 vehicles, 6,778 (51%) have been built since privatisation, in the last 20 years; and 1,425 (11%) are owned by parties other than the three largest ROSCOs.[5]

In 2015/16 the TOCs paid £1.4 billion in rolling stock charges – 12% of their total expenditure: the third highest single item after payments to the Government and staffing costs, and more than they pay in access charges to Network Rail.[6]

[3] RDG et al., *Long Term Passenger Rolling Stock: Strategy for the Rail Industry (5th ed.)*, March 2017, para 21
[4] ibid., table 2, page 15
[5] ibid., para 57
[6] ORR, *UK Rail Industry Financial Information 2015-16*, 22 February 2017, p16

# 2. Who owns the trains?

This paper relates to Great Britain – in Northern Ireland the trains are owned by the state railway [NI Railways](#).

The trains in use of the GB rail network are not owned by the train companies who operate the service but by private companies called rolling stock leasing companies, or ROSCOs.

These companies lease the rolling stock to the train operating companies (TOCs) who then deploy it on their services. For the most part, the train companies procure the rolling stock directly from the rolling stock companies.

In addition, in recent years successive Government have stepped in to procure large rolling stock orders directly from the train manufacturers, which are then owned by so-called 'mini-ROSCOs' and again leased out to the TOCs.

This structure is a direct result of the privatisation of the railways in the 1990s.

## 2.1 Privatisation

During the passage of what became the *Railways Act 1993*, the Conservative Government announced that private sector advisors would help to set up three passenger rolling stock companies as subsidiaries of British Rail (BR) from 1 April 1994. The companies would take over BR's existing domestic passenger rolling stock and lease it to future passenger service operators. The companies would:

- work to a commercial remit;
- be structured so as to be capable of acquiring new rolling stock to meet demand;
- facilitate the use of private sector capital; and
- with a view to the earliest possible complete transfer to the private sector.[7]

Most of the privatisation changes were introduced on 1 April 1994, including the establishment of the three rolling stock companies – Angel Trains, Eversholt and Porterbrook – to lease rolling stock to the new railway operators. At the time the BR passenger fleet consisted of 11,000 vehicles ranging from brand new locomotives and coaches to those that were nearing the end of their economic life. Each company was given a portfolio of a similar mix of stock with a similar age profile. The new ROSCOs, as they came to be called, would be responsible for acquiring new trains when needed. They were not to have in-house maintenance capabilities but were responsible for specifying all maintenance and for contracting with maintenance suppliers for all heavy maintenance and refurbishment. The idea was that they should offer operating, rather than finance, leases which meant they carried most of the risk of holding and maintaining the rolling stock.

[7] DoT press notice, "Private sector to help set up passenger rolling stock companies", PN 223, 3 June 1993; full details given in : DoT, *Railway Privatisation: Passenger Rolling Stock*, January 1993

In 1993 the BR passenger fleet was said to have a book value of some £2 billion.[8] The proposed sale of the three companies was announced in March 1995 and bids for the purchase of these companies were invited in May.[9] Details of the contracts for the sales were announced in November 1995 and completed in early 1996.[10] Eversholt and Porterbrook were acquired by their managements with development capital backing while Angel was bought by an external management team with the financial backing of Nomura International.

All three purchasers took on the existing train fleet and the Networker fleet on order at the time. They were also reported to be in a position to arrange additional funding for the continuing modernisation of the passenger railways through investment in new trains and refurbishment of existing rolling stock. All the purchasers committed themselves to introduce incentive schemes for employees, whether by way of participation in ownership or otherwise.

The actual sale price payable by the purchasers was approximately £1.8 billion but some £800 million was also paid to the government in cash as dividends from the ROSCOs before the sale. The Government therefore maintained that total proceeds from the sale exceeded £2.5 billion, while opposition parties accused the Government of selling the companies "on the cheap".[11] One commentator, not known as a fan of privatisation, thought that the sale was "a good deal for the taxpayer. We have got rid of a fleet of trains, two thirds of which are geriatric, to the private sector for not a bad price".[12]

In March 1998 the National Audit Office (NAO) published a report into the privatisation of the ROSCOs. Sir John Bourn, then head of the NAO, stated his belief that "the then Government saw major advantages in an early sale … Their over-riding objective was to secure the sale of the companies as soon as practicable". Sir John further reported that the "chosen timing of the sale probably had an adverse impact on proceeds".[13] The NAO calculated that at the time of privatisation the value of the three ROSCOs future cash flows, under continuing public ownership, would have been £2.9 billion. The value obtained by the government (sale proceeds, risks transferred and possible tax receipts) was considered to be only 'up to £2.2 billion'.[14]

The Commons Public Accounts Committee also published a report on the privatisation of the ROSCOs, similarly concluding that the timing of

[8] DoT press notice, "New companies to manage passenger rolling stock after railways privatisation", 29 April 1993

[9] DoT press notice, "Mawhinney announces details of rolling stock sale", 20 March 1995

[10] DoT press notice, "Britain creates new train leasing market with £1.8 million sale", 9 November 1995

[11] "BR rolling stock sold 'on cheap' for £2.5bn", *The Guardian*, 10 November 1995

[12] "BR's train fleet sold for £1.8bn", *The Times,* 10 November 1995 [Roger Ford, then editor of *Rail Privatisation News*]

[13] NAO, *Privatisation of the rolling stock leasing companies* (session 1997-98), HC 576, 5 March 1998, p2

[14] ibid., p4

the sale of the ROSCOs and its sequence in the overall rail privatisation programme "was a key factor in the loss of value to the taxpayer".[15]

**ROSCO safety obligations**

A Memorandum of Understanding was signed by the Health and Safety Commission (HSC) and the then Departments of Transport and the Environment on 10 October 1996. ROSCOs have several safety obligations under the rolling stock leases signed in 1993. In his *Review of the Rolling Stock Market*, published in May 1998, the Regulator provided a summary.[16]

If mandatory modifications to rolling stock are required – normally for safety or operational reasons – the relevant ROSCO is responsible for affecting and paying for them. The ROSCOs are subject to no regulatory requirements beyond those normally applicable to private sector companies but are subject to both competition and monopolies law.

