

The future shape and financing of Network Rail

Network Rail Response to the Shaw Scope Report

23rd December 2015

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Executive Summary

Current situation

Britain's railways are in many regards an extraordinary success. Over the last twenty years, passenger numbers have more than doubled. Britain now has both the safest, and the fastest growing rail industry in Europe and we have cut the cost of running the infrastructure by 40 per cent in the past decade, saving taxpayers £5.2 billion. The annual operating subsidy to Network Rail has halved in the last 10 years.

Network Rail's inheritance, it is worth remembering, was a poor one. The railway infrastructure had suffered from decades of underinvestment and train punctuality had collapsed following the Hatfield tragedy and was struggling to recover. In the last 10 years we have transitioned this into the safest railway in Europe.

Better railways drive growth. They connect communities and businesses, which in turn creates new opportunities for more housing, jobs and a stronger economy. Today it is widely recognised that we need to drastically improve connectivity to harness the power of economic regions, particularly in the Northern Powerhouse. Better connectivity also means better integration of our railway with buses and trams, better integration with local urban plans and more attention being paid to passenger's interests, whose expectations are rising all the time. Passengers expect integrated ticketing, personalised information about their journey, to be able to have a seat, to be able to work on the move, to be able to stay connected and to arrive on time. And, of course, they want rail fares to be lower not higher.

The success of our railway continues with passenger growth – and we now expect passenger numbers to double again over the next twenty-five years, driven by an increasing population, urbanisation and an ever more congested road network. But this growth poses a huge challenge for our industry because our railways are, in many places, already full at peak times. This impacts train performance, with one failure impacting tens, or even hundreds, of trains. And because the railways are full, too often passengers are left standing on crowded trains.

How should the railway respond to these challenges? How can we ensure that railways are at the heart of creating a stronger more vibrant economy, with more jobs and more housing, rather than becoming a congested brake on economic opportunity?

Network Rail's response to the Shaw Report focuses on the changes that are required to address these questions.

Proposed resolution

Network Rail believes three broad changes are needed to rise to the challenges that lie ahead; further devolution, technological transformation and financial reform.

1. **Devolution.** At present too many people feel Network Rail remains a centralised, slow, inward focused and bureaucratic organisation. We are changing – but we must act faster. We must accelerate the devolution within our company to route businesses that can be closer to Train Operating Companies and Freight Operating Companies, can take decisions faster and can innovate more effectively, meeting the needs of our individual customers. Our congested

railway has to run to the second, not to the minute, which needs ever closer collaboration with TOCs and FOCs and a relentless focus on structured continuous improvement. We will therefore continue to innovate with different route based business models with different TOCs (such as the alliances in Wessex and now Scotland).

Increased devolution will also foster performance competition and benchmarking opportunities. In turn this should lead to more effective economic regulation because targets can be set from within the company itself based on better GB performance data, rather than international comparisons which are often confused by too many complex variables.

By being closer to our customers we become closer to passengers so we can ensure that their interests are at the heart of planning. Transport systems should then become more integrated, helping customers to have successful journeys from start to finish. Devolved route businesses will also create a better interface with regional levels of government, including Scotland, Wales and the emerging Northern Powerhouse.

But while better regional planning is at the heart of devolution, the network is exactly that, a GB wide network. It operates as a complex inter-related system and there is therefore a critical role to ensure that the network is optimised for the benefit of the whole, not sub-optimised for the few. This responsibility sits within the System Operator.

We strongly believe that this System Operator role needs to be connected to the operational railway as without this connection, it could become a body devoid of practical understanding which would lead to poor decisions. But, to further complicate matters, infrastructure planning cannot be divorced from franchises or rolling stock – an integrated systems approach is needed with ever greater collaboration with the regional powers, TOCs and FOCs in the early stages of development, and ultimately with the DfT, as recommended by the Bowe Review.

There are other critical aspects of the business that benefit from national activities carried out on behalf of all the routes. It clearly makes sense, for example, to have a shared service provision to ensure that national economies of scale are maximised and that scarce resources are optimally deployed across the network. These services must be regularly tested in the market place and against devolution into routes to ensure that the Route Services are optimally sized. It will be for the Route Managing Directors to collectively decide which services are best provided from a single support team. Savings should be driven by the routes and our ambition is to greatly reduce the size of the central services to a much smaller proportion of the total Network Rail staff.

It also makes sense to have one part of the business managing consistent standards, research and development and competency frameworks, for example. Better implementation of new technology can reduce route costs by modernising work practices, but we must not underestimate the challenging industrial relations environment. We must also not lose the benefits, especially in safety performance, that we have strived so hard to achieve by driving consistent standards across our network. Fragmentation of these core functional needs would be expensive and add unhelpful complexity to the industry.

Improving the way Network Rail works needs to be supported by strong and effective regulation. There needs to be clear accountabilities between ORR, DfT and Network Rail with clearly aligned incentives between industry parties. Further devolution will support increasing analysis and benchmarking of Network Rail's performance at a route level while recognising that the routes each form part of the whole rail system.

Our matrix operating model is designed to get the best of both worlds; local speed, customer focus and innovation, married to national economies of scale and standardisation where it really matters.

2. ***Technological transformation.*** Second, technology can help us improve both capacity and connectivity challenges for our ever more congested network. In the past capacity has been increased by, for example, train lengthening with track and station improvements. But there is a limit to what one can do in this way, which is why there is massive new investment in new railway routes, like Crossrail and HS2, and in the near future Crossrail 2; investment that will exceed £100 billion. While these sorts of improvements are vital, they will not solve the capacity problem across the country as a whole because they are specific line of route improvements. To meet the burgeoning demand we will have to run many more trains on the existing network; to 'make the most' of what we have already got.

Other industries, from aviation, to roads, and the London Underground, have already unlocked significant additional capacity through digital control systems. We are hitting the limit of analogue signalling faster than other countries in Europe because of our successful growth - over 40 per cent of the EUs officially declared 'congested railways' are in Britain. Digital technology will change the way we operate and manage our network. It could create up to 40 per cent more capacity on the most congested urban networks, while making trains more reliable, safer and greener and our network far more resilient to disruptions. This digital transformation can also increase connectivity, using capacity to adapt services to improve overall end to end journeys. And we believe that this incremental capacity can be unlocked at significantly less cost and with massively less disruption, than building new railways in dense urban centres.

It is not a question of 'whether' we transform our signalling technology, but 'when'. Plans exist already, but they are piecemeal and will mean that Britain will not see the full benefits for many decades. We believe the country cannot wait that long. Such an industry transformation cannot be done in a fragmented manner; it needs planning, coordination, investment, technology and project management. It cannot be managed like conventional enhancement projects. It will need a different approach that involves the entire industry, because this change involves infrastructure, rolling stock, drivers, train and freight operating companies, suppliers – in fact the whole railway industry.

We have already brought together parts of railway delivery and planning into an integrated Digital Railway programme, with the aim of bringing forward and maximising the benefits of digital capacity. The programme is working in partnership with the industry (via RDG) and particularly the Rail Supply Group, to understand the costs, benefits and affordability of accelerating digital modernisation on a route by route basis. We need to understand the impact of changes on people, processes, technology, policy and commercial structures and to generate an industry-wide approach to deliver an industry-wide transformation. As the system operator, Network Rail is uniquely positioned to play a leading role in enabling this transformation.

3. ***Capital Reform.*** Third, we believe financial reform is needed so that private capital can flow into the railway industry. The huge investment in the railway infrastructure over the last twenty years has been financed almost exclusively through Government, leading to a debt of over £42 billion pounds by March 2016. We do not believe it is sustainable to rely on Government backing for the investment needed to upgrade our railways in the future. Private

investment will also bring with it skills, expertise and business discipline. This type of reform requires strong and effective regulation to ensure that private investment (in what is still inevitably a monopoly business) is rewarded in an appropriate manner.

Reclassification removed the benefits of Network Rail's previous funding and financing structure as well as placing constraints on the company's access to capital and its business activities. The significant legacy debt needs to be addressed in order to create a stable long-term funding and financing structure for Network Rail. However, we will face constraints in our ability to remove debt from the Government's books due to the regulations contained within the European System of Accounts (ESA 10).

The market for infrastructure investment is attractive at present for investors such as pension and sovereign wealth funds and also from the more active infrastructure investors and funds as well as there being interest from strategic investors. The funds raised from such investments could be available to reduce Network Rail's debt burden or to fund further investment. Introducing private capital at the corporate level could offer substantial benefits but given the current context, this is seen as an option for debate rather than a firm proposal. However, introducing capital at a route or sub route level, via some form of concession could be a more deliverable proposition. This could enable a more 'active investor' approach, attracting private capital and expertise to finance railway growth and specific schemes (for example electrification or digital signalling), with companies or other entities accepting greater risk for potentially greater returns.

We are aiming to bring in private capital through investments linked to increased capacity to help accelerate the technological transformation and meet devolved regions' aspirations. We believe we need to be commercially more focused too, bringing in private income or equity when it is appropriate, either to exploit underused capacity (telecoms) or, possibly, to help improve underlying performance (energy systems). We also propose to divest significant elements of the property portfolio, ensuring that we deliver on our core enhancement commitments by recycling capital in to passenger benefiting projects.

In conclusion, rail is vital to our country and Network Rail must rise to the challenges. It must change to better meet customer needs. It must play a key role in the technological transformation that is needed and there must be new opportunities for investors to compete and contribute to the growth of rail.

