3.5 WEST COAST MAINLINE

In this section we will describe the story of another large infrastructure project: the West Coast Mainline (WCML). This brings us also to a different institutional setting since the project is located in the United Kingdom. The information presented in this chapter is partly drawn from the interviews held and report written for the EU funded NETLIPSE project. The information and analysis was also used as a basic for chapter 4. 'Appearances and Sources of Process Dynamics; the Case of Infrastructure Development in the UK and The Netherlands' in the book Managing Complex Governance Systems (Teisman, 2009).

In the Dutch cases we have more or less centred on the elements of complexity. In the Swiss project we have added some first insights into the management of complexity as well. We will continue to do so in the case of the WCML where we will

show how major changes in the institutional context along with major differences in management have lead to completely different results. But we will start of with presenting the facts and figures of this highly dynamic project.

3.5.1 Project Facts & Figures and stakeholder constellation

Project Purpose and Project Definition

This section represents the status of the project as at the start of 2007.

The West Coast Main Line (WCML) is Europe's busiest mixed-use railway (see figure 3.23). It links London with major urban areas in the northwest. More than 2,000 trains a day use the line, transporting both passengers and freight. The train services consist of long distance, regional and local (short distance) commuter trains, along with substantial freight traffic. The latter represents around 40% of the total rail freight traffic movements in the UK. The WCML relates to the 650 km main line between London Euston and Glasgow, which also serves the West Midlands (Birmingham), the North West (including Manchester & Liverpool) and North Wales (with connections to & from Ireland). Presently, there are some 22 million passenger-train km a year and 6 million freight-train km a year.

The objectives of the WCML project have shifted several times. The current objectives (2007) were formulated in the WCML Strategy report of June 2003:

1 The upgrade had not only to address the major backlog of maintenance and renewals on the route, but should also ensure value for money;
2 The upgrade should also establish sustainable and cost effective maintenance regimes;
3 The upgrade should provide additional capacity for anticipated growth in passenger and freight business over the next 20-30 years, with substantially faster and more competitive journey times between major cities served by the West Coast route;
4 The upgrade should also provide an improved level of performance, safety and reliability which will, in turn, help the railway regain lost market share and increase the role it can play in the national and regional economies;
5 Finally the upgrade should achieve above the objectives on a 'railway in use' allowing for the continuation of freight and passenger services during the rebuilding and enhancement work.

In meeting the above objectives, the project will deliver a modernised and sustainable West Coast railway. The success of the project will also depend on key outputs being achieved: for example, a 125 mile/h route between London and the West Midlands, Manchester, Liverpool, the North West, North Wales and Scotland, exploiting the capability of tilting trains to deliver much faster journey times. There will be capacity for 80% more long distance passenger trains than today and for up to 60-70% more freight paths than at present.

Fastest journey times to/ from London Euston:	Pre-Project	May 2006	Post-Project (Expected, Dec 2008)	Reduction in journey time (Pre-/ Post-Project)
Birmingham New St.	1h 39m	1h 21m	1h 18m	-21,2%
Manchester	n/a	2h 05m	1h 59m	-
Liverpool	n/a	2h 09m	2h 06m	-
Preston	2h 25m	2h 10m	2h 07m	-12,4%
Glasgow	5h 06m	4h 24m	4h 15m	-16,7%
Number of fast line train services to/from London per hour:				
Peak time	7	11	13	
Off peak	5	6,5	11	

Table 3.2: WCML Frequency

Figure 3.23: West Coast Mainline

Facts and Figures

Renewal elements:

- Track works: 780 miles of track (out of a total of 1,660)
- Bridges: 30 spans
- Number of stations: 20 intercity & 30 regional/ local

Finance

The first calculations of the costs of the upgrade made by Railtrack (RT) went no higher than £ 3 bn. More realistic estimations at the beginning of the 2000's indicated that a renewed and modernised line might well cost in the region of some £13 bn. plus. Government, as part of an agreement, approved the project budget based on the content of the June 2003 WCML Strategy report. The budget was set at £9,9 bn. (2002/03 price level). Cost control has been achieved and the project has been kept well within this limit. By joint assessment of cost reduction opportunities, value maximisation and scope control, the current baseline amounts to £8,3 bn. (2005/06 price level).