Further information on the railway safety regime can be found in HC Library briefing paper SN605.

## 2.2 The 'big three' ROSCOs

### Angel Trains

Angel Trains was bought for £696 million by GRS Holding Company Limited in January 1996. GRS was a consortium comprising the railway consultancy company Prideaux & Associates, the Australian investment firm Babcock & Brown and Nomura International plc (ultimately owned by the Japanese financial services company Namura Group). The funding was arranged and underwritten by Nomura.

Shortly after the original sale GRS sold their right to part of Angel Trains income for some £690 million. In December 1997 GRS sold the remainder of the business to the Royal Bank of Scotland Group for £395 million, thereby valuing Angel Trains' business at some £1.1 billion, a gain of £389 million since privatisation.[17] In June 2008 RBS sold Angel to a consortium which included Babcock & Brown, Deutsche Bank and Australian investment funds for £3.6 billion.[18] When Babcock & Brown folded in 2009 its European infrastructure fund was acquired in a management buyout under the name Arcus Infrastructure Partners.[19]

In August 2015 Angel was effectively sold to a group led by Sydney-based firm AMP Capital,[20] after Arcus Infrastructure Partners sold its stake in the group. The rest of the stake was sold to Canadian pension scheme investors PSP Investments. Post-sale, Angel's ownership was 55% to AMP, 30% to PSP and 15 % to two Australian superannuation

[15] PAC, *Privatisation of the rolling stock leasing companies* (sixty-fifth report of session 1997-98), HC 783, 10 August 1998, para 26
[16] ORR, *Review of the Rolling Stock Market*, May 1998
[17] "Ex-InterCity chief makes pounds 15m from Angel Trains sale", *The Independent*, 18 December 1997
[18] "RBS gets £3.6bn by shunting off Angel Trains", *The Guardian*, 14 June 2008
[19] "Managers buy out Babcock & Brown fund", *Reuters*, 24 July 2009
[20] the infrastructure arm of Australia's biggest pension provider AMP, backed by firms including the Abu Dhabi Investment Authority, PensionDanmark and Swiss Life Asset Managers

schemes and UK-listed firm INPP.[21] The deal was reckoned to be worth approximately £3.5 billion.[22]

Angel leases trains to franchises across the network, including recent significant orders for South West Trains, London Midland, the TransPennine Express and East Anglia.[23]

## Eversholt Rail

Eversholt Rail was acquired by the Eversholt management/employee buy-out consortium for £518 million in February 1996. A further £80 million was deferred and became payable when specified technical and financial performance thresholds were achieved by the fleet of 164 new Networker Express vehicles on order from Swiss company ABB. The consortium invested £70 million in equity. The management and employees shared in up to 15 per cent of the equity share capital through subscription for shares and option schemes. The debt was arranged by Deutsche Morgan Grenfell and underwritten by Deutsche Morgan Grenfell, Fuji Bank, Societe Generale and Royal Bank of Scotland.

In February 1997 the company was sold to the Forward Trust Group, the leasing subsidiary of HSBC, for £726 million, a gain of £208 million on the original price.[24] In November 2010 HSBC sold the company to Eversholt Investment Group, a consortium consisting of investment funds managed by 3i Infrastructure plc, Morgan Stanley Infrastructure Partners and STAR Capital Partners, for approximately £2.1 billion.[25]

In January 2015 the Eversholt Investment Group sold the company to Hong Kong's Cheung Kong Infrastructure Holdings Ltd (CKI), backed by Li Ka-shing, Asia's richest man, for a reported £2.5 billion.[26]

Eversholt leases trains to franchises across the network, including recent significant orders for Northern Rail.[27]

## Porterbrook Leasing

Porterbrook was initially bought by a Porterbrook management/employee buy-out consortium for £528 million in January 1996. The consortium sold the business to Stagecoach Holdings for

[21] INPP is a global infrastructure fund under the auspices of Amber, which also established in 2009 after the management buyout of the PPP infrastructure team at Babcock & Brown

[22] "UK train leasing owner changes track for £3.5bn", *City A.M.*, 19 August 2015

[23] Stagecoach Group press notice, "Passengers to benefit from £210m train order for UK's busiest commuter network", 3 September 2014; "New Class 350-3s for London Midland to enter service early", *Rail Technology Magazine*, 3 October 2014; First TPE press notice, "TransPennine Express and Angel Trains orders 95 Inter-City rail carriages from UK manufacturer Hitachi", 1 April 2016; and "Details confirmed for £900 million largest ever privately procured train order in the UK", *SmartRail World*, 5 October 2016

[24] op cit., *Privatisation of the rolling stock leasing companies*, para 4

[25] 3i Infrastructure press notice, "Eversholt Investment Group Agrees to Buy Eversholt Rail Group from HSBC", 4 November 2010

[26] "Hong Kong's Li Ka-shing buys UK train company Eversholt", *Reuters*, 20 January 2015

[27] Northern Rail press notice, "Arriva signs rolling stock contract for new Northern rail franchise", 22 January 2016

£826 million in August 1996 – a gain of £298 million.[28] This was not without controversy – the Chairman of Stagecoach, Brain Souter, was reported as saying he could reduce Porterbrook's spending on maintenance by up to 30 per cent and he foresaw further savings through bulk purchases of components, some of which were shared by Stagecoach's buses and trains.[29] The rail regulator immediately announced a review of the competition issues and warned the bid might be referred to the competition authorities.[30] In December 1996 the Minister, John Taylor, announced that he had accepted satisfactory undertakings from Stagecoach and that the acquisition would not be referred to the competition authorities.[31]

The company was later sold to Abbey National Treasury Services plc in April 2000 for £1.3 billion.[32] In October 2008 Abbey National sold it to a consortium led by Deutsche Bank, and including Lloyds TSB and BNP Paribas, for an estimated £1.4 billion.[33] In February 2009 the Canadian fund OPTrust was cleared by the European Commission to take joint control of Porterbrook.[34]