1. Devolution

1.1 Devolution

Context – Lessons from the past

When Network Rail was created in 2002, the challenge was clear; to deliver the basics of safety, reliability and efficiency in order to stabilise the company and place it on a firm financial footing from which to move forward. Throughout most of the 2000s Network Rail was a highly centrally driven, functional and process led organisation. This was needed to address the significant problems left by Railtrack and to drive improvements in performance and safety. Train punctuality had collapsed after Hatfield and Public Performance Measure (PPM) was at 78.6% and struggling to recover. Alongside PPM being significantly improved, we are now the safest railway in Europe, demonstrating that performance and safety go hand in hand.

In order to achieve these aims Network Rail took a deliberately centralised approach to regain control. This approach enabled Network Rail to re-build, however, it was not perceived to be sufficiently customer focussed and the company became increasingly seen as bureaucratic, and slow. Around 2011, this frustration from customers was stoked by the McNulty review which suggested that the UK rail industry was inefficient. Amongst others, McNulty raised the idea of increasing the devolution of power to smaller entities that would be closer to customers and better able to deliver efficiencies and performance improvement as a result. This led to the creation of a devolved route based organisation in Network Operations.

While this step towards smaller, more customer focussed businesses was undoubtedly correct, with the benefit of hindsight many would say that this first step was carried out too quickly and without enough thought to the capabilities that would be required in the routes or in the way in which the remaining central organisations would interface with them. The decline in performance of the company, measured by the PPM or cost efficiency, in recent years can be attributed, at least in part, to a loss of accountability, focus and performance management that accompanied these first steps towards devolution.

The Matrix Organisation and Accelerating Devolution

In 2014, to address the issues identified above, it was decided to implement a full matrix management organisation. The aim was to clarify and sharpen accountability, speed up decision making, improve the business performance management framework and start the journey towards structured continuous improvement, and to embed this as part of Network Rail culture. The guiding principle was that everything should be done locally in routes, unless there were clear benefits from centralisation.

This was not a fundamental structural change but more a clarification of the central organisation and its key activities. The output of the change created, in simplified terms, four key blocks of activities, operating in a matrix structure; the Routes, Service Providers, Devolved Functions and Head Office Function activities. This change came with a greater focus on accountability and performance management which has driven a focus on the key metrics and basics to improve performance overall.



Fig.1 The Matrix Organisational structure

One important change introduced at this time was that Infrastructure Projects (IP) was described as a Service Provider to the routes. This resulted in the route acting as the client along with the other key stakeholders with IP providing a service. It had hitherto been seen as a stand-alone business, a vertical element in the structure. However, the role of the Client within the route structure was, with the benefit of hindsight, inadequately defined at the time, something that is now being addressed through a stronger project sponsorship structure in routes and whole life asset management.

The next stage of devolution – Operating Model 2016

Building on the matrix organisation, we are now moving towards an optimised route based operating model as described below.

Route businesses are the fundamental building blocks of the organisation. They are designed to be accountable for the safety of the railway and for driving operational and financial performance. Route Managing Directors are accountable for running an integrated, customer focussed business. They are responsible for their own budget and bottom line performance. They have delegated authority to operate within a framework of policies set by the functional leaders of the company. Routes are focused on executional excellence and structured continuous improvement, including LEAN working, with best practice sharing.

The formation of a Route Services Directorate (Group Business Services, National Supply Chain, Network Rail Consulting), together with Digital Railway and Infrastructure Projects, will create a strong Route Support organisation. These Directorates will only provide services that the routes, collectively, decide can be more effectively delivered by a single team. This emphasizes the increasing role of the routes in deciding for themselves what is provided for them. The concentration of these services allows financial and service benefits to be realised through economies of scale and more effective use of scarce resources.

In order to deliver this next stage of devolution we are committed to the principle of a small central core, which will exist as;

- A hub of engineering and safety expertise and will be accountable for providing technical policies and standards to the devolved functions within the routes (Technical Authority).
- A centre of network coordination which balances the needs of local operators with the

complex inter-related system in order to manage the network as a whole (System Operator).

- A corporate core which sets policy and provide assurance and governance on behalf of the Board and Executive Committee. Examples include Legal, Corporate Communications, Risk and Audit.

The diagram below shows how the functions detailed above interoperate with the routes

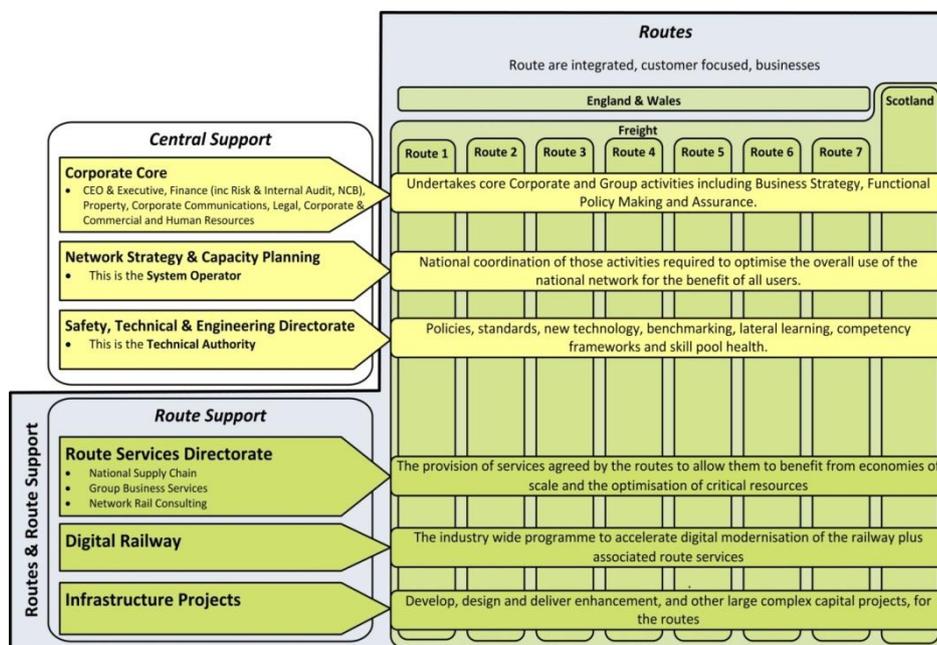


Fig 2. The further devolution organisational structure

1.2 Route Services Directorate

The newly created Route Services Directorate will initially include Group Business Services, National Supply Chain and Network Rail Consulting. This will be an organisation that supplies services that the Route Managing Directors collectively decide are best provided from a single support team. This organisation will allow routes to benefit from economies of scale and allow us to optimise resources on a national basis. But it will also have to be demonstrably cost and service competitive compared to routes doing the activity themselves, or obtaining the services in the open market.

We will therefore have a consistent approach to ensuring that services are benchmarked externally, that they are outsourced when appropriate, or they are devolved into routes if there are no material benefits from providing a common service.

We have recently reviewed the majority of our central activities to ensure we are maximising the efficiency of central services and accelerating the journey of devolution to the routes. During the course of this analysis 372 business services were reviewed and they have been categorised into three areas; maintain, market test and devolve to inform their optimal position within the preliminarily matrix model. Further work is now being undertaken to confirm this view and then subsequently to implement the required changes.

Providing services on a Route Service / National basis delivers significant financial benefits of c£355m (£205m opex benefits, £150m+ procured spend benefits), and those which contribute

most to this value should continue to operate nationally. However, for some of the services the case for national provision is relatively weak, so there are options to consider targeted devolution to the routes. For other services, the opportunity exists to introduce more market involvement, through full or partial outsourcing, and/or the sale of assets.

This is a natural evolution of our matrix model and continues to support greater decision making powers in the hands of Route Managing Directors.

In order for this to be successful there needs to be a period of stability to fully embed these plans and changes in order to drive out continuous improvement and the benefits of further devolution. This will then enable a renewed focus on driving improvements to train performance.

1.3 An Optimised National Rail Network Underpinned by Local Planning

Whilst devolution to the routes is critical to meet customer and local funder needs it is imperative to ensure the network is managed overall as a whole. The cost disruption boundary issues and loss of network benefits that could otherwise come with a more fragmented industry are avoided by a strong and competent network System Operator.

To optimise the national rail network we need to balance the needs of our multiple passenger and freight customers, build a cohesive national timetable, and provide the necessary access to build and maintain the railway. We need to identify and deliver the right improvements to the network for the future at the right time in line with the requirements of our funders, enabling private investment. The costs, disruption, boundary issues and loss of network benefits that could otherwise come with a more fragmented industry are avoided by a strong and competent System Operator.

Informed and effective network coordination is more than just efficiency in capacity management; it captures the range of activities across market forecasting, planning, capacity contracting, timetabling allocation and delivery. Consistent decision making across time and geography gives funders confidence in the realisation of investments and prevents discrimination between operators. Effective system operation is essential to allow an already heavily utilised system to achieve the outputs needed to enable the national and regional economies to continue to thrive and expand. As levels of congestion increase, co-ordination of this complex system in a fair and transparent way will become more and more critical. This coordination undertaken is the responsibility of the System Operator role which takes place in Network Rail under the Network Strategy and Capacity Planning function.

Much of the industry framework within which the GB rail industry operates is established by the European Union, including the requirement that 'essential functions' (capacity allocation & charging) are conducted independently of train operators. By separating these functions from the devolved routes, authorising sales through a central access rights process, and planning on a long-term basis, the routes are able to work more closely and collaboratively with customers and stakeholders, including in deep alliances, than would otherwise be possible. It is also important to maintain separation of these activities from franchising bodies, to avoid any suggestions of distortion of competition.