Although the UK rail industry has been privatised since 1994, it is still reliant on substantial public subsidy for both capital investment and ongoing revenue support.

The funding flows according to figure 3.24.

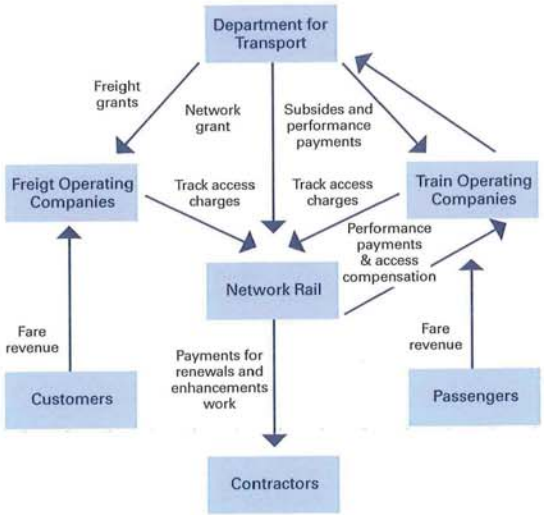

Figure 3.24: Funding flows for the West Coast Programme

Planning

Present stage of project (1 January 2007)	Approximately 2/3 completed (final 1/3 completed by the end of 2008)
Time of decision to build (go/no go decision)	Spring 2002 (present project)
Time of start of construction works	2002 (earlier work started in 1998)
Time of delivery	December 2008 (complete project)
Time of begin operations	Staged between 2004 – 2008: Sept 2004: London Euston – Crewe Dec 2005: London Euston – Glasgow Dec 2008: All

Contracting

Network Rail has a formal procurement and contracting strategy:

- EU and UK regulations are the basis.
- The preferred contracting option is to enter a series of contracts split by discipline with the contract deliverers, rather than to main contractors – who then sub contract the majority of work and in effect act as Construction Managers.
- The preferred forms of contract will be either fixed price, lump sum or 'bids of quality with re-measure'.
- Due to the nature and present time scales each contract will need to be reviewed independently to determine the form of contract.

Organisation

Given the high profile nature of the project, the importance of the route and the high level of expenditure, the government decided in October 2001 to take the strategic lead for the project through to completion, with Network Rail being responsible for the delivery of the infrastructural aspects.

The governance of the project is managed through a Project Board. See figure 3.25 for the project's governance arrangements in December 2002. This Board is made up of Network Rail, The Strategic Railway Authority (SRA), and Office of Rail Regulation (ORR) Board Members and Network Rail and SRA West Coast Directors, dealing with strategic decision-making. Reporting to this Board is a Project Development Group (Network Rail, SRA & ORR) dealing with detailed decision-making on delivery, costs, resources and operational issues and a WCML Joint Board (train and freight operators) considering operational performance and maintenance issues. Reporting to the Development Group are Network Rail's and SRA's West Coast Teams.

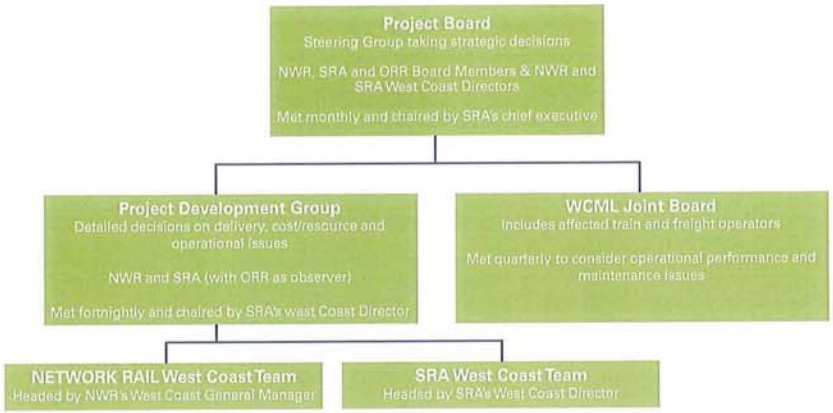

Figure 3.25: WCML project's governance arrangements (December 2002)

Stakeholders: internal and external

The first group of internal stakeholders are those parties within the rail industry, or those directly associated with it, that play a direct role in the delivery of the project and are directly affected by its outputs. These parties comprise the following, see next table.