Most recently, in October 2014 the company was sold for an undisclosed sum to a consortium that includes Australian asset manager Hastings, Canada’s Alberta Investment Management Corporation and EDF Invest of France.[35]

[28] op cit., *Privatisation of the rolling stock leasing companies*, para 4; see also: “The Great Train Robbery”, *The Sunday Times,* 4 August 1996

[29] “Stagecoach bids for rail stock leasing group”, *Financial Times,* 1 August 1996

[30] ORR press notice, “Rail Regulator to consult on proposed merger”, 31 July 1996

[31] DTI press notice, “Stagecoach/Porterbrook merger: John Taylor accepts undertakings from Stagecoach”, 23 December 1996

[32] “Stagecoach poised to sell Porterbrook”, *The Independent*, 20 March 2000

[33] “Deutsche Bank team buys UK rail stock group”, *Financial Times*, 27 October 2008

[34] EC press notice, “Mergers: Commission approves proposed acquisition of Porterbrook Leasing Company by OP Trust, Deutsche Bank, Lloyds Bank and BNP Paribas”, IP/09/223, 5 February 2009

[35] “UK train rolling stock owner sold off”, *Financial Times*, 12 October 2014

# 3. How are trains procured and leased?

As indicated in section 1, the rolling stock market has been dominated since privatisation by the big three ROSCOs – Angel, Eversholt and Porterbrook. However, they do not enjoy a complete monopoly. As John W. E. Helm explained in an overview of the sector, published in *Local Transport Today*:

> … (bank-owned) Voyager Leasing has supplied 59 'Voyager' sets to Arriva Cross Country and another 18 units to Virgin West Coast; QW Leasing has supplied 57 class 378s to London Overground; and Macquarie Leasing has supplied 30 Class 379s for Abellio Greater Anglia's Stansted services. BAA owns both the (open access) Heathrow Express and Heathrow Connect stock.[36]

In the decades since privatisation the market-based approach envisioned in the early 1990s has become ever more dominated by government prescription. In a 2009 report the predecessor to the Competition and Markets Authority (CMA) explained how rolling stock is deployed by the train operating companies (TOCS) as part of their franchises and the role played by the Department for Transport in that process:

> The TOCs bid competitively on the basis of the subsidy that they require (or in an increasing number of cases the premium they will pay) to operate the franchise. Lease rentals constitute a significant proportion of the total franchise costs.
>
> [...]
>
> The franchise invitation to tender (ITT) sets out the DfT's expectations (its 'base case') for the services to be provided on the franchise. Service Level Commitments, i.e. the specification of services to be provided by the franchisee, are often very detailed and may specify explicitly, or necessitate implicitly, the use of particular types, classes or fleets of rolling stock. TOCs can also put forward variations of the base case. However, the DfT generally awards franchises on the base case specification and only thereafter considers whether the winner's proposed variations would be desirable. TOCs preparing franchise bids each approach the ROSCOs or other lessors to reach conditional agreements for leasing the rolling stock they will require; these are finalized once the preferred bidder is selected. Rolling stock leases are typically for the length of the franchise although there are shorter-term leases.[37]

This has gone even further in recent years, most particularly, as explained in more detail in section 3, below, due to the direct procurement of major rolling stock orders – such as those for the InterCity Express Programme (IEP), Thameslink and Crossrail. This involves the setting up of new 'mini-ROSCOs' to build and then lease out the rolling stock for these specific projects. The process was

[36] "UK train procurement moves onto a different track", *Local Transport Today*, LTT 659, 31 October 2014

[37] CC, *Rolling Stock Leasing market investigation*, April 2009, paras 7&9

summarised in the 2008 procurement notice and project summary and overview for the Thameslink contract:

> The Department is initiating the process of procuring train provision and associated services for, and on behalf of the train operating company operating the Thameslink/GN franchise (the 'TOC') and the advertised contract is likely to be entered into by the TOC. The procurement uses the negotiated procedure to select a party which will supply and maintain the fleet of new rolling stock. The Department intends that the chosen bidder will be required to arrange the finance necessary for the acquisition and ownership of the rolling stock. The ITT would therefore require bidders to submit bids covering the supply and maintenance of the new rolling stock, together with arranging the necessary finance.[38]

Basically, what this means is that the winning bidder establishes a Special Purpose Company (SPC), which includes investment from external equity and the manufacturers. It is this SPC that then raises the funds required to build and maintain the stock. In effect, it is a mini-ROSCO: the SPC owns the rolling stock and leases it directly to whoever is the winning bidder for the relevant franchise. The Department's role is to ensure that the rolling stock gets built (i.e. it puts out the procurement) and then it guarantees that the stock will be leased by a TOC over a certain period.[39]

John Helm argued that in terms of size and complexity these contracts "dwarf everything that has gone before, and they provide the Government with the pretext to intervene in the market in a way that was never contemplated at the time of privatisation". Although the DfT sees these sorts of procurement as the exception rather than the rule, Helm stated that "the size of these orders alone will substantially reduce the market share of the leasing market currently enjoyed by the three ROSCOs and will undoubtedly change it in the long term".[40]

The other significant feature of how rolling stock is managed is 'cascading': this is the means by which trains are reallocated around the network, so that older trains can be phased out as new capacity allows other stock to 'trickle down'. This is not always straightforward.

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38 DfT, *OJEU procurement notice for Thameslink*, April 2008; see also: DfT, *Thameslink Rolling Stock Project Summary and Overview*, April 2008, section 3
39 this is permitted under section 54 of the *Railways Act 1993*, as amended
40 op cit., "UK train procurement moves onto a different track"

# 4. Major rolling stock procurement programmes

## 4.1 InterCity Express Programme (IEP)

The InterCity Express Programme (IEP) is intended to bring faster services and additional capacity to major UK cities. On the **Great Western Main Line** it will improve services between London, Reading, Bristol, Cardiff and Swansea, Along the **East Coast Main Line**, it will improve services between London, Leeds, Newcastle and Edinburgh. This will mean 40% more seats into London Paddington and 28% more seats into Kings Cross during the morning peak.