Delivering services to routes and other infrastructure managers together from one place allows us to plan and use the railway in a way that aims to make the 'best' use of the system as a whole. It

also means investment / utilisation decisions can be carefully considered and physical infrastructure enhancements can be made once other system solutions have been deployed – an approach that enables the System Operator to help keep network efficiencies high and therefore system costs down.

System Operation activities range from very long term (e.g. 30-year market forecasts) to very short term (e.g. co-ordinated incident response) activities. Network Rail currently leads long term planning on behalf of the industry, bringing together industry parties, funders and stakeholders to develop market studies, network-wide studies and route studies which present choices to funders (both public and private) about the mix of outputs deliverable at different levels of cost. Since the location of investment in infrastructure may not be the same as the location where the benefits accrue, a cross-network view enables network wide solutions to be pursued. Whilst central co-ordination is a necessity, this has to be synchronised with devolved planning and closer integration with local government bodies and private investors to meet the specifics of economic geographies, variations within routes and the needs of Operating Companies to optimise service delivery. We are working more closely with the operational route teams to identify local demand and development opportunities to incorporate within our long term planning processes.

We oversee major infrastructure/ service changes that will affect future timetables and coordinate with stakeholders to develop a project plan and oversee the implementation of that change. Aligned with this, we review proposed sales of access rights centrally within the business and identify whether there are any significant impacts that may affect the applications for access to the network. On an increasingly congested rail network - whether as a capacity allocator in its own right or in providing well informed advice to the ORR on the interaction of access applications – this role will become more important.

We construct the timetable twice a year in accordance with the Network Code and applicable track access contracts. The network benefits of this are most obvious for freight and country wide services. The enormous growth seen in intermodal traffic to the midlands and the north could potentially be disrupted without national planning and control to oversee their operation. For any long distance passenger or freight service, the co-ordination of engineering work is important across geographical boundaries so that, where practical, a diversionary route is made available around a line closure.

Much of the day-to-day operation of the railway falls outside many formal definitions of a System Operator but its role and connectivity in the Network Rail overall matrix enables it to be consistently governed by a framework of codes, rules and policies to support decisions about regulation, short term allocation, and operation of contingency arrangements in the event of unplanned disruptions. In the event of major disruption or high-profile national activities, we are able to maximise the response to support the overall system (Industry Wide). This includes working to maintain service continuity, provision of information to rail users, and the ability to redeploy resources to shorten disruption.

We strongly believe that the system operator needs to be connected to the operational railway as without this connection, they become a body devoid of practical understanding which would lead to poor decisions.

The improvements to date provide a foundation to support the next stage of devolution through further embedding of the system operator role and its linkages within the matrix with greater emphasis on local planning; building on the development of partnership models with regional bodies such as Transport for the North, through closer working with new devolved bodies as they

develop (e.g. Midlands Connect) and wider industry alignment to maximise the potential for GB rail. Working with the industry, we are transforming the way we timetable and operate the railway to achieve the best network capacity, deliver a robust timetable and enable a better, more punctual and safer service for our operators and passengers.

1.4 A Hub of Safety and Engineering Expertise

Technical Authority

Key to a successful devolved model is the accountability and responsibility for managing standards, research, technology and competency frameworks within which safety critical rail infrastructure delivery can operate in the routes. We operate the safest major railway in Europe, and it is essential that we continue to improve on what we have strived so hard to achieve by driving consistent standards across our network. We believe that these core functions should be kept together for the benefit and integrity of the industry. By keeping these together within Network Rail there is the added benefit of utilising the route based experience and truly understanding the impact of what is mandated at the centre.

In July 2015 we formed the Safety, Technical and Engineering function within Network Rail as a strong and stable hub for the safety, sustainable development and engineering functional expertise across the business. Forming the basis of a Technical Authority and producing the requisite policies, standards, processes, methods and competences to drive consistency and ensure safety and reliability across the industry. It is also accountable to produce the technology strategy for Network Rail integrated from the RDG Rail Technical Strategy and to manage the delivery of the programme.

By its very nature, asset management relies on a strong engineering capability. Decisions on inspection, maintenance and renewals all rely on good engineering judgement. So what does a strong engineering functional capability look like? It requires a professional competence career framework aligned with the relevant professional institutes. It values and rewards deep specialist knowledge in the critical areas associated with the assets it looks after from an understanding of the business context. It must nurture a long term talent pipeline through apprenticeships, graduate programmes and continuous professional development. It must have the ability for the engineers to work both in the central functional areas where standards and technology are developed and in the execution areas where the knowledge and capability is applied in a day to day way. This dual approach is even more important in an operating model that increases the devolution of the business.

It is for this reason that the centre of engineering excellence is a core element of our matrix organisation. This should ensure that there is a strong functional influence aligned to the routes. Remote audit and assurance we know does not provide the real integrity that is needed both for safety and engineering on a day-to-day business. Our operating model takes this into account to prevent a repeat of the incidents of the past. The centre is concentrating on becoming lean, focused and forward looking.

Moving forward, we will develop a management system across Network Rail in accordance with international standards. This will provide clear and unambiguous procedures that manage the customer aligned value chains throughout the devolved businesses. It will be developed using the Network Rail Business Critical Rules approach that is centred on risk control. This combined with

the up to date physical standards will allow clear specifications for maintenance, renewals and enhancements that are predictable lean and affordable. These steps will take us further on our journey and will provide further evidence that safety and performance go hand in hand.

1.5 Strong, effective regulation

We recognise the advantages of economic regulation when it is working effectively and consider that it should be retained. However, there are several aspects of the current regulatory regime where improvements could be made and that a more targeted regulatory regime would be beneficial to all parties.

In establishing the basis for reformed regulation, we consider that a number of principles should apply including:

- **Safety:** Network Rail should be supported and encouraged to deliver continuous improvements in public, passenger and workforce health and safety.
- **Output-based incentive regulation:** Network Rail should be effectively incentivised to deliver and outperform based on achievable efficiency targets.
- **Simplicity and effectiveness:** The regulatory and contractual regime should be simple, targeted and consistent with the principles of good regulation and focused on what matters to passengers and freight end-users.
- **Whole-life, whole-system, risk-based approach:** The level of funding, the required outputs and the financial framework should enable Network Rail to manage risk and make whole-life, whole-system decisions and trade-offs.

Network Rail will continue to require a secure financial framework that enables the business as a whole to deliver its plans as efficiently as possible. This requires a framework that continues to provide medium term (currently five year) funding settlements based on realistic assumptions about what Network Rail can achieve, particularly in terms of efficiency and outputs.

To achieve the above, we require a strong and effective regulator that:

- Can make realistic assumptions within a regime that provides consistency with other parts of the rail system.
- Has the strength to determine the necessary funding requirement.
- When necessary effectively hold Network Rail and the rest of the industry to account.
- Adopts regulation principles that are common to other regulators (e.g. OFGEM, OFWAT).
- Encourages industry solutions to be developed.
- Targets regulation, only intervening where absolutely necessary.

We also require a revised approach to funding of enhancements, consistent with the Bowe report, recognising that funding for enhancements should, where appropriate, be agreed separately from the existing five year period review process. While five year funding settlements are important, it is equally important that these are considered in the context of a much longer planning horizon, which recognises that plans will continue to evolve within and beyond each funding period.

Regulation could be improved with increasing analysis and benchmarking of Network Rail's performance at a route level. This should provide an improved evidence base, increasing transparency and accountability and support improvement in route-level planning. Network Rail needs to be able to manage the network as a whole, taking into account the interaction between routes, making trade-offs as performance continues to evolve. It also needs sufficient risk

allowance to reflect the uncertainty in both expenditure and outputs.

Effective regulation requires alignment of incentives between industry parties to enable delivery of outputs for the benefits of passengers and freight users. Network Rail is preparing a response to the ORR's consultation of Schedules 4 and 8 for submission by January 15th 2016. The incentive regime should be designed to support effective working between Network Rail and its customers to deliver aligned objectives. For example, the current regime has inconsistent train performance targets for Network Rail and some train operators, with them being held to account by different organisations. Further consideration is also needed of the outputs that Network Rail is targeted to deliver, including the extent to which it can realistically manage the outputs. The number of regulatory output targets and indicators that are being monitored is unrealistic and leads the organisation to treat the regulator as its customer, with many of the indicators being perceived as regulatory targets.

The regulatory regime also needs to work effectively with the way Network Rail is expected to operate as a part of the public sector. If routes are to work effectively with customers, there also need to be consistency between the regulatory regime and the requirements of the Framework Agreement between Network Rail and the Department for Transport (DfT) and the broader requirements placed on Network Rail as a public sector body.

Clarification on the respective roles and responsibilities between DfT, Network Rail and ORR will be important. It will also be important to consider (particularly as part of DfT's recently launched review of ORR's roles and responsibilities) whether ORR's safety regulation and economic regulation roles are working effectively together.

Summary

What Network Rail has done;

- Implemented a matrix organisation thereby further empowering the Route Managing Directors to take on greater accountability financially and for performance.
- Created the Safety, Technical & Engineering function establishing a centre of engineering and safety expertise providing consistency across the rail network.
- Created the Strategy and Planning group, including timetabling, thus pulling together the major elements of the System Operator

What Network Rail is doing:

- Evolving the matrix organisation by the creation of a market tested Route Services Directorate. Streamlining the central core to maximise the efficiency of central services and assure optimum devolution to the routes.
- Implementing an Enhancement Improvement Plan to strengthen IP delivery capability
- Implementing the recommendations of the Bowe review to ensure that the lessons from the poor planning of CP5 are learnt in NR, DfT and ORR.