Internal Stakeholder:	Responsibility:
• Government (represented by the SRA prior to Summer 2005, DfT after summer 2005)	Project strategy definition.
• Network Rail, a not-for-profit organisation	Infrastructure works delivery.
• Passenger & freight train operators	Train service delivery (timetables), revenue generation and customer service.
• Office of Rail Regulation (ORR) (prior to July 2004: Rail Regulator)	Protection of the interests of users and the promotion of competition, efficiency and economy in the provision of railway services.

Each of these parties has a major responsibility in the project. The project was presented as "Britain's railways working together".

External stakeholders are the bodies that are indirectly affected by the outputs of the project; that can influence funding or support for the project; and, in some cases, which have a statutory right to be consulted in the process of development of the project. In total there are over 700 organisations identified and the Department for Transport and Rail (DfT) contacted each of them individually.

External stakeholders are separated into 2 groups: a group which the West Coast Team has to consult from a statutory standpoint, which like the Passenger Transport Authorities and Executives have responsibility for the delivery of regional transport services in the major provincial cities. The West Coast Team does not have to consult the second group from a statutory responsibility (none of the bodies in the second group has a 'veto' over the content or delivery of the work being undertaken, except in for few local planning issues). However, consultation of this group of stakeholders is highly desirable, because it is vital to ensure that their local knowledge is aligned with the overall direction of the project. Many of the bodies represent areas that would benefit by the improved services or would generate business to support the investment.

In order both to inform and to seek agreement to the strategy underpinning the revised project scope and outputs, a consultation document was published in October 2002. This was provided to all parties in both the first and second groups. Details of this activity and the results of the consultation exercise are contained in the final WCML Strategy report published in June 2003.

There continues to be an ongoing dialogue with external stakeholders, to keep them abreast of developments at the side of the WCML, but also to consult with them over the more detailed aspects of the project as they emerge, and to receive early indications about developments in the stakeholder context that could be useful or prejudicial to the process of upgrading. To facilitate the link with such bodies, a number are grouped together. An organisation entitled 'West Coast Rail 250' represents many of the local authorities along the line of route and also has a Parliamentary branch enabling a direct dialogue with Members of Parliament. DfT, along with Network Rail and the train operators, continues to meet this body on a regular (bi-monthly) basis.

3.5.2 Storyline West Coast Mainline

Built in stages over three decades from the 1830s. The description of the reconstruction of the line starts in 1984.

In the case of the West Coast Mainline there is a variety of crucial events. We can distinguish three institutional periods starting and ending with main events. In this section we summarise the key elements in which we illustrate the complexity and how it was managed.

Round 1 Locked in a non-innovative British Rail *1984 - 1990*

British Railways was created in 1948 out of ailing private regional rail companies which were bankrupt following the stresses of the Second World War, British Rail was for a long period the manager of the West Coast Mainline. Although the route was extensively renewed and upgraded as part of major electrification investment schemes, work carried out since has been limited. Although British Rail recognised that further renewal work was necessary and contemplated options during the 1980s, the route had not seen any significant renewal since its electrification in the 1960s and 1970s. This period can be described as 'the public monopoly period'. British Rail was in charge, had a lot of 'tacit' knowledge of what should be done with the West Coast Main Line, but did not have the ability to put this into action. The main objective seemed to be 'preventing the system from breaking down'. Money was put where the biggest impact on reducing failures with severe effects were expected. The route needed renewal in the 1990s because, with its infrastructure ageing, train service reliability was deteriorating, leading to a fall in demand. Plans for upgrading the line were made, but were never implemented.

This, combined with the overall global wave of privatising and market orientation, led to the erosion of support for the nationalised British Rail and stimulated people to look for other (and therefore private) approaches. In the mid 1990s the breakup and privatisation of British Rail was completed. This ended a period of stagnation and technical degradation on the WCML.

Round 2 Chaos in the private domain: The story of broken dreams *1990 - 2001*

The Railway Act 1993, introduced by John Major's Conservative government, started the privatisation of British Rail. British Rail was broken up into over 100 separate companies and sold off. By doing so the Railway Act 1993 created a complex structure for the rail industry.