The first IEP units to be built will be introduced on the Great Western Main Line from 2017 and on the East Coast Main Line from 2018.[41]

In July 2007 the Labour Government published a rail White Paper, which stated that it would fund an additional 1,300 new carriages, over 300 of which would "address the rapid growth in demand seen in cities such as Birmingham, Cardiff, Leeds and Manchester" and "enable the railway to accommodate a further seven years of growth and will start to tackle crowding, bringing improvement to some of the busiest services".[42] The rolling stock plan, published in 2008, provided more information:

> The IEP base case introduces approximately 90 full train length equivalent diagrams from 2013 to 2017. There are options for a further approximately 50 full train length equivalent diagrams for introduction between 2014 and 2018 … The winning bidder will be responsible for design, manufacturing, financing, long-term maintenance plus operational reliability and availability.[43]

The two bidding consortia for the IEP contract were:

- Express Rail Alliance (Bombardier Transportation, Siemens, Angel Trains and Babcock & Brown)
- Agility Trains Ltd. (Hitachi (Japan) Ltd, Barclays Private Equity and John Laing Projects and Developments).[44]

In February 2009 the then Secretary of State for Transport, Geoff Hoon, announced that Agility Trains had been selected as the preferred bidder for the £7.5 billion contract. At that time the first of the new trains was expected to enter service on the East Coast Main Line in 2013.[45]

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[41] DfT, *2010 to 2015 government policy: rail network*, Appendix 3 [archived 22 April 2017]
[42] DfT, *Delivering a Sustainable Railway*, Cm 7176, 24 July 2007, p10
[43] DfT, *Rolling stock plan*, 30 January 2008, para 11
[44] DfT, *Change to IEP short listed bidders*, 26 June 2008
[45] DfT press notice, "Passengers and economy to benefit from biggest investment in trains for a generation", 12 February 2009

Although the Government described Agility Trains as a "British-led consortium", the main partner is Hitachi and most of the press comment on the announcement described the consortium as 'Japanese-led'.[46] In connection with this, the unions raised questions about whether the trains would be built in the UK or just assembled here.[47] When these concerns were raised in the Commons Mr Hoon, said that he anticipated that "something in the order of 2,500 new jobs will be created" and that "jobs in the supply chain—the estimate is up to 10,000 jobs—will be protected and safeguarded, as they support the manufacture".[48]

In the event, the Labour Government's July 2009 announcement on rail electrification in had a significant impact on this programme,[49] and in February 2010 it announced that it would not proceed with negotiations on the contract for the IEP programme before the 2010 General Election because of the time frame and the costs involved. The Secretary of State also asked Sir Andrew Foster, former controller of the Audit Commission, to provide "an independent assessment of the value for money of the programme and the credibility and the value for money of any alternatives which meet the programme's objectives".[50]

In July 2010 the then Secretary of State for Transport in the new Conservative-led Coalition Government, Philip Hammond, said that a decision on the future of the IEP would be made in October. He also outlined the broad conclusions of the Foster report that the IEP proposition was "positive and attractive" in a number of ways and that it had exceeded the Department's value for money thresholds. However, he also expressed some doubts over the technical feasibility of the new bi-mode trains and stated that the value for money had declined over time.[51] Mr Hammond indicated that the Government would use the period until the spending review announcement in October to give further consideration to the alternatives to IEP.[52]

On 1 March 2011 Mr Hammond announced the Government's intention to resume the IEP procurement and proceed with Agility Trains as the preferred bidder. He also said that Hitachi had said it would locate its European train manufacturing and assembly centre at Newton Aycliffe in County Durham, creating "at least 500 direct permanent jobs, as well as hundreds of temporary construction jobs".[53]

In July 2012 the then Secretary of State, Justine Greening, announced financial close for the Great Western elements of IEP, and commercial close for the East Coast elements. She indicated that the contract would create 900 jobs and secure "thousands more". The contract, worth

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[46] see, e.g.: "Britain's £7.5bn train order lost to Japan's Hitachi", *The Times*, 13 February 2009
[47] RMT press notice, "RMT seeks answers on rolling-stock contract", 12 February 2009
[48] HC Deb 12 February 2009, c1535
[49] DfT, *Britain's Transport Infrastructure: Rail Electrification*, July 2009, paras 40-42 and HC Deb 26 October 2009, c13W
[50] HC Deb 26 February 2010, c92WS
[51] DfT, *Review of the Intercity Express Programme by Sir Andrew Foster*, 6 July 2010, pp3-8
[52] HC Deb 6 July 2010, WS
[53] HC Deb 1 March 2011, cc185-186

£4.5 billion, would see 596 railway carriages (92 complete trains) built at Newton Aycliffe. She also said that Hitachi would construct maintenance depots in Bristol, Swansea, west London and Doncaster, and upgrade existing maintenance depots.[54]

In July 2013 the then Secretary of State for Transport, Patrick McLoughlin, announced that the Government had decided to exercise an option to purchase a further 270 vehicles (class 800 series nine-car electric trains) to replace the electric Intercity 225 fleet on the East Coast Main Line. The cost was £1.2 billion.[55]

In July 2014 the National Audit Office (NAO) published a report on the procurement of the IEP and Thameslink (see below) rolling stock. It concluded that both procurements had achieved levels of competition equivalent to or better than other rolling stock procurements since 2000. However, in the case of IEP, the Department had "decided to proceed with a revised bid without rerunning the competition. The Department view is that no other manufacturer could offer better value for money but this remains untested". It also called attention to the decision to electrify the Great Western Main Line, which meant that diesel trains were no longer needed. It stated that while the IEP was "designed to be flexible enough to accommodate this change of direction", it recommended that "the Department in future major procurements produce a detailed, integrated plan to bring together infrastructure, rolling stock and franchising strategy".[56]