What we want to happen to us and the industry:

- Network Rail supported to continue the journey to evolve the matrix organisation devolving responsibility to the routes and delivering benchmarked value for money for all customers.
- Strengthen Network Rail's role as the System Operator, delivering joined up planning of the rail network. This requires NR to further develop Route Studies and wider industry planning with closer collaboration with TOCs, FOCs and regional authorities so that the optimum ways to improve the customer experience can be presented to funders for their decisions.
- Network Rail to remain the owner of infrastructure standards, R&D, competency frameworks etc. across the rail industry (even if some routes are let as concessions).
- Effective regulation that is output based and that aligns the industry around common performance metrics.

2. Technology transformation

2.1 The Accelerated Introduction of Technology

The accelerated introduction of technology will help to free up more capacity from the existing railway infrastructure, tackling the capacity challenge and reducing the need for Government funded infrastructure enhancement schemes.

In setting the priorities for the National Infrastructure Commission, the Government has defined the vital economic task for the railway today: helping our great cities in the North become engines of national growth, whilst sustaining London's global economic success. There however are a number of major challenges that stand in the way of achieving this ambition.

Other industries, from aviation, to roads and to London Underground have already unlocked significant additional capacity through digital control systems that enable greater throughput. Our railway is already at capacity in key hotspots, both in the North and South; passenger numbers will double again in the next two decades. Our cities' future success is conditional on a rail network that connects more people to places of work, for example, between the economies of Manchester, Sheffield and Leeds, and provides manufacturers with access to bigger markets.

Further transition to a digital railway is essential to a 'high-skills', 'high-wage' economy as it helps to release the capacity the UK needs from the railway infrastructure it already has. So on every line of route, new options need to be created to meet local priorities for more trains, better connections and greater reliability.

This is a time of unprecedented growth on our railway. But beyond critical upgrades and projects now planned or underway, a national capacity strategy that is rooted in conventional enhancements alone would cost too much, disrupt for too long, and deliver too little.

Without faster digital modernisation, passengers and freight customers will face longer waits for trains that are less reliable and more crowded, with fewer choices about where and when they stop.

A more productive network: a better future for Britain's railway

There is a fundamental barrier to a more productive and cost-effective railway; the constraints imposed by signalling designed for a pre-digital age.

Until the end of the last century, the most effective way to keep trains safely separated was to divide tracks into fixed block signalling sections and only allow a train to enter a block once the preceding train vacated it. The consequence of this approach means that trains that could theoretically run closer together are simply prevented from doing so, resulting in the network being significantly under-utilised. In addition much of the existing signalling infrastructure is aging, with signalling system failures the cause of delays every day across the rail network. It is expensive – Network Rail currently spends around £800m each year maintaining and renewing signalling equipment.

A lack of agile 'command and control' combined with limited capacity on the track creates a less resilient network where disruption can spread far and fast when things go wrong.

Creating a national strategy for digital capacity

The Digital Railway programme will unlock up to 40% more capacity from the existing network by delivering key technologies:

European Train Control System (ETCS)¹: This provides safe separation of trains whilst enabling more to run safely on the track at more optimum speeds.

Traffic Management (TM): Whereas ETCS allows more trains on the track, TM maximises network performance by allowing these trains to run together as effectively as possible – significantly increasing the throughput that existing track can support.

Automatic Train Operation (ATO): In-cab digital decision support tools give drivers the information they need at the right time to boost performance and safeguard safety.

The additional capacity created by these technologies, when combined with a targeted package of conventional infrastructure enhancements, provides a menu of opportunities that can be tailored to suit the priorities of different routes:

More trains can be provided where they are needed most, for example, metropolitan regions such as London and Manchester;

- Better connections are possible, enabled through more choice about configuration and timetabling of services, stops and speeds, for example, between our system of cities in the North or for key freight routes.
- Greater reliability and a reduction in delays when problems do occur.

Once in place, a digitally-enabled network has proven maintenance cost advantages achieved by the removal of conventional line side signalling infrastructure assets and a reduced cost of disruption. With more space in the network, new options are also created to undertake maintenance and normal service side by side. The outcome of this is a lower cost railway.

Next Steps

Historically, the rail industry has adopted a strategy to replace traditional signals with their digital successor over a 50-year timeframe. Whilst this would succeed in replacing some of the key assets as their risk of failure increases, it lacks the pace, prioritisation and scope needed to maximise the benefits of digital capacity or deliver them fast enough.

The purpose of the Digital Railway programme is to bring the required pace and maximise economic benefit to GB. Internationally, it creates a platform for the rail supply chain to develop specialist expertise to win in this key growth market.

Whilst the Digital Railway is underpinned by technology, it is a change programme that will impact all parts of Britain's railway industry. A cross-industry Steering Board led by Network Rail has been established to lead the development of the programme, including senior leaders from DfT, ORR, TfL, Crossrail, the Rail Delivery Group, Train Operators, and the Rail Supply Group.

The Initial Industry Plan (IIP) to be published in September 2016 will include a 25 year baseline option for a Digital Railway that is deliverable and based on proven technology, sustainable, and policy compliant. It will also provide an option to upgrade to the next generation of technology as it becomes proven – increasing the scale benefits from digital modernisation further.

¹ ETCS is specified at four different levels, L0-L3, the options under review for this programme are L2 and L3

Summary

What Network Rail has done:

- Created a Digital Railway Programme to develop and implement a strategy to replace traditional command, control and signalling with much more capable digital equivalents in order to increase capacity and reduce the need for costly infrastructure enhancement schemes across the network.
- Network Rail has established and leads the cross-industry steering board that guides the development of this programme.
- Conducted extensive industry consultation of the priorities, requirements and outcomes needed by the GB rail industry.

What Network Rail is doing:

- Building the business case for the Digital Railway that will demonstrate the business benefits to GB.
- Delivering a development programme utilising selected key technologies to prove the business benefits and effectively mitigate the technology risks.
- Defining a 15-25 year rolling programme of digital modernisation of traditional command, control and signalling.
- Engaging with European railways to gain a leading position in digital transformation.

What we want to happen to us and the industry:

- To gain acceptance of the plan to accelerate the introduction of digital technologies which will be set out in the Initial Industry Plan (IIP).
- Secure wide cross-industry engagement and involvement that will enable the change that is required across the rail sector.
- To continue to develop and evolve the GB railway to exploit the digital platform and data created through this change for the benefit of GB rail users and to drive economic growth.
- For the rail supply industry to grasp the opportunity to become world leaders in the implementation of digital train control on existing congested networks, thus building a platform to grow an export market for the UK.
- Secure political support (for example through the National Infrastructure Council) for what must be, a national infrastructure change priority.

3. Capital Reform

3.1 Capital Reform to Facilitate the Inflow of Investment

There has been a huge investment in the railway over the last twenty years. Renewals have updated ageing and unreliable infrastructure. Enhancements have increased capacity, connected communities and revitalised urban centres. That investment has been financed almost exclusively by debt, with explicit Government backing. Under the current arrangements there is no intention for this debt to be paid off, this means that, over time, the cost of servicing this debt will become higher and form a greater proportion of Network Rail's revenue requirement. This is not sustainable in the long term. Reform of how the railway is financed is necessary particularly if we are to attract investment from the private sector.

Significant benefits could be realised from the introduction of private capital to drive increased value for money, introduce external expertise and business discipline and to also fund additional enhancement programmes and contribute to debt reduction. This could be achieved through a combination of active investment, such as commercial partnerships to deliver technology enablement of the railway, and investment from pension or sovereign wealth funds.

Capital reform and strong and effective regulation will be required in order to attract third party capital and to ensure that private investment is rewarded in an appropriate manner. In particular, stability of the regulatory framework is important as investors will be seeking a fair and predictable return on their investments.

Network Rail is currently funded through a combination of government grant and track access charges to cover its maintenance and operating costs (including financing costs). Investments in the railways (enhancements) are primarily debt-financed currently through a loan facility from DfT which matures at the end of CP5. The reclassification of Network Rail as a public sector body and the transfer of the debt onto the government balance sheet resulted in stronger spending discipline as capital can no longer be treated as 'unconstrained' and off the Governments books (including by Government). Reclassification removed the benefits of the existing funding and financing structure as well as placing constraints on the company's access to capital and its business activities.

These changes of circumstance drive a need to consider alternative but sustainable financing structures that promote efficiency and provide value for money. The Framework Agreement between Network Rail and DfT states that a decision will be made as to whether to extend the DfT Loan Facility Agreement by April 2017.

A long term sustainable financing and funding structure for Network Rail requires:

1. Balance sheet repair to address legacy debt.
2. Changes to funding of future enhancements (avoiding renewed build-up of debt, spreading the cost of the investment to those who benefit from it).
3. 'Asset recycling' to support long-term sustainability (possibly through asset disposals and concessions).
4. Introduction of 3rd party funding and financing for some enhancements or innovative financing.

In addition there are other improvements that could be made to support these 4 steps, such as a better alignment of incentives to support improved transparency and whole system efficiency.

1. Balance Sheet Repair to address legacy debt

Addressing the significant legacy debt is a critical first step in improving the long-term sustainability of Network Rail. Reducing the debt burden will support a reduction in subsidy as interest costs represent a significant and growing proportion of our annual costs. Network Rail's gross debt is forecast to reach £52 billion by the end of CP5.