Railtrack (RT) took over ownership for all track, signalling and stations and was hastily privatised in 1997. In 1996, the Passenger Upgrade 1 (PUG1) contract was agreed between Railtrack (RT) and the Office of Passenger Rail Franchising (OPRAF) to modernise the rail infrastructure with existing technologies. RT then owned and was responsible for operating, maintaining, renewing and developing the rail infrastructure. Virgin Rail Group (VRG) a joint-venture of the Virgin Group and the Stagecoach Group won the franchise to operate long-distance passenger trains on the WCML in 1997 until 2012.

However, Virgin Rail Group (VRG) wanted to go further than PUG1. It agreed with RT a renewal and upgrade programme known as Passenger Upgrade 2 (PUG2) that allowed higher speed trains with a higher frequency. VRG took the view that significant increases in capacity would be needed for its franchise. After being approved by OPRAF and the Rail Regulator, PUG 2 was signed in 1998.

RT and VRG were confronted with the worn-out line and started enthusiastically with plans for high quality upgrading. Their plan was reliant on new technology, such as moving block signalling to increase capacity and train speeds at low cost. The plan drawn up by Railtrack estimated that the upgrade would cost £ 2 bn. and would by ready by 2005 (in two phases: 2002 and 2005). The ambitions were high: the upgrade would cut journey times from London to Birmingham from 1hr 40 minutes to 1hr. This would be achieved through increasing the line speed to 225 km/h. VRG ordered a fleet of new tilting trains that would be capable of running at 140 mile/hr, with delivery planned for May 2002.

Both the private newcomers, Railtrack and Virgin, were anxious to show how an innovative, quick and smart private sector could deal with the neglected system. They focused mainly on financial return, delivered through innovation and market expansion. These objectives were at the core of the contracts between RT and Virgin to upgrade the line – the core purpose was to make money, rather than deliver transport improvements. The two private parties however seriously underestimated the restrictions that came with the existing (lack of) quality on the line.

The programme ran into difficulties. RT's estimates of the expected final cost increased rapidly and in December 1999 Railtrack decided not to use moving block signalling, as the technology was not sufficiently mature. Other factors, including West Coast contract liabilities, created a financial crisis for RT which resulted in October 2001 in the government putting RT into Railway Administration. In effect Railtrack was bankrupt. VRG's procurement of its new tilting trains rolling stock also fell behind schedule. With hindsight the plan was doomed from the beginning, since Railtrack had not assessed the technical viability of 'moving block signalling' prior to promising the speed increase to Virgin and the Government. Moving block signalling had never been implemented on such a complex line as WCML before. It soon became apparent to experts that the technology was not mature enough to be used on the line. The bankruptcy of RT in 2001 brought a reappraisal of the plans whilst the original costs of the upgrade continued to soar. The revised estimates indicated that the line upgrade would cost a total of £ 13 bn. and would be ready by 2008 with a maximum speed of 200 km/h for tilting trains. The ever-present 'phantom' of cost overrun and delay in infrastructure was beginning to re-emerge.

We have referred to the PUG2 contract. In interviews, we heard a firmly negative judgement about the contracting by Railtrack to Virgin in PUG2. Two quotes taken from the interviews:

> *"Railtrack was a bank, not a railway company."*
> *"Contractors had basically Railtrack's cheque book."*
> Manager West Coast Mainline, interview 2006.

Due to ignorance and lack of local knowledge of the rail system the two parties managed to make highly ambitious, but unrealistic (in retrospect) plans and contracts,

hoping for the big money prize. In the process they created enormous cost overruns and delay, contributing significantly to the fall of RT and the need for a new project definition by public authorities. A further dramatic moment occurred with the railway accident at Hatfield in 2000, where the lack of competent asset management led to the derailment of an East Coast High Speed Train. In order to deal with the perceived risks, RT imposed over 1200 emergency speed restrictions on its network, creating enormous delays and severe losses for the service providers. This was a classic moment of crisis. The lack of asset knowledge in RT became fully apparent to the nation.

Secretary of State for Transport, John Prescott decided that SRA, a non-departmental public body responsible for providing strategic direction for the British rail industry would impose a solution for this crisis. This means that political intervention led to the return of Railtrack and its assets into the public sector, as hastily as it was previously handed over to the private sector.

Virgin renegotiated their contracts with the government from high risk, high return to low risk, low return.