Hitachi opened its new facility at Newton Aycliffe in September 2015.[57]

Her Majesty the Queen travelled aboard a Great Western Railway IEP Class 800 on 13 June 2017, to commemorate the 175th anniversary of the first rail journey made by a monarch. The Queen travelled from Slough to London Paddington aboard 800003, before then naming it *Queen Elizabeth II*.[58]

[54] DfT press notice, "£4.5 billion investment in new trains creates new jobs", 25 July 2012; the technical specification and contractual documentation is available at: DfT, *Intercity Express Programme technical specification and contracts*, 19 February 2013
[55] HC Deb 18 July 2013, c132WS; and: DfT press notice, "Government gives green light for more state-of-the-art intercity trains", 18 July 2013; more details were released in April 2014, see: DfT press notice, "Government confirms £2.7 billion deal to build new state-of-the-art trains", 16 April 2014
[56] NAO, *Procuring new trains*, 9 July 2014 [quotes from the landing page; full report available from the same link]
[57] DfT press notice, "Train manufacturing officially returns to the North East", 3 September 2015
[58] "IEP train keeps royal appointment for anniversary special", *RAIL Magazine*, 13 June 2017

## 4.2 Thameslink

The Thameslink Programme is intended to increase capacity on one of Europe's busiest stretches of railway. A new fleet of 115 high capacity trains was procured. New depots to house and service these trains were built at Hornsey in north London and Three Bridges in West Sussex. The first new trains entered passenger service between London Bridge and Brighton in 2016.[59]

The rolling stock are only one element of a wider programme, including infrastructure improvements. Information on these other matters can be found in HC Library briefing paper SN1537.

In July 2007 the Labour Government published a rail White Paper, which stated that it would take forward the much-delayed Thameslink programme, with a projected total cost of £5.5 billion, and a planned completion date of 2015.[60] Its January 2008 rolling stock plan stated that the new rolling stock would consist of up to 1,300 next generation Electric Multiple Units (EMUs). Once these new vehicles were introduced, it was anticipated that the existing fleet of EMUs operating the Thameslink routes could be used for cascade on to other routes to deliver additional capacity.[61]

In April 2008 the Government placed a notice in the EU Official Journal seeking expressions of interest in the programme; this was accompanied by a summary document giving details of the programme and matters of interest to bidding companies.[62] In July the Government released the details of the four shortlisted applicants: ALSTOM Transport; Bombardier Transportation UK Limited; Hitachi Europe Limited; and Siemens Transportation Systems. In November the Government published its train technical specification and Invitation to Tender (ITT) for the programme.[63] The then Railways Minister, Lord Adonis, said that the tender was "for some 1,200 new Thameslink carriages, including around 400 additional carriages on top of those being replaced".[64]

In July 2009 the Government published its rail electrification strategy. This confirmed the procurement plans for the Thameslink rolling stock programme and stated that the 'old' Thameslink stock would be moved onto the Great Western Main Line.[65] Nothing further happened before the 2010 General Election.

In November 2010 the then Secretary of State for Transport in the new Conservative-led Coalition Government, Philip Hammond, confirmed

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[59] op cit., *2010 to 2015 government policy: rail network*, Appendix 5 [archived 22 April 2017]
[60] op cit., *Delivering a Sustainable Railway*, p50
[61] op cit., *Rolling stock plan*, paras 12-16
[62] op cit., *OJEU procurement notice for Thameslink*, and: *Thameslink Rolling Stock Project Summary and Overview*
[63] all of these documents are available on the DfT archive website [archived 3 January 2009]
[64] DfT press notice, "Extra 14,500 seats due for Thameslink passengers", 27 November 2008
[65] op cit., *Britain's Transport Infrastructure: Rail Electrification*, para 45

that the Government would "fund and deliver the Thameslink programme in its entirety", but with completion of the programme delayed to 2018. He said that as part of the Thameslink programme, the Government would procure a new fleet of trains-up to 1,200 new carriages.[66]

In June 2011 the then Railways Minister, Theresa Villiers, announced that a consortium led by Siemens and Cross London Trains (comprising Siemens Project Ventures GmbH, Innisfree Ltd and 3i Infrastructure Plc) had won the contract to build the Thameslink fleet. It would "create up to 2,000 new jobs in [Siemens] UK operations and across the UK supply chain", particularly in the North East of England, and in the construction of the depots and subsequent maintenance of the new fleet of trains.[67]

Even more than the decision by the Labour Government to award the IEP contract to Hitachi, this decision proved deeply controversial. Of particular concern was the future of the Derby plant of Canadian-based Bombardier, one of the failed bidders.[68] However, much like with the IEP, the Government indicated that the decision would create jobs in other parts of the country.[69]

There were delays with the signing of the Thameslink contract with Siemens: commercial agreement was agreed in December 2012 and financial close was finally achieved in June 2013.[70]

In July 2014 the National Audit Office (NAO) published a report on the procurement of the IEP (see above) and Thameslink rolling stock. It concluded that both procurements had achieved levels of competition equivalent to or better than other rolling stock procurements since 2000. In the case of Thameslink the NAO concluded that the DfT had not considered public funding as it "decided it did not want to absorb the cost of this project at the expense of other transport priorities, and that, as a result, private finance was the only practical option given the existing industry structure".[71]

The first new train entered passenger service between London Bridge and Brighton in June 2016.[72]

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[66] HC Deb 25 November 2010, c466; and: DfT press notice, "More than 2,100 new carriages for rail travellers as Government unveils rail investment package", 29 November 2010

[67] HC Deb 16 June 2011, c86WS; and DfT press notice, "Rail passengers to benefit from 1,200 new carriages", 16 June 2011

[68] see, e.g. "Death knell for train industry as Germany wins key contract", *The Times*, 17 June 2011

[69] in fact Bombardier did end up supplying separate rolling stock to be used as part of the Thameslink, Southern & Great Northern franchise, see: DfT press notice, "New trains for Gatwick Express and Thameslink", 18 November 2014

[70] HC Deb 20 December 2012, c1048; DfT press notice, "Siemens Thameslink deal to create up to 2,000 new jobs", 27 June 2013; the principal rolling stock and depot agreements are available on the Gov.uk website, see: DfT, Thameslink rolling stock and depot agreements, 5 August 2013

[71] NAO, *Procuring new trains*, HC 531 of session 2014-15, 9 July 2014, p8

[72] Siemens press notice, "Thameslink's new train enters passenger service", 14 June 2016

## 4.3 Crossrail 1 (the 'Elizabeth Line')

Crossrail 1 is the plan to integrate the mainline railways to the east and west of London through the construction of two tunnels beneath central London from Paddington to Liverpool Street. The project will deliver a 74-mile railway; 13 miles of new tunnels under London; new, expanded or upgraded stations along the Crossrail route; and a new fleet of trains.