2. Changes to funding of (future) enhancements

Balance sheet restructuring will need to be coupled with a change in the funding arrangements for future enhancements, otherwise debt will simply accumulate and the problem will repeat itself. Potential solutions include grant funding of the proportion of new enhancements that deliver socioeconomic benefits, and better sharing of the costs of investment between the beneficiaries (Train Operating Companies, local businesses). At present those projects that have major socioeconomic benefit are mainly funded by Network Rail through increased debt. There is a valid argument that projects such as these should be funded by a collection of stakeholders who will benefit from the socioeconomic changes and therefore could realistically contribute to the expenditure – perhaps through hypothecation taxes. Hypothecation taxes seek to raise money from parties who benefit from new infrastructure through local taxes – for example increased business rates.

3. 'Asset recycling' to support long-term sustainability

Network Rail has a number of assets supplementary to, but closely integrated with, the operational railway which presents an attractive opportunity for releasing short term capital.

The Hendy Report identified £1.8 billion of non-core asset divestment to allow us to re-invest the proceeds in passenger benefitting enhancements that we have committed to in CP5.

A number of these assets and their activities are core to the safe and efficient operation of the railway. Therefore, any envisaged sale or leasing arrangement needs to be structured so as to ensure the continuing safe, sustainable performance of the railway without compromise. Any proposed sale of assets needs to be carefully weighed up in terms of the short term capital proceeds received versus the loss of future revenue/additional operating expenditure and profit streams in the future.

The specific asset sales are being developed in the following areas:

Property

Significant opportunities exist for a sale, lease or partnering approach to both station and non-station property assets (e.g. the commercial estate assets) due to their established revenue streams from rental income, retail and advertising. Current work on this also focuses on providing land suitable to fulfil the Government's needs for building new houses.

Energy Assets

It has been proposed that in current market conditions the Network Rail electrical distribution and traction power assets could be an attractive investment opportunity for sovereign wealth funds, strategic investors and other infrastructure investors.

As a result, Network Rail is currently reviewing options for disposing of some or all of these assets taking into account technical, operational, commercial and financial issues.

Telecoms

A sale of our telecoms network is not currently seen to be a realistic option due to the core communication requirements of the operational railway. However, the recently upgraded network does have significant spare capacity. Network Rail could sell this spare capacity to the private sector or to the rest of the public sector. In addition, there is specific interest from UK Broadband to invest in new revenue-enhancing technology on the network through a partnering approach.

Creation of Concessions

The introduction of private capital through the creation of infrastructure investment opens up opportunities to accelerate the technological transformation of the railway, increasing capacity, meeting devolved regional aspirations as well as providing an opportunity for improved financial efficiency through a more rigorous commercial approach to costs. Additionally, concessions on select routes (or lines of route) would enhance comparability and benchmarking across the network. The devolved organisational model is compatible with route concessions.

Network Rail will further develop the concession proposition, which would be long term (30-50 years) to attract the right level of investment and would be let by Network Rail (as the legal owner of the infrastructure) on a competitive tender basis. While creation of a concession through the sale of a discrete part of the infrastructure will raise capital proceeds, significant work will be required to demonstrate that this model is feasible. It also appears unlikely that the sale proceeds will reduce government debt unless there is a full transfer of risk to the third party who also has sufficient financial capacity to withstand potential large losses. However, there are wider benefits including creation of a comparator to provide benchmarking opportunities. It will take a number of years to establish whether a concession is delivering benefits to the rail industry. We therefore do not propose that more than one concession is created until there is evidence that this approach can be successful.

4. Introduction of 3rd party funding for some enhancements or innovative financing.

New investment projects and/or investments in new technology could potentially be attractive to third party investors. There are some clear constraints and issues with traditional project financing for railway infrastructure projects due to the inherent difficulties in effectively transferring risk to private investors. However, there are opportunities which merit further investigation. In particular we will be considering the investments which are expected to generate future cost savings or incremental revenues. It could be possible to structure these investments so that investors could share in the benefits that accrue from them and for the investor to earn an appropriate commercial rate of return.

Accounting requirements

It is important to note that there are important Government accounting rules under ESA10 (the statistical framework for measuring Government debt and deficit in the European System of accounts) which need to be considered when undertaking any of the possible changes outlined above including their impact on Government debt and/or deficit reduction.

Other industry changes that would enhance transparency, financing and whole-system efficiency:

- Revised subsidy flows: Money flows from Government to Train Operating Companies rather than direct to Network Rail via grants (as government has indicated it will do);
- Reforms to charging regime: Improved incentives for Network Rail and its customers to work together to improve efficiency and performance, and sufficient flexibility in the regime to enter into bespoke arrangements, for example;
- Aligning the franchising and rolling stock across the industry specifically regarding enhancements so that the behaviours of the industry are motivated by the same drivers;

Summary

What Network Rail has done:

- Currently track access charges cover Network Rail's maintenance, renewals and operating costs. Enhancements are primarily debt-financed.
- The current financing of enhancements by debt has led to high annual interest costs and is unsustainable in the long term.
- We have identified 4 steps to solving this problem

What Network Rail is doing:

- We are 'Asset recycling' to support long-term sustainability (possibly through asset disposals and concessions).
- We are exploring the Introduction of 3rd party funding and financing for some enhancements or innovative financing.
- We are considering the short term and long term impacts of the divestment as well as the impact of Government accounting constraints now that we are classified as a Public Sector body.

What we want to happen to us and the industry:

- Balance sheet repair to address legacy debt.
- Changes to funding of future enhancements (avoiding renewed build-up of debt, cost of the investment borne by those who benefit from it).
- There is a need to create a long term sustainable funding and financing framework that will allow the introduction of private capital.
- This needs to deliver better value for money and reduce overall company debt, accepting that this will be challenging under accounting rules.

4. Appendices

4.1 Appendix 1. Response to Shaw scoping study questions

Network Rail's structure

1. What are your views on the scope of Network Rail's functions?

Please refer to section 1.

2. Have we failed to mention any specific and important factors?

Opportunity to reform the role of regulation - Please refer to section 1.5.

People and Culture – The value of a 'high performance culture'. Network Rail is striving to embed a high performance culture to support the development and embedding of further devolution and structured continuous improvement and LEAN with clear accountabilities improving performance management, developing high performing leaders and excellent people managers. Ensuring that we recruit and retain the right skills and capability to be successful, recognising that to do this we need to remunerate staff at all levels according to market rates.

We think that it is important to recognise that many of the problems seen in Network Rail are a reflection of broader behaviours and culture within the industry at large. For example, the problems with the CP5 final determination, which were laid bare by the Bowe review, concerned the DfT, ORR and NR. To address these problems will require a culture change in the company, but within the broader industry too. We must all learn to operate in a capital constrained world.

Change management – Absence of any mention of the need for integrated risk management to support any planned industry wide change. For example, there may be distraction caused by announcements regarding CP6 plans rather than focusing on delivering in CP5.

Staff Impact - Industrial Relation challenges or deterioration may occur as a result of industry wide change.

3. What are your views on these accountability arrangements and their effectiveness?

Please refer to section 1.

There exists a complex set of accountabilities internal to Network Rail which is described in the Devolution handbook published in October 2014. This provides the background and rationale of the model along with the top level accountabilities for each function as summarised in section 1. Devolution. This along with the Business Performance Management framework has provided a clear line of sight to all functions on how their business function contributes to the corporate performance scorecard.

4. Have we correctly identified and defined Network Rail's customers?

Please refer to section 1.

TOCs and FOCs as well as taxpayers represented by national governments through agencies such as the DfT, and local governments, are clearly Network Rail's customers. However, particularly to

many of those working on the frontline whether maintaining track, operating a signal box or a managed station, the “customer” means the passenger or freight shipper. The driving force for our workforce tends to be delivering for the paying public. However, for the purpose of this document we have referred to TOCs and FOCs as Network Rail’s customers.

5. How effectively are customer needs and expectations met by Network Rail at present?

Britain’s railway is safer, carries more passengers, is attracting more investment and has more reliable infrastructure (by most commonly accepted measures) than at any time in its history. It’s (passenger) customer satisfaction scores have also been improving. It is growing faster than the broader economy, which is very rare in railway history. Network Rail has played a significant role in these successes. A summary report (November 2015) Network Rail 2015 Customer Satisfaction has been shared with the Shaw Team. This shows, methodologies, response rates, current satisfaction levels for TOC and FOC including tracked trends from 2008. The report also shows the actions that are being taken to improve and address the levels of frustration where expectations are not being met.

In order for Network Rail to meet the growing capacity demands will require a frontier shift in terms of both expectations as well the technology required to meet these demands. As an organisation we are finding new and faster ways of meeting the increasing expectations with Digital Railway being an example of trying to get well ahead of the curve. There is a need to bring the customers on a journey to meet this frontier shift both in terms of expectations and delivery.

There are a large and varied number of customers that Network Rail interacts with who have a wide variety of “needs” that we have to fulfil and we do this to a varying degree of success. These needs are not necessarily aligned with each other. For example, the passenger may not feel their needs are being met if a service is removed from the timetable to allow for engineering work to be carried out. However, we are meeting the needs of our funders, and TOCs/FOCs who will benefit from the increased capacity in the long term. Taking these needs into account, to provide an entire network view of our railway, is a balancing act in which sometimes customers may feel ignored.

6. Should direct customer pressure on Network Rail be strengthened? If so, how might this be achieved?

Please refer to section 1.

Network Rail’s devolution process is designed to allow each of our route businesses to be fully empowered to make the right decisions for their passenger and freight users. We believe that devolution will result in our routes working more closely with their customers to make better informed decisions for the ultimate end users of the railway. We also expect that devolution will lead to more formal and informal joint working with passenger and freight operators. It will be through these arrangements that customer needs will be better reflected into how the railway is operated.