Round 3 Reinventing public-private cooperation: A realistic approach 2001 - 2007

In Autumn 2001, Government took direct control of RT and its assets. As already noted, Secretary of State for Transport, John Prescott decided that Strategic Rail Authority SRA, should impose a solution. The renewed role for government did not lead to a return to the British Rail regime since many aspects of privatisation had proved to be successful. SRA concluded that abandoning the project was not viable. 80% of the works were needed to replace ageing infrastructure and cancelling works already contractually agreed would incur substantial financial penalties. The project could however be respecified with deliverable outputs and a clear positive business case. In 2004 the SRA in its turn was abolished. Its strategic tasks were transferred to the Department for Transport (DfT), as was the letting of contracts for passenger franchises. The operation of the infrastructure remained with Network Rail, the successor of Network Rail.

The WCML Strategy report, published in June 2003 addressed the need, not only to repair and renew the railway to ensure its continued operation, but also to provide the capacity and capability for high-speed long distance trains. Moreover, it allowed the continued provision of local and regional passenger services and the serving of the important freight market. It was decided that proven technology was to be used wherever possible: the project had a huge scale and could not continue to be burdened with the uncertainties in timescales and costs associated with the development of new technology. A business case was built, leading to clear insights about the revenues of upgrade activities and working as a communication instrument

with all parties involved. Finally the predictions of the cost of the project were brought back from £ 13 bn. to £ 9 bn., following further cost reductions the expected costs are less than £ 8 bn. (December 2006).

The West Coast strategy was built upon an extensive consultation with stakeholders, both within the railway industry and with other interested bodies, such as local authorities and user groups. Trust was built up and kept. Indeed, there has been overall consensus throughout over the specification and delivery of this stage of the West Coast Project. These close links have been maintained and have assisted the continued development of the route and its outputs.

The WCML Strategy report sets out three stages of project delivery. The first of these was introduced in September 2004, involving the upgrade of the line between London Euston and Crewe / Manchester. These also enabled accelerated improved services to be introduced on all key inter urban corridors, including increased frequencies and faster journey times. Trains were also permitted to operate at 125 mile/hr in tilt mode south of Crewe. The second stage was planned in 2005, when the line North of Crewe was upgraded to provide for 125 mile/hr in tilting mode. By April 2006, around three quarters of the physical work of the project was complete. Remaining key works include the enlargement of Milton Keynes and Rugby stations and the widening of the Trent Valley route (third stage).

The upgrading activities are performed mainly by Network Rail. They prepare schemes for upgrading parts of the line and announce when the line is to be closed for use. The line is out of use to a considerable extent, especially, at weekends.

Nevertheless it seems to be clear that the upgrading activities will be finished in 2008. The first Pendolino trains were operating on the WCML in 2004 and the amount of users is growing very strongly. The expectation is that, at constant price levels, revenue will triple between 2003/04 and 2012/13, from just over £ 300 mln. p.a. to £ 1 bn. p.a. and that freight traffic on the route will also grow strongly. Looking at these achievements one could say "all's well, that ends well", but there was some significant waste in the early, uncontrolled, days of the project, mostly borne by the loss in the share price of the private infrastructure controller, Railtrack.

The approach in this third round of upgrading was different from the previous rounds. The strategy was build up in consultation with shareholders within the industry and with stakeholders such as local authorities and user groups. The passenger and freight operators, who had been excluded from contributing to the project, became heavily involved and provided the SRA with an immense amount of practical advice and guidance. This plan was not made in splendid isolation as was done before, but in interaction with the whole rail industry and important stakeholders. This led to an arrangement beyond the boundaries of the public and

private domain that was based partly on control but for a large part on building and maintaining trust.

This led to a complex institutional arrangement once more. This time, however the managers in charge were able to deal with this complexity. They focused on desirable outcomes, managed support and dealt with the continuing institutional change, like the abolition of SRA and the division of its tasks between DfT, Network Rail and ORR.

This third period is still going on and has led to an intriguing combination of public guidance and private production. An effective network of parties has been built up capable of dealing with the network characteristics and interdependencies of the physical rail network and future delivery. On the one hand there were clear formal divisions in tasks and responsibilities, but on the other there were effective informal networks and methods of collaborative planning; building up sufficient knowledge and support.