When the project is complete, Crossrail services will run from Maidenhead and Heathrow in the west to Shenfield and Abbey Wood in the east. Overall, it will provide a ten per cent increase in London's rail transport capacity. The Government has said that Crossrail would provide 14,000 jobs at the peak of construction and 'facilitate employment growth' of up to 30,000 jobs by 2026.

Further information on Crossrail can be found in HC Library briefing paper SN876.

In March 2011 Crossrail Ltd. announced its intention to put out an Invitation to Tender (ITT) by the end of 2011, to award the contract to build the Crossrail fleet in late 2013. The shortlist of organisations invited to tender was: Alstom Transport; Bombardier Transportation (UK) Ltd.; Construcciones y Auxiliar de Ferrocarriles SA (CAF); Hitachi Rail Europe Limited; and Siemens plc.[73]

However, following the political fallout of the decision to award the Thameslink contract to Siemens in June 2011 (see above), the Government announced a review of its public procurement practices and in August Crossrail announced that a delay to the procurement programme.[74] The then Railways Minister, Theresa Villiers stated that this delay would enable Crossrail to take account of the results of the Government's procurement review.[75]

In September 2012 the then Chief Secretary to the Treasury, Danny Alexander, announced that the Crossrail rolling stock project could be the first beneficiary of the UK Guarantees scheme. UK Guarantees, launched in July 2012, takes advantage of the Government's fiscal credibility to provide guarantees for major infrastructure projects that may struggle due to adverse credit conditions.[76]

In November 2012 the then Transport Minister, Norman Baker, said that four bidders has submitted first-round bids for the £1 billion contract – Bombardier, CAF of Spain, Hitachi and Siemens.[77] In August 2013 the Government received revised bids from Bombardier, CAF, and Hitachi.

[73] Crossrail press notice, "Crossrail confirms shortlist for rolling stock and depot facilities", 30 March 2011
[74] Crossrail press notice, "Update on Crossrail rolling stock and depot procurement", 30 August 2011
[75] HC Deb 21 October 2011, c1198W; for more information on public procurement and the outcome of the review, see HC Library note SN6029
[76] HM Treasury press notice, "Crossrail trains first to qualify for UK Guarantees", 27 September 2012
[77] HC Deb 20 November 2012, c132WH

In terms of the financing model, in March 2013 the then Transport Minister, Stephen Hammond, announced "a change in the financing approach for the Crossrail rolling stock and associated depot facilities contract". In effect, the Government agreed to the then Mayor of London's proposal to move from a financing model involving a substantial element of private sector funding, to one that would be entirely funded by the public sector.[78]

In February 2014 the Government and TfL announced that the £1 billion contract to supply, deliver and maintain 65 new trains and a depot at Old Oak Common had been awarded to Bombardier. The new trains would be manufactured and assembled at the Bombardier plant in Derby, supporting 760 UK manufacturing jobs and 80 apprenticeships.[79] After a ten day standstill, period the contracts were signed on 19 February.[80]

In September 2015 the first test train carriage rolled off the Bombardier assembly line in Derby.[81] The first train was put on the test track at Derby in August 2016.[82]

The first trains were scheduled to be introduced on the existing TfL Rail service, running from Liverpool Street (Main Line) to Shenfield in May 2017.[83] However, at time of publication they had only been running in their testing phase and are now likely to enter service sometime in June 2017.[84]

Images of the rolling stock can be found via the TfL Flickr account.

## 4.4 High Speed 2 (HS2)

HS2 is a proposed infrastructure project to build a high-speed rail line from London to Manchester and Leeds, via Birmingham, to begin operation in 2026 and be completed in 2033. It will be delivered in three phases. Phase 1, which has already been legislated for, will go from London Euston to Birmingham Curzon Street and Lichfield with intermediate stations in West London (at old Oak Common) and at Birmingham Airport. In total, the scheme is estimated to cost £55.7 billion in 2015 prices (including rolling stock).

The Government is moving ahead with planning for the next phase of the scheme – construction and operation. This includes tendering for and awarding contracts, including the future 'West Coast Partnership' franchise, the winner of which will operate the first high speed services on the HS2 line from 2026.

Further information on HS2 Phase 1 can be found in HC Library briefing paper SN316.

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78 HC Deb 1 March 2013, cc49-50WS
79 DfT press notice, "Crossrail rolling stock and depot contract to be awarded to Bombardier", 6 February 2014
80 TfL press notice, "Contract signed for Bombardier to deliver Crossrail rolling stock and depot", 19 February 2014
81 TfL press notice, "Crossrail trains take shape", 11 September 2015
82 TfL press notice, "First Elizabeth line train takes to the test track", 1 August 2016
83 Crossrail Ltd., *Moving Ahead: Crossrail Project Update,* January 2017, p1
84 "Crossrail £1 billion commuter train fleet running late", *ITV News*, 1 June 2017

In January 2017 the Secretary of State for Transport, Chris Grayling, launched the process to find a company to design, build and maintain a fleet for Phase 1. The contract for up to 60 high specification trains capable of running at up to 225mph is worth £2.75 billion. The successful bidder will maintain the fleet from the dedicated rolling stock depot planned for Washwood Heath in Birmingham. [85]

There was an industry event on 27 March where interested companies could find out more about the bidding requirements and process. On 20 April 2017, HS2 Ltd. commenced the formal procurement process with the launch of the pre-qualification questionnaire (PQQ) pack which will provide further details of the specifications for the trains. Bidders will be shortlisted following the PQQ, and the formal invitations to tender issued in 2018. The contract award will be announced at the end of 2019.[86]

Relevant documentation is available on the HS2 Ltd. website.