However, Network Rail has to balance a variety of short, medium and long term pressures. Intensifying Network Rail’s exposure to direct customer needs might cause it to focus on short-term decision making and favour big customers rather than small ones. It is vital to balance short, medium and long-term perspectives in railways across the entire network. More direct customer pressures from TOCs and FOCs might result in the short-term being prioritised at the expense of

doing the right thing in the longer term; providing access for enhancement work is a classic example. This concern is reinforced by the regulatory duty to treat all TOCs fairly and to not unduly favour one over another.

Consistent with devolution, there are also benefits to be had from engaging with TOCs and FOCs earlier in the enhancement lifecycle. This will allow a greater focus on the train operators, alongside funders as customers of railway enhancements. This should allow those parties closest to the end users of the railway to influence the specification of enhancements.

7. Are there more positive incentives for delivery which would be useful? Are any of these incentives more effective than others?

Please refer to section 1.5.

The current incentive regime is complex and covers a wide range of issues. Some of it works well, for example the wear and tear charges that Network Rail levies. The performance regime (Schedule 8) also has many features that most industry players think work well (for example it being a liquidated sums regime). However, there are aspects of the regime that do not work very well. We should be clear as to the reasons for these weaknesses; for example, under the current industry arrangements franchised passenger operators are protected from large parts of the regime through their franchise agreements. Franchise agreements also often include different targets that are different to Network Rail's regulatory targets. These weaknesses can result in TOCs, FOCs and Network Rail working towards different goals and can also lead to less productive behaviours.

The incentive regime should be designed to support effective working between Network Rail and its customers to deliver aligned objectives. For example, the current regime has inconsistent train performance targets for Network Rail and some train operators, with them being held to account by different organisations. Further consideration is also needed of the outputs that Network Rail is targeted to deliver, including the extent to which it can realistically manage the outputs.

Network Rail is working with the industry to push for stronger incentives in the performance regime for TOCs to reduce reactionary delay. Linked to this there is likely to be a wider debate of the benefits of including passenger compensation payments in track access contracts.

Network Rail has nearly 100 individual regulatory output targets (excluding delivery of enhancement milestones) and is being monitored against nearly 4,000 of its indicators. This leads the organisation to treat the regulator as its customer, with many of the indicators being perceived as regulatory targets. It is almost impossible to manage this number of measures. There needs to be a much clearer focus on more streamlined regulatory targets supported by a more manageable level of key performance indicators.

Additionally Network Rail is preparing a response to ORR's consultation of Schedules 4 and 8 for submission by 15 January.

8. Is there a case for changing the route based structure of Network Rail and what are the advantages and disadvantages of different approaches to disaggregating the network, for example on the basis of:

- a. Physical, political or economic geographies?**
- b. Service type, e.g. commuter services, inter-city services and regional services?**

Please refer to section 1.3.

Many structures have been tried in the past but they usually follow historic pre-grouping boundaries for practical reasons. However, it is important to understand that for the overall operation of the network, the location of the boundaries is irrelevant. The real skill is in managing the business in such a way that the customer – whoever they may be – does not realise there is a boundary and that it is never used as a reason to do or not to do something. The management of this interface between boundaries is key to managing the interface as a network.

Any structure must balance the ability to effect change within the route whilst maintaining interoperability. It is important to minimise transaction or management duplication costs. With this in mind the present structure is workable.

The scoping document explains how increased localisation of government might be sensibility mirrored in Network Rail's structure, however, it is important to note that any disaggregation would have to reconcile local and national interests. The trick is to make routes big enough that the interface issues are minimised but not so big that they become too difficult to manage.

9. Does the current balance of responsibilities between the routes and the centre seem at the right level? Are there any further responsibilities that should be devolved or centralised?

Please refer to sections 1.1 and 1.2 of the document.

10. Can you point to any specific economies of scale that should be protected at national rather than route level?

Please refer to section 1 and 1.2.

Network Rail has carried out a review of the services that it provides on a national basis. This work has looked at all central services (outside of the Infrastructure Projects function) and has identified that particularly strong economies of scale are achieved through activities such as:

- IT and telecoms infrastructure Shared services centre for back office IT, finance, HR processes and records management.
- National procurement, for example of materials, plant and technology.
- Logistics management, including the distribution of materials by road and rail.
- The shared provision of specialist engineering, such as high-output track renewals systems and heavy on-track machines, and specialist services such as overhead line conditions renewal.
- The management of large industry change programmes like Offering Rail Better Information Services and the Digital Railway.

We have estimated that such national provision reduces Network Rail's direct costs by around £200m p.a. as well as delivering procured spend benefits of over £150m p.a. There are a number of other services that also provided on a national basis which allow us to optimise the network and avoid the risk of inconsistency and interfaces. This also includes the central provision of scarce resources.

We acknowledge that the system operator needs to work closely with devolved authorities as the needs and priorities are better developed in order to integrate these local plans into the wider national strategy, whilst maintaining the cohesion of the national network. However, keeping this a central, network wide capability is essential.

11. What processes and capabilities need to be in place (at both the centre and route level) to support Network Rail's current devolved structure?

Please refer to section 1.2.

Our routes must have sufficient critical mass and breadth of capability to act as strategic business units, which take responsibility for long-term ownership of their development, performance and efficiency. The organisation needs both technical specialists as well as commercial business skills to be able to drive forward the further devolution model.

In addition to the existing expertise in operations, maintenance and the specification of renewals, this requires access to skills in network and capacity planning, commercial management, technology introduction, property management and communications – amongst other things.

The further devolution of the matrix model provides an opportunity for the route services to refine the offerings based on what the routes actually want/need. This will result in a shift for the route services to treat the routes as customers and create processes accordingly.

The Route Services review project which Network Rail is running will determine where these skills are best provided from in our organisational matrix. Please see section 1.2 for more information.

12. Drawing on your previous experiences where relevant, what would be the potential impact on your organisation of further structural change within Network Rail?

Not for Network Rail to answer.

13. What are the strengths and weaknesses of Network Rail's current approach to planning enhancements?

The Bowe review gives clear examples and sets out recommendations in relation to planning enhancements.

There are a number of perceived strengths and weaknesses which can alter in priority depending on the specific customer. Below are the key strengths and weaknesses that we are focusing on:

Strengths:

- Network Rail has significant in-house expertise that allows it to work with funders and

- other stakeholders in the planning of enhancements.
- Network Rail is focused on the long-term as we have an interest in timescales beyond franchise life.
- We operate an inclusive process for those who choose to engage

Weaknesses:

From the Bowe Review into the Planning of Network Rail's Enhancement Programmes (2014-19) a number of key recommendations are made that when implemented will improve planning of enhancements. One key recommendation is that NR improve 'Final Investment Decision' making, the Bowe recommendation is set out below:

"1.8 I recommend that the governance and day to day management of the process for planning and overseeing rail investment should be strengthened as between Network Rail and the Department. New governance arrangements between Network Rail and the Department should include more clearly signposted investment decision points, mutually understood opportunities for amending the programme of work (as occurred effectively during CP4), and a greater role for the Department as primary funder to prioritise schemes at early development phases."

In addition Bowe also recommends a number of other improvements that would address perceived and potential weaknesses in our enhancement planning, these are:

Planning processes, which had been thought to have worked successfully at the previous control period, have been shown to be inadequate in the face of the scale and complexity of the CP5 programme – including, very importantly, proposed electrification works on a scale not attempted before in the UK:

- The definition of organisational responsibilities between the Department, Network Rail and the ORR. These were unclear, lacking the relentless focus and clarity required for the design and execution of a major infrastructure programme.
- The fact that the overall plans encompassed a complex portfolio of schemes, subject to poor scope definition from the outset and ongoing 'scope creep' which led to cost increases.
- Issues of effective internal programme and portfolio management, notably at Network Rail, where a combination of changing internal structures and responsibilities obscured lines of accountability for efficiency and delivery; and
- When it came to delivery, early costing errors, unanticipated interdependencies, lower than expected productivity and the failure to ensure agreed front end scope definition have also contributed.

14. What are the strengths and weaknesses of Network Rail's current approach to delivering enhancements?

The 'Hendy Review' analysed the current control period delivery plan and identified areas for improvement. Network Rail's Enhancement Improvement Programme (see appendix 3) will additionally deliver a significant change in our enhancement delivery performance.

Our customers will state different strengths and weaknesses in our approach to delivering enhancements, depending on the type of project they have experienced. Below are a list of our key strengths and weaknesses that we are focusing on:

Strengths:

- A national organisation that manages the delivery of enhancements across the rail network.
- Our organisation is structured to maximise the economies of scale, derived through:
 - Management of Internal Resource.
 - Management of Supply Chain.
 - Management of Internal Client.
 - Management of Support Services & Assurance.
- Infrastructure Projects (IP) works as an integrated part of Network Rail minimises transaction costs between itself and its internal clients, which is particularly important in relation to the management of risk on large and complex enhancements. We see this as a strength but it can also be seen as a negative because of lack of formal internal operating level agreements.
- Network Rail has capability to provide value through our full lifecycle of a project (from concept, to option development and selection and ultimately delivery and commissioning of new assets).
- IP continually learns, improves and challenge itself as mentioned using structured continuous improvement e.g. the Enhancement Improvement Programme (EIP) which is looking at how Network Rail improves the planning, management and delivery of enhancements.

Our weaknesses have been outlined in the Enhancements Improvement Plan of which we have eight key improvements that we have identified:

- We will put safety first by designing safety considerations in from the start of a project.
- We are putting in place a clear and strong governance model that enables industry integration, joint decision making and clearly defines roles and responsibilities.
- We are introducing the need for two separate key decision points in the life of a project: the decision to develop and the final investment decision to deliver it.
- We will develop a set of 'clienting' principles to make sure that accountabilities in the project lifecycle are clear and that a strong, capable sponsor acts as the guiding mind and leader for the life of the project.
- We are improving the reliability of our cost estimates and establishing a way of quantifying the risk and uncertainty surrounding them.
- We are introducing more formality, rigour and transparency around the gateway process that governs how projects progress through their different stages.
- We are improving the delivery capability and capacity of Network Rail and our supply chain.
- We are improving portfolio governance and our ability to see the bigger picture across all projects and programmes.

15. How well do the current delivery and planning processes work for projects of different sizes?

The Bowe and Hendy reviews make recommendations in respect of planning and delivering programmes and projects and should be referenced for specific recommendations.

Generally Network Rail should do more to realise the longer term value that is realised from spend in the early stage of development of enhancements and not underestimate its importance. Currently a very marginal sum is typically spent directly on the development of

enhancements (probably less than 2%). We believe that it should be much higher – typically 5% to 10% of the overall cost of the project depending on complexity. By spending more on the development and evaluation of options, greater certainty of option selection and efficient delivery will be achieved.

The Route Studies (formerly Route Utilisation Studies) led by Network Rail on behalf of the Industry, typically have a Governance Group (made up of TOCs and FOCs and other key stakeholders), more should be done to incentivise and support their involvement in the planning process to take the studies into reality.

16. Are there any useful models of precedents from other sectors or countries for long term infrastructure planning and delivery processes that we should consider, including in relation to management of and engagement with suppliers during the planning process?

Railways operate in many different countries. Countries will have different approaches to planning, financing and running their railways. These approaches will reflect all sorts of factors including history, geography and the priorities of their specific country. Network Rail has always been keen to learn from other countries, as we recognise that we do not always do things in the best way possible.

Whilst Network Rail can learn from other countries, it is fair to say that that GB's processes of consulting and publishing long-term route studies is seen to be one of the most open and evidenced based approaches adopted in Europe. Indeed, the current EU railway legislation (referred to as the recast of the 1st Package) requires that member states should move towards arrangements similar to GB's five year reviews for charging and funding of Infrastructure Managers, and the forthcoming 4th railway package raises the prospect of this being extended to long term infrastructure planning, albeit at the discretion of Member States.

17. What would be the most important structural features of any future infrastructure provider?

Please refer to section 1.

18. Are there any other processes which we have not highlighted, either within Network Rail or the wider industry, which could be improved?

There are a number of processes which can be improved of which the key for Network Rail have been outlined below:

- Clearer DfT/Network Rail demarcation of accountabilities and responsibilities
- RSSB / Network Rail allocation of standards development that have a cost on the Network
- Industry Data Sharing. While the wealth of data gleaned through the Network Rail Offering Rail Better Information Services (ORBIS) programme was originally intended to be shared with the wider rail community, it is currently only made available to Network Rail. Overcoming the political and licensing issues that have prevented progress to date – moving to a model of vertically integrated asset information down the supply chain – offers the potential for far greater private sector involvement; harnessing the expertise and economies of scale of the supply chain to both plan and deliver interventions based on live operational and maintenance data.

- Digital Railway - move to an industry structure which facilitates, not blocks, innovation within the sector; unlocking the true potential of a digitally enabled railway. To explore the impacts of digital enablement across the rail industry. Areas for consideration in relation to the Digital Railway:
 - Managing Signalling and Associated Infrastructure Changes.
 - Maintaining existing Rolling Stock (fitment of equipment).
 - Provision of new Rolling Stock.
 - Capacity planning/access management/franchising.
 - Better passenger information and digital ticketing.
- The current industry plans, planning and processes such as track access, timetabling, engineering access etc, processes can be improved and made more collaborative in order to really determine what can and can't be delivered and for how much.
- Network Station Change – The 'Industry code' and licence compiled when railway was not in this climate of continued growth, needs to be reviewed now in light of current growth and utilisation)
- Franchise Transition - Duration of franchise awards, impact of changing hands, causing distraction from supporting railway delivery by bidding activity)
- The current process around the role of the System Operator – more specifically trade-offs between commercial / governmental requirements for the train plan and the operational integrity of the plan especially to recover for disruption.
- Performance management – Joint performance improvement, the role of National Task Force (NFT) and the importance of franchise target alignment and how they are managed.
- More focus on role of smaller industry bodies engaged in processes such as capacity allocation, timetabling and access disputes (Access Disputes Committee in combination with the ex-ante role of the regulator in terms of access rights

There are internal Network Rail processes which as an organisation we are working to make more efficient. We have embraced the spirit of structured continuous improvement to tackle these processes. This can be shown by Network Rail seeking ISO management standards (please see section 1.4). We know that there are processes that need improving and we have a plan to start making these changes.

19. Do you have any views on how the relationship between the periodic review process and other processes with which you are involved could be improved?

Please refer to section 1.5.

As we have set out elsewhere in this response and consistent with the Bowe report, we consider that the funding of enhancements should be reviewed separately from the periodic review (unless development of specific enhancements has been completed, supporting a Final Investment Decision after the completion of GRIP 3).

For the core business, Network Rail needs to develop a continuous business planning process so it has long term plans that form the basis of its input to each periodic review process. There needs to be a greater focus on maintaining longer term plans which have a much further horizon than the five year funding periods, while periodic reviews are used to determine funding for discrete five year periods. Infrastructure assets need to be planned over decades and there needs to be more recognition that plans will continue to evolve during control periods with demand continuing to grow and solutions continue to be developed. In addition, focussing planning on control periods results in a reduced focus beyond the current control period and creates false 'disconnects' (or

discontinuities) in plans between control periods.

The periodic review process would also be improved by better alignment with the franchising process to provide consistency between the objectives and outputs of train operators and Network Rail.

20. What criteria should be used to assess structural options under consideration? How, if at all, should these criteria be prioritised?

We would look to apply a consistent set of criteria/priorities by which structural changes could be assessed; focusing on safety as of paramount importance whilst needing to work at route, local and regional level as well as corporately. Some of these are seen as being:

- Value for Money;
 - Demonstrate the driving realistic and achievable efficiencies and cost reductions;
 - Any alternative financing must compare favourably for value for money/affordability with government debt.
- Attract investment;
 - Investment options that provide a clear and quantifiable means of financial return or investor benefit.
 - Establish investment vehicles to enable private sector investment.
- Allocate risk appropriately;
 - Agree commercial models that fairly compensate different parties for risk exposure from the outset.
- Clarify accountabilities;
 - Clear lines of accountability across the industry, such that industry fragmentation is minimised.
- Establish incentives;
 - Parties need to be incentivised to make decisions that benefit the industry wide outcomes.
 - Incentives need to be aligned, with shared goals.

Financing and funding of the company

21. Do you have any views on whether the RAB remains a relevant concept in the railways, and, if not, what should replace it?

The RAB is a long-standing and well understood concept used in many regulatory sectors. It is considered an important part of the approach to provide a pre-determined and reasonably stable return to investors.

The RAB and its associated processes focus Network Rail's (and its funders) attention on financial responsibility as it is used by the regulator to limit the amount of debt (as a percentage of our RAB) that we can take on.

However, since the company's reclassification as a public sector body Network Rail only borrows from the Government, with more or less fixed debt levels in absolute terms. Some would argue that this means that there is no longer a need for a RAB. However, we consider that (consistent

with statements in the Shaw report) we consider that there remain a number of benefits from retaining the RAB. These include:

- Providing a transparent financial log of renewals and enhancements, that DfT would be likely to require in any case.
- Providing a RAB 'track record' should make it easier, over time, to attract 3rd party investment into the railway.
- Allows comparisons with other regulated sectors.

No decision should be made regarding debt or RAB write off until a decision is made on the future financing structure of Network Rail. As noted above, the RAB provides a well-established and stable mechanism for investors to earn an appropriate return and this is essential if private sector investment is to be introduced into Network Rail either at the corporate level or at a route, or at a specific asset level (e.g. energy) or into enhancements.

22. How should financial risk be managed in UK rail infrastructure in the future?

For any business, there are inherent uncertainties in forecasting future income and expenditure, particularly in large investment programmes. It is therefore important that the risks that could cause variations in future forecasts and the potential range of uncertainty are understood and as far as possible estimated. There then need to be appropriate mechanisms in place to enable that uncertainty to be managed if it materialises.

There are a number of options for managing these financial risks for Great Britain's rail infrastructure. First, the infrastructure manager could have sufficient financial flexibility to be able to finance additional costs (or reduced income) if risks materialise. This could be achieved by revenue covering both the base forecast of expenditure and a surplus to fund potential variations in expenditure. An alternative would be to allow the infrastructure manager to increase its borrowing beyond the level that is consistent with the base income and expenditure forecast.

An alternative to providing additional funding to manage risk is for the infrastructure manager to adjust what it will deliver if risks materialise. This could be by reducing (or retiming) inputs to offset increased costs or by revising the outputs that it is expected to deliver.

Finally, the regulatory framework within which the infrastructure manager operates could provide formal mechanisms for updating the funding and outputs that it is expected to deliver if significant risks materialise.