[85] DfT press notice, "Search underway for company to build HS2 trains in £2.75 billion government rail investment", 20 January 2017
[86] HS2 Ltd. press notice, "HS2 opens procurement for world class train manufacturer", 20 April 2017

# 5. Government policy, 1997-

## 5.1 Labour Government, 1997-2010

In December 2003 the Strategic Rail Authority (SRA)[87] published its rolling stock strategy.[88] The report reaffirmed the leading role of the private sector in the rolling stock market. It concluded that the SRA should continue to support and facilitate the benefits of private sector investment, commercial decision making and private risk-taking, by involving itself in rolling stock markets in a "limited, clear and consistent way". [89]

In February 2004 the National Audit Office (NAO) produced a report on the state of Britain's rolling stock. The report concluded that although new trains were bringing significant benefits to passengers, most were late entering service.[90] It also stated that new trains were not bringing all of the passenger benefits that they should (in terms of layout, accessibility etc.) and the TOCs that were running new trains experienced reliability problems (e.g. mechanical failure, on-train computers and air conditioning).[91]

In 2005 Sir Rod Eddington was charged by the Treasury and the Department for Transport with looking into the relationship between transport and the economy. He published his report in December 2006. It considered the benefits of increasing capacity through new rolling stock and concluded that to do so would represent a relatively high return for a reasonable investment – and certainly for less investment than wholesale upgrades to the infrastructure.[92]

In July 2007 the Labour Government published a rail White Paper which included its high level output specification (HLOS); and was accompanied by the *Rail Technical Strategy*.[93] The White Paper set out a range of options to increase capacity and stated that a 'one size fits all' solution would be inappropriate.[94] This was followed in January 2008 by a rolling stock plan, which provided additional detail about the deployment of new rolling stock.[95] In July 2008 the Transport Committee published a report on the 2007 White Paper. This raised concerns about both the procurement and deployment of rolling stock,

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87 an independent body the Labour Government set up as a 'guiding mind' for the rail industry, which was responsible for franchising (amongst other things); it only lasted for five years and was abolished in 2005, for more information see HC Library briefing paper SN1344

88 SRA, *Rolling Stock Strategy*, December 2003

89 SRA press notice, "*Future of rolling stock lies in the private sector*", 19 December 2003

90 NAO press notice, "Strategic rail authority: improving passenger service through new trains", 4 February 2004

91 NAO, *Strategic rail authority: improving passenger service through new trains*, HC 263 of session 2003-04, 4 February 2004, paras 4-6

92 DfT, *The Eddington Transport Study*, December 2006, Vol. 3, para 4.166

93 all of the relevant documentation can be found on the Department for Transport's website [archived 3 January 2009]

94 op cit., *Delivering a Sustainable Railway*, para 4.9

95 op cit., *Rolling stock plan*

looking ahead to the report into the rolling stock market by the competition authorities, expected in 2009.[96]

### Competition inquiry into the rolling stock leasing market, 2006-09

In June 2006 the Department for Transport made a complaint to the Office of Rail Regulation (ORR) under the *Enterprise Act 2002*. The complaint alleged that the features of the market for the provision of rolling stock to TOCs 'prevented, restricted, or distorted' competition. The ORR consequently announced that it would conduct a market study to see whether there were grounds to suspect that the rolling stock market was not working well and to determine whether there was sufficient evidence to make a referral to the Competition Commission (CC).[97] The ORR's findings were published in November 2006. It concluded that there were grounds for referral.[98] This was subsequently made on 26 April 2007.[99]

On 7 April 2009 the CC published its final report. It concluded that competition in the market for the leasing of rolling stock was restricted by the limited number of alternative fleets available to TOCs when bidding for rail passenger franchises. The CC identified several factors which in combination had restricted the choice of rolling stock available for lease at the point franchises were let, including: technical and operational factors which limited interoperability; costs and risks in switching rolling stock or introducing new rolling stock; and aspects of the way in which the franchising system operated. The CC took the view that TOCs had in many cases little incentive or ability to negotiate with ROSCOs and ROSCOs in turn had little incentive to compete with each other.

It recommended three main changes to the rolling stock market:

- longer franchise terms;
- assessing the benefits of alternative new or used rolling stock proposals beyond the franchise term and across other franchises when evaluating franchise bids; and
- ensuring that franchise invitations to tender (ITTs) were specified in such a way that franchise bidders were allowed a choice of rolling stock.[100]

The ORR welcomed the report and urged the Department for Transport to "seriously consider the CC's recommendations".[101] The Labour Government's response was published in July 2009. It was not overly enthusiastic about the CC's recommendations and was disappointed that the CC did not think that some form of market intervention (price controls) could benefit the market.[102]

The Government indicated that it would publish a new rolling stock plan in autumn 2009.[103] For various reasons, nothing was published before the 2010 General Election. It did, however, publish a paper on

96 Transport Committee, *Delivering a sustainable railway: a 30-year strategy for the railways?* (tenth report of session 2007-08), HC 219, 21 July 2008, paras 111&113

97 ORR press notice, "Office of Rail Regulation receives complaint regarding the provision of rolling stock", 28 June 2006