The risks that Network Rail currently faces are currently mitigated through a mix of the above options. It has a risk buffer that enables it to increase its borrowing over and above the base case forecast subject to the DfT loan cap. If extraordinary levels of risk materialise there are mechanisms in place for interim regulatory reviews. However, these mechanisms have not worked effectively, partly because the scale of risks faced have not been consistently understood by ORR, DfT and Network Rail. It is therefore likely that some changes are required that enable risks to be managed more effectively. As mentioned earlier, this could include greater flexibility on delivery of output targets where there are significant factors that are outside Network Rail's control, particularly for train performance. There also needs to be a better understanding of financial risk so that there is either a sufficient financial buffer or flexibility within the framework to adjust plans should risks materialise.

For the rail industry to attract third party funding, investments will need to receive a commercial return that reflects the risks that are being passed to the investor.

As proposed elsewhere in this report, a specific change to managing financial risk should be a revised approach to funding enhancements. Where appropriate, this should be separate from the periodic review so that commitments for major programmes are not made until they are sufficiently well developed.

23. Do you have any views on how the UK railway infrastructure should be funded in the future, regardless of corporate structure?

The railway is part of Britain's critical infrastructure. Many of the enhancements that Network Rail delivers provide services that are not commercially viable, but are justified by societal benefits such as reducing road congestion or air pollution or creating GDP. Government support will be required to deliver enhancements that are not financially viable purely in terms of the railway revenues they produce from increased passenger fare income or freight income.

The current Network Rail financing approach involves 100% debt-funding of enhancements, with the debt never being paid off. This has been observed to be unsustainable in the long-term without explicit and full Government support, because the debt and its servicing costs continue to increase.

Prior to Network Rail's reclassification the debt-funding approach has worked for both Governments and Network Rail. Governments have been able to fund the railways off their balance sheets and Network Rail has had reasonably free access to debt (subject to remaining within the ORR prescribed 75% debt/RAB gearing ratio).

The reclassification of Network Rail as public sector body has removed some of the benefits of the existing financing structure as well as imposed additional constraints on Network Rail's financing and business activities. The change, therefore, accelerates the need to address the issues of the current approach.

Network Rail has prepared a first draft of an indicative "roadmap" of key steps to support a sustainable long-term financing structure for the company, as set out in four steps below.

1. Balance Sheet Repair to address legacy debt:
 - Debt and RAB Repayment/Write-down.
2. Funding Future Enhancements (avoiding renewed build-up of debt, spreading the cost of the investment to those who benefit from it):
 - Grant funding (for enhancements with social benefit).
 - Customer contributions (TOCs, FOCs).
 - Hypothecation tax (e.g. on businesses accruing exogenous benefits).
 - Private sector investment in select projects (PPP structures, project finance).
3. 'Asset recycling', to support long-term sustainability:
 - Commercial income streams (maximise profits to reduce subsidy).
 - Asset management strategy (dispose for up-front cash or retain for revenue stream).
4. Introduction of 3rd party funding and financing for some enhancements.

24. What positive case studies are there (e.g. international examples in the railway sector, other sectors internationally/in the UK), where more affordable and sustainable funding and financing structures have been implemented, with or without private sector capital input? And how do you think the lessons learnt could be applicable to the UK railway infrastructure?

A number of railways that have previously been cited as more efficient when compared with Network Rail (including by McNulty Review) have subsequently been revealed to have been operating on an unsustainable basis.

The current framework has problems, as it is proving very hard to finance all of the enhancements that we are required to deliver. This is because post-reclassification we have moved to a fixed debt limit due to the DfT loan cap, compared with the previous more flexible approach. Under the previous approach our debt levels were more flexible subject to us staying within the debt/RAB limit set by ORR.

Different approaches to the current 100% debt financing have been used by Network Rail. These are worth exploring further. An example of a different approach for an enhancement is Crossrail. This is different for a number of reasons:

- It was funded outside of the periodic review process as it was not an HLOS scheme as part of CP4.
- It is funded by Transport for London which is a devolved organisation of Department for Transport.
- The Network Rail part of its capital is paid back through an amortisation charge payable over 50 years.

There is a clear distinct difference in the future financing of enhancements that deliver commercial benefits. These could be funded through a typical charging regime. For enhancements that primarily deliver benefits that fall outside of the railway (benefiting 'GB plc' more generally) it will always be necessary to include some form of government subsidy to support their funding.

25. What are your views on the enabling factors facilitating a sustainable and affordable capital structure for Britain's railway infrastructure? What factors would be required specifically for private sector capital introduction?

Please refer to section 3.

The relevant asset needs to be capable of separation to be financed on a standalone basis so that the risk and rewards of delivery of the enhancement and of its operation can be easily transferred. Also, the investor needs to be able to earn a commercial return on its investment through the revenues generated by that investment/enhancement.

26. What are the types of investors that may interest in investing in Network Rail or in select parts of it? And for these types of investors, can you indicate:

- **Key attractions;**
- **Risk appetite;**
- **Required enabling factors.**

The rail industry is a large, complex and growing part of the UK economy and one where a gap between the availability of high quality investment opportunities and government funding constraints is likely to widen. We consider that there is potential for private sector investment. Potential investors include financial investors (e.g. pension funds and sovereign wealth funds), strategic investors, infrastructure funds and retail investors (the latter through public offering). We believe that many investors will be seeking a stable, index linked revenue stream.

Strategic investors and certain infrastructure funds are likely to take more risk than pension funds/sovereign wealth funds.

Enabling factors include (but are not limited to) a stable regulatory regime, transfer of risk and rewards of ownership, a commercial revenue stream to earn an appropriate rate of return, non-political intervention, and a clear commercial and contractual framework.

Using Digital Railway as an example, the chosen commercial option will largely determine the availability of particular sources of finance for the programme. At a high level, the sources of funding being explored are:

- UK and devolved governments – funding through CP6 funding cycle (2019-2024) with further funding being sort in subsequent control periods.
- European Union – the option of seeking funding from the European Union in for form of grants, loans, guarantees and matched funding.
- Third party – the option of securing funding or financing from third parties, which could be current industry partners or other third parties. This is particularly evident in the current ROSCO funded rolling stock model.
- Hybrid – a combination of the above options which could be leveraged through an investment vehicle, potentially through creation of a system operator with equity share between government and private financiers.
- a system operator with equity share between government and private financiers.

27. What characteristics do you think enhancement projects would need to have to attract private sector investment and to what extent and in what form would public sector support be needed? What types of financing structure could be brought to bear?

In order to attract private sector investment, enhancement projects may need to have the following characteristics:

- Result in incremental revenue or reduction in cost.
- Provide a clear and quantifiable means of financial return or benefit for the investor.
- Fairly compensate different parties for risk exposure from the outset, with risk allocated to the parties best able to manage it.
- Have clear lines of accountability that establish direct links between actions and penalties or rewards.

- Incentive structures that result in decisions and actions that support the long-term strategy of the industry.

There is an expected need for the public sector to play a central support role in the enhancement projects from a financing perspective. This support would be in the form of equity injections and financial guarantees that minimise the risk to private sector investors. A recent example is the Thames Tideway Government Support package.

We recognise that there is a multiplicity of financing structures that potentially could be used for private sector participation. Factors include our need to influence delivery, contract scale/duration and complexity.

There are also a variety of delivery approaches, including co-sponsorship of projects with TOCs, concessions, the formation of joint arrangements, and creation of standalone organisations, for instance through asset sales. Many of these have been used successfully within the rail industry, with examples including the Evergreen programme with Chiltern Railways (cooperation), our Solum joint venture with Kier, HS1 and (outside the industry) Thames Tideway. In the last case, a new entity was created to run in parallel with the local regulated utility, and with its own Regulatory Asset Base. The industry and its component factors is hugely complex and no one size fits all.

Risk and Implementation

28. What incentive mechanics or control structure on Network Rail would facilitate third party involvement in the financing of enhancement projects?

Since Network Rail has been reclassified as a public sector body, we are more restricted on our access to debt finance than was previously the case. This is encouraging Network Rail to consider how to involve third parties in financing enhancement projects. This could transform the approach of the company and the rest of the industry to planning and financing enhancement projects (as this may need DfT support to do so, for example, if changes in franchises required). This is providing the impetus for us to look for other opportunities. Attracting third party investment will require a framework that clearly identifies risks that are being transferred to the investor who will need to be able to manage the potential financial impact if these risks materialise.

The challenge will be to define the risks being transferred to the investor without being too complex or open-ended. There are parallels here with initiatives being considered to attract private finance to invest in the delivery of other areas of Network Rail's businesses (OMR etc.) where the risks being transferred may range from the day-to-day delivery of efficiencies within a service contract model to the development of revenue streams through the development of the market offer.

Integrating infrastructure projects with rolling stock changes would also create system-wide opportunities to leverage third party investment.

29. Do these feel like the right concerns? Has anything been missed that is vital to consider at this stage?

We have provided a number of responses to earlier questions highlighting the possible omissions or areas for investigation and consideration. Below are two further concerns that have not yet been mentioned.

One is collaboration agreements that have been successful. Examples of these successes include collaborations between Network Rail and Northern Trains and Transpennine Express. There have been clear memorandums of understandings that have been used to set out the behaviours and requirements from Network Rail and its customers. These successful arrangements could be highlighted and become more widespread.

A second is the benefits in giving consideration to better aligning the governments franchising strategy with the objectives and requirements of Network Rail. The aligning of objectives and requirements up front will ultimately lead to greater efficiency and customer benefits, especially if this is done at a national, route and at local levels.