98 ORR, *The leasing of rolling stock for franchised passenger services*, 29 November 2006, p1

99 ORR press notice, "Leasing of rolling stock for franchised passenger services", 26 April 2007

100 CC press notice, "Rolling stock leasing market investigation: final report", 7 April 2009

101 ORR press notice, "Rolling stock leasing market investigation", 7 April 2009

102 BIS, *Government response to the Competition Commission's report, "Rolling Stock Leasing market investigation*, July 2009, paras 31-35; five years later the regulator sought views on the effectiveness of the Rolling Stock Leasing Market Investigation Order 2009, issued by the competition authorities after their injury, see: ORR, *Review of the Rolling Stock Leasing Market Investigation Order 2009*, 19 December 2014

103 op cit., *Britain's Transport Infrastructure: Rail Electrification*, para 7

reforming rail franchising. This indicated that the Government had taken note of some of the criticisms of the franchising process highlighted by the competition authorities and that it intended to issue longer franchises in future (of at least ten years). This would have a number of benefits, one of which would be that a longer planning period would improve financial incentives for franchisees to procure new rolling stock.[104]

## 5.2 Conservatives in Government since 2010

The Conservative-led Coalition Government which took office in May 2010 stated very early on that it intended to reappraise and reassess all rolling stock procurement proposals by the previous government for affordability.[105] It announced a procurement pause for financial year 2010-11 to "assist the Department in making its contribution to the Government's in-year savings programme".[106] In early 2011 the Government stated its intention to deliver more than 2,100 new rail carriages to the network by May 2019 (an increase of 1,850 net); and that the Department would negotiate with train operators to provide more and/or better rolling stock on a number of franchises.[107]

Separately, there was a great deal of controversy over the award of the Thameslink rolling stock contract and delays to the timetable for procuring the Crossrail rolling stock project (see section 4, above).

The Government also consulted on franchise reform,[108] and concluded in January 2011, that it would opt for longer franchises in the future to incentivise investment, including in new rolling stock. It would also guarantee an "enhanced residual value mechanism that will reward operators for investment with a payback period longer than their franchise term". This would involve guaranteeing a value for those assets (such as rolling stock) at the end of the franchise.[109]

There were reports in the 2010 Parliament that the Government and industry were considering whether to allow TOCs to purchase new trains directly rather than leasing them from the ROSCOs.[110] The Association of Train Operating Companies (now the Rail Delivery Group) had called for this sort of liberalisation for a number of years.[111] There have been no further developments in this area.

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104 DfT, *The Future of Rail Franchising*, January 2010, p10
105 HC Deb 7 June 2010, c39W
106 HC Deb 3 June 2010, c71W and HC Deb 7 June 2010, c37W
107 HC Deb 11 January 2011, c238W; deals were reached with a number of franchises by the end of 2011, see: DfT press notices, "Additional seats for Leeds commuters", 13 April 2011; "8800 extra spaces for busy trains on key routes", 10 August 2011; "West Coast passengers in line for 28,000 extra seats as franchise extension signed", 27 October 2011; "Thames Valley & West Country Rail passengers in line for extra seats boost", 22 November 2011; "New platform and 60 extra carriages for Waterloo commuters", 23 December 2011; and "Southern carriages announcement", 28 December 2011
108 DfT, *Reforming Rail Franchising*, July 2010, para 2.12
109 DfT, *Reforming Rail Franchising: Government response to consultation and policy statement*, January 2011, para 9.11
110 "DfT plans for operators to fund rolling stock", *Passenger Transport*, 19 June 2013
111 ATOC, *Rolling stock and value for money: An ATOC discussion paper*, December 2011, pp9-11

In 2015 and 2016 the Department for Transport published rolling stock 'perspectives', giving an overview of their assessment of the sector and future aspirations.[112] The 2016 report stated that the Government wanted to see "TOCs, ROSCOs, manufacturers and suppliers doing much more in the years ahead, investing for themselves, taking their own risk-based decisions on procuring the train capacity we need now and in the future".[113] It explained that, in practice, where a change in fleet is proposed, the Department and the TOCs:

> … look for improvements in all areas including:
>
> - Capacity, in terms of vehicle interiors, train lengths, and train frequency;
> - Comfort, including making it easy to stow luggage, cycles and bulky items;
> - Technology and innovation, which sometimes needs to be balanced with the ability for new trains to couple with older trains allowing them to be deployed across different routes more easily;
> - Operation, including making it easier to get on and off trains at busy stations and the ability to carry out train maintenance more quickly;
> - Environmental impact, typically by making trains lighter, less noisy in operation, easier to recycle and eliminating the discharge of toilet waste onto the tracks (which about 25% of the fleet still do);
> - Provision for those with reduced mobility, and
> - Cost effectiveness, particularly in the way the fleet is timetabled and the way in which maintenance is carried out.[114]

It stated that, as a result, rolling stock changes "can be quite complicated".[115] Further, where new trains are proposed, the Department believed that "more emphasis might be given to 'future proofing' them, to make it easier to move them between routes and so that they increasingly have common features".[116]

## Industry views

In February 2013 Network Rail published the industry's first long term rolling stock strategy. It has been updated every years since and is now published by the Rail Delivery Group. The key findings of the 2017 strategy are summarised in section 1, above. Overall, it found that orders for new rail rolling stock are at a "historically high level" and that Britain's train fleet is "increasing faster than at any time in recent decades".[117]

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112 the 2015 report is available at: DfT, *Rolling stock perspective: moving Britain ahead*, 7 July 2015

113 DfT, *Rolling Stock Perspective Second edition: Moving Britain Ahead*, 18 May 2016, p8

114 ibid., p12

115 ibid., p13

116 ibid., p13

117 op cit., "Train fleet growth fastest for decades"

The industry is also looking at the ways it can leverage new technology to improve rolling stock.[118] There is also a focus on future sustainability, such as running trains on batteries and hydrogen power.[119]

[118] RDG press notice, "Rail companies set out blueprint for age of the digital train", 7 February 2017

[119] see, e.g. "Run trains on batteries, says Network Rail boss", T*he Times*, 25 March 2017; and Alstom press notice, "Alstom's hydrogen train Coradia iLint first successful run at 80 km/h", 14 March 2017

**BRIEFING PAPER**
Number CBP3146
15 June 